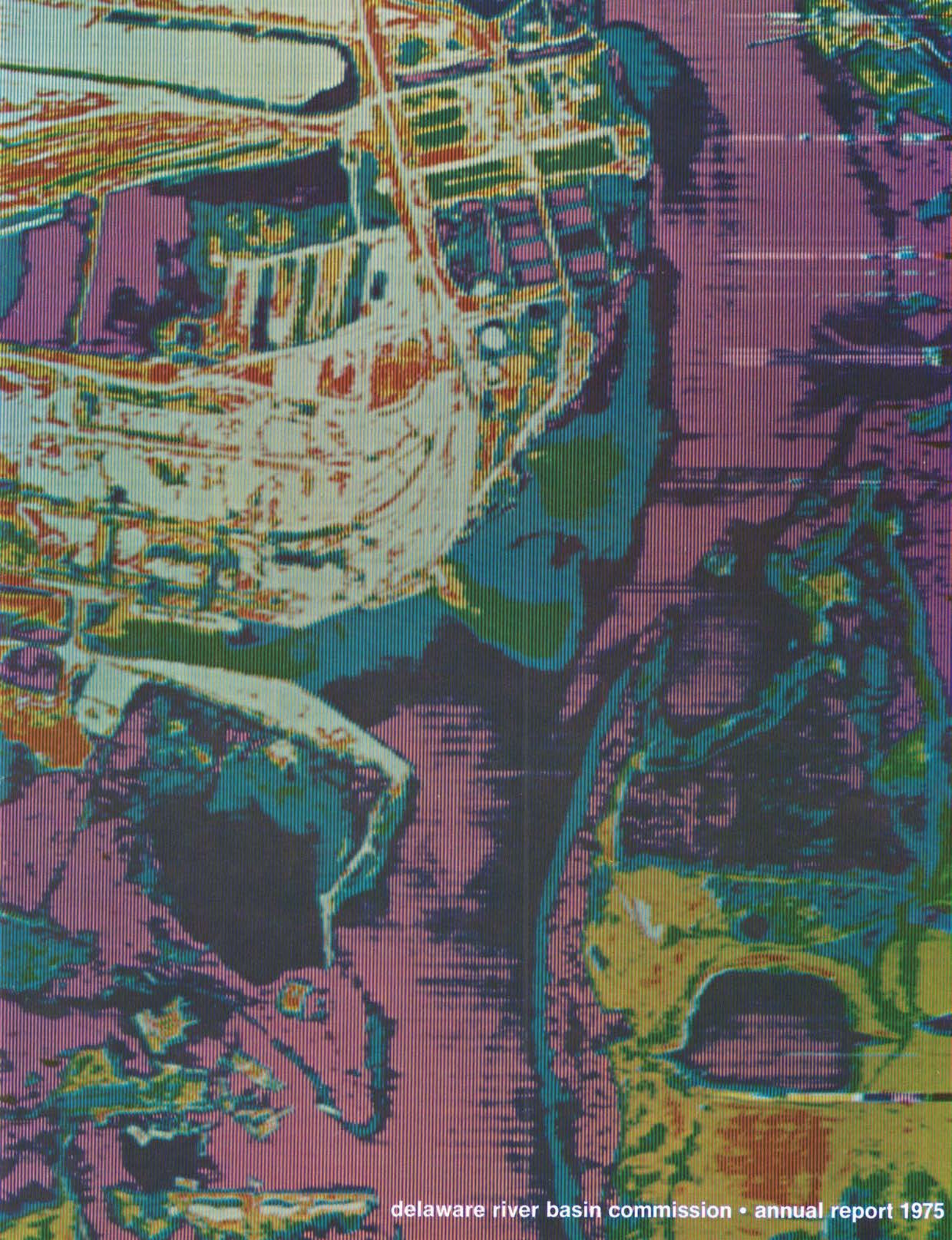
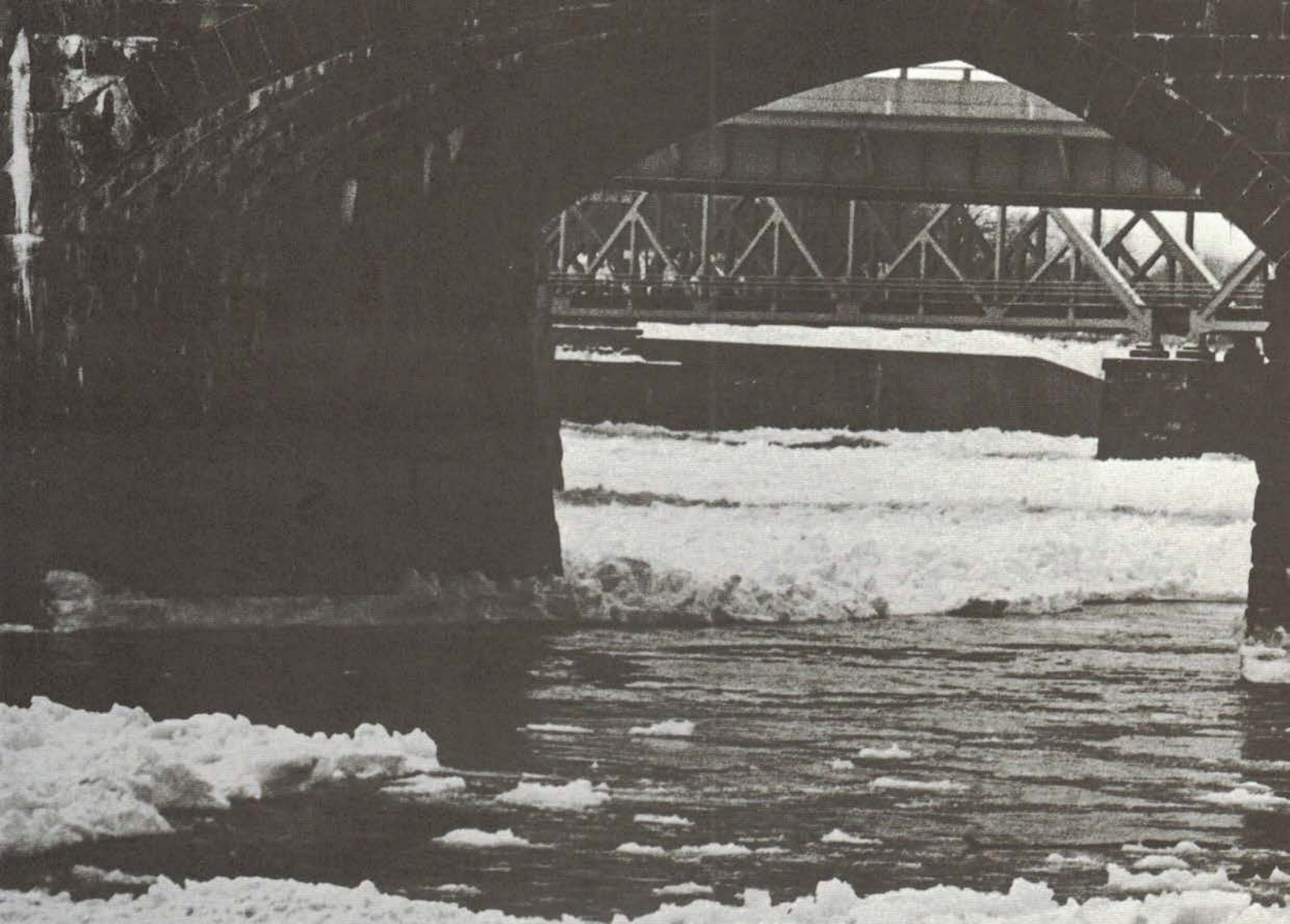


delaware river basin commission • annual report 1975

Cover: Infrared photograph taken from altitude of nearly one mile records temperature variations in and near the Delaware River main stem as it passes the Fairless Works of the U.S. Steel Corporation, upper left, Fieldsboro, top right corner, Newbold Island, lower right, and a part of Pennsbury Manor State Park, bottom left. River enters photograph at top right, making a gentle S-curve, with downstream end at bottom center. Pictures are employed in a special DRBC thermal pollution study of the estuary.

Pictures on pages 1 and 2 show ice jam that clogged Delaware River at Trenton in January 1976.

Report designed by Louis F. Conant, DRBC graphic artist/illustrator



introduction

The Delaware River Basin Commission respectfully presents this 13th annual report — for calendar year 1975 — to the seven and one-half million persons comprising the valley community and to their representatives in the legislatures of the Commonwealth of Pennsylvania, the States of Delaware, New York and New Jersey, and in the Congress of the United States.

The report is an accounting of the Commission's activities under its mandate to plan, develop, manage and protect the water resources of the four-state stream system under the interstate-federal Delaware River Basin Compact of 1961. It relates also the events of calendar year 1975 as they affect the present and future water resources portraits of the valley.

One major development was dominant in 1975 both for widespread public attention and for its significance to the future of the region and its water needs. This was the momentous decision by a three-state majority of the Commission recommending that Congress appropriate no money to initiate construction of the long-planned and controversial Tocks Island reservoir on the upper Delaware. A section of the report describes that decision, summarizes the findings of a massive federal restudy of the project, and enumerates the resulting issues.

Continued progress by the Commission is reported in several of its regular fields of endeavor, including promotion of less hazardous uses of flood plains, water pollution control programs, regulation of public and private projects affecting water resources throughout the valley, and helping assure that future water supplies will meet industrial and residential demands.

The Commission's successful legal defense of its actions on three varying issues, particularly relating to environmental protection practices, also is described in other sections of the report.

contents

1975 review

The Delaware River Basin Commission came to a crossroads in 1975 and altered its 14-year-old course.

From DRBC's inception in 1961, the giant Tocks Island reservoir proposal near the Delaware Water Gap had been central to its planning for the basin's water resource development and management services. Tocks Island was to be the valley's prime provider of more household and industrial water supply, flood protection, outdoor recreation, energy, and extra flows to help protect the lower river areas from seawater intrusion and excessive pollution.

But at a special conference called to meet a deadline imposed by an impatient Congress, the state members of the Delaware River Basin Commission recommended, in a split vote, against the appropriation of funds to commence Tocks Island's construction. The decision was widely assumed to have killed the once-popular but by-then controversial reservoir plan, although as 1975 ended it still was on both Congress' and DRBC's lists of authorized projects.

The basin states took their anti-Tocks Island action immediately following the conclusion of a massive one-year federal study that Congress had ordered in 1974. In their voluminous report, in accordance with their instructions, the consultants who conducted the study made no recommendations. They did, however, lay before the Congress, the Delaware Valley and its public officials and DRBC three alternative programs to Tocks Island for dealing with the serious water resources problems of one of the nation's most urbanized and industrialized regions. The report presented detailed analyses and the pros and cons of Tocks Island and the alternative programs that offer a combination of approaches to handling water problems for each of three hypothetical future conditions — continued high growth, medium-growth and low-growth.

Tocks Island's time apparently had run out. Construction already had been delayed for eight years during which it had become a prime target of the growing movements to preserve the natural environment and slow down growth. Opposition to Tocks Island had started a decade ago among a few property owners and citizens in the project area and then grown into a national environmental cause. By the early 1970s it had become strong among some key public agencies and many elected officials. Most of its supporters, meanwhile, held fast.

Of such magnitude was the apparent loss of Tocks Island to future management of the water resources of the Delaware Valley and some neighboring areas that DRBC's staff, supported by the policy-making commissioners, turned immediately to the preparation of new guidelines in critical matters including streamflow controls, flood protection, water supply priorities and conservation, and water needs for energy.

Forthcoming policy determinations on these and other issues will provide the basis for reforging the Basin Commission's comprehensive plan that soon could be without the long-dominant Tocks Island reservoir. Naturally, the judgments on new policies must be tied to latest projections of population, land use, industrialization and other trends, in turn keyed to programs that can meet the needs.

It can be expected that sharp disagreements will be resurrected from past Tocks Island debates on what the future trends will be, and also the adequacy of any alternatives, including Tocks, to hold up the supply end of the equation. The Tocks consultants' report declared that no single alternative, including the controversial reservoir, could meet all forseeable demands, except for water supply in a no-growth future.

"Level B" study

The prospects appeared encouraging for the Commission to receive in 1976 a substantial federal financial grant to support an investigation that could be the major source of information prerequisite to the post-Tocks Island decisions ahead.

The U.S. Water Resources Council annually funds planning proposals for reconnaissance and evaluation of water and related land resources on a regional, and preferably river basin, scale. In the 13,000-square-mile Delaware Basin, where intense and rapid development is straining both quality and quantity of water resources, DRBC has sounded the need for integrated and concurrent land use management, increased water supply, water quality improvement, streamflow regulation, flood loss reduction and recreation development.

DRBC's application for the grant to finance the two-year program was before the Water Resources Council for the second straight year. The grant of $1.1 million would be augmented by $432,000 in DRBC, state and local matching contributions. Half of the grant funds would pay for study services performed by federal agencies. Despite a high-priority rating, the proposal was the victim of funding limitations in 1975. However, after receiving widespread support from the valley's congressional delegation as urged by the governors, DRBC was encouraged by the inclusion of the funds in the Presidential budget proposal for 1976-77.

Upper Delaware streamflows

A United States Supreme Court decree allows New York City to divert voluminous water supplies from its three-reservoir system in the upper Delaware Basin and also requires that releases be made from the system to assure adequate minimum flows below where the river passes Milford, Pa., and Montague, N.J. However, New York State is concerned about conditions in the river from Milford upstream, where studies showed that irregular releases from the reservoirs cause temperature problems and handicaps to management of fish and wildlife, water quality and recreation. The state seeks to impose a program of increased and more evenly distributed releases to improve the upper river, yet continue to meet flow requirements below Montague-Milford. New York State has enlisted the aid of

DRBC in implementing its proposed controls which promised to develop into an important issue in 1976.

Water management report

The Commission published in mid-1975 a report entitled Water Management of the Delaware River Basin, presenting a 13-year compilation of the agency's water resources data and planning studies and assumptions.

The 350-page document offers statistics on the status of existing water resources developments, estimates of future demands, means of accommodating them, and the assumptions on which DRBC's existing 11 planning programs are based. The report further compiles all the Commission's adopted standards, which include water quality and groundwater protection. Separate chapters appear on the description and history of the basin, water supply management, water quality control, flood protection and recreation and fish and wildlife management. The broad guidelines that have been adopted for those wishing to plan, develop and manage available water resources are presented as the Water Code of the Basin.

The water management report is useful in lieu of the delayed republication, in codified and loose-leaf form, of DRBC's voluminous comprehensive plan.

The Commission's annual Water Resources Program is now published as a bound self-contained document that is a six-year action program based on the comprehensive plan. The twelfth Water Resources Program was released late in 1975. The new format was introduced in 1974.

Environmental and project reviews

To help recover the cost of operating its project review branch and environmental unit, the Commission increased fees on projects examined by the review branch and imposed charges for the first time on environmental investigations. Both apply only to privately sponsored projects, since public proposals, though reviewed, are exempt from charges. Each year about 200 applications come to DRBC for review of various types of projects, including dams, wells, pipelines, marinas, electric power plants, waste treatment facilities, and water supply works. The Commission clears those projects that it finds would not conflict with its comprehensive plan nor impair the valley's water resources. About half entail staff field investigations. Also, extensive environmental analyses are made of the projects assessed as having substantial impact on the environment, as required by DRBC's rules and the National Environmental Policy Act. Before being approved, each project must be presented to a public hearing. The preventive value of the review programs is demonstrated by many projects being withdrawn by the sponsors because they fail to meet DRBC's requirements and by the others that are altered in order to comply.

The minimum fee for applications before the project review branch rose from $25 to $100 and the maximum was increased from $25,000 to $50,000, based on a percentage of the total project cost. Intermediate charges were boosted also.

For applications brought before the environmental unit, $1,500 is now charged where the Commission makes an environmental assessment and $30,000 where a more voluminous impact statement is prepared.

Staff departures

After nearly four years as head of the DRBC environmental unit that he organized, Robert L. Mann left the Commission to set up a similar operation in California's new Energy Resource Conservation and Development Commission. Mann, who left DRBC after finishing out 1975, was commended as a creative and energetic official who helped forge the stringent environmental protection policies and regulations that were particularly effective in the Commission's review of several major energy facilities and water resources developments.

Mann was succeeded in an acting capacity by a veteran DRBC economist and environmental unit member, J. W. Thursby, who came to DRBC in 1963 from the California Water Resources Department.

The 1975 retirement of Phillip J. Gordon left the Commission without the services of a power engineer in its operations branch. In his nearly 13 years with the Commission, Gordon prepared scores of analyses of a wide variety of energy-related plans within the four-state area proposed by its many electric utility companies. He also performed important work in evaluating the long-range supply and demand picture of the heavy energy-using Delaware Basin region.

"Freedom of Information"

Early in 1975, DRBC enacted regulations formally opening its files to the public under federal Freedom of Information guidelines. DRBC took the action in keeping with new federal policy although the federal law did not specifically require the Commission's adherence. DRBC had maintained an open-files policy from its inception.

Budget

The Commission continued to operate on an austerity budget. The total budget request was reduced substantially, reflecting special financial problems encountered by some of the signatory parties.

Although 58 positions have been authorized, only 53 were actually funded, and restrictions were additionally placed on the filling of several positions that became vacant during the year.

Mr. Mann

Mr. Thursby

Mr. Gordon

water supply pricing

The Commission successfully defended the legality of its newly instituted surface water pricing program in 1975 in the federal courts and started making sales to finance expansion of the basin's inadequate fresh water storage facilities.

At its 1974 annual meeting, the Commission had adopted the water pricing program that had been years in the making. But without delay, the municipal and county officials in Pennsylvania that had fought the plan responded by challenging it in federal court.

Prior to the program's enactment, no charge had been assessed against water purveyors, public or private, for any quantities drawn from the Delaware or its tributaries, even though the water was then sold to their customers. Industries, including manufacturers and electric utilities using large volumes for cooling, also had escaped any charge for stream-drawn water.

DRBC takes over the water supply function in federal reservoirs built in the Delaware Valley and, in return, is to repay the United States that portion of the cost. To raise the money, DRBC charges industries and purveyors for water drawn, but only for that in excess of their 1961 entitlements, which remain free. Thus, if a purveyor does not increase its previous taking, there is no charge.

DRBC's base water rate is four cents per 1,000 gallons, but the charge is only a hundredth of that price, or four cents per 100,000 gallons, for water returned to the stream. This means the bulk of income is from cooling water that is evaporated, and from prospective future exports outside the basin. No charge is made to users who arrange for or provide their own reservoir storage.

To date, one reservoir under the program (Beltzville in the Lehigh Valley) is operating, and another (Blue Marsh in the Schuylkill Valley) is nearing completion, while several others are authorized by Congress for construction. Collections from water sales through 1975, a financial starter toward the expanded water supply network, were $165,000.

Comprising municipalities and multi-community authorities in Bucks and Monroe Counties, the seven plaintiffs principally challenged the arrangement under which any increased withdrawal from the river would be subject to charge even though the water does not come directly from a reservoir supply. The program's pooled-water principle is that any user increasing his withdrawals should help pay for expanded storage facilities that replenish the withdrawals taken from anywhere in the basin.

DRBC made an environmental assessment of the pricing plan, finding that it would not have a substantial effect on the quality of the region's human environment. Environmental rules provide that no environmental impact statement need be prepared in event of such a negative conclusion. The plaintiffs contended this determination, which was supported by the President's Council on Environmental Quality, violated the National Environmental Policy Act (NEPA).

The court supported the Commission's decision not to prepare an impact statement based on all the standards applied by the federal judiciary in previous cases elsewhere.

Noting the complainants' contention that DRBC failed to consider relative environmental impact of alternatives such as making the basin states pay for the reservoirs or ignoring the Compact's water sales exemption mandate, the court declared: "What plaintiffs want is not an environmental, but a political, impact statement, which is neither required by NEPA nor within the Commission's expertise to prepare."

The Federal District Court also rejected the plaintiffs' contention that equitable cost sharing under the program was impossible in view of the exemption of existing withdrawals from charges, noting that Congress had mandated the exemptions in approving the Delaware River Basin Compact, the Commission's enabling law. The court declared: "To say that no charges are equitably allocated if exemptions are granted would be to say that the Commission could never impose charges, even though it is expressly given the power by . . . the Compact."

After the Federal District Court entered its judgment in favor of DRBC on all claims in July 1975, the plaintiffs carried the case to the U.S. Circuit Court of Appeals, which affirmed the lower court ruling early in 1976.

tocks island

the decision

On July 31, 1975, the members of the Basin Commission assembled in Newark, N.J., and, following a morning-long debate, recommended that the Congress not appropriate funds to commence construction of the long-planned multiple-purpose Tocks Island reservoir on the main stem of the Delaware River just upstream of the Delaware Water Gap.

New Jersey, New York and Delaware cast the majority votes to recommend against funding the start of construction. Pennsylvania dissented, and the United States, as sponsors of the Tocks project, abstained.

On the same day, the DRBC members urged that land acquisition be continued but failed to act on a motion to recommend that Congress deauthorize the project.

In the short-term sense, the action of the Commission was the culmination of a one-year period in which the once-heralded water supply, flood control, recreation and hydro-power project underwent an unprecedented and intensive new federal study at Congress' direction and was the subject of the most spirited pro-con debate ever. Congress, in arranging for the one-year crash study, said it wanted DRBC's recommendations on Tocks by August 31, 1975, after conclusion of the investigation.

(A summary of the study findings appears on page 8.)

New Jersey took the position that it could get by for the coming two decades without tapping the Delaware beyond its present entitlement for 100 million gallons daily for its north-eastern counties. But it argued that Tocks Island's possible use to supply North Jersey beyond that period should not be foreclosed. It also supported holding the already-purchased Tocks area lands – 70 percent of the project's 60,000 acres – in public ownership for whatever needs develop later.

Pennsylvania supported the project without qualification, while New York argued that impacts in its area, including costs of waste treatment of waters headed downstream toward the Tocks area, would be too great. Delaware made good its promise to withhold support if Tocks lacked endorsement from the areas slated for the purported benefits.

Deauthorization unresolved

As 1975 ended, Tocks Island's fate was uncertain, although it was widely assumed to be dead. New Jersey led the fight against building Tocks now but argued against wiping it off the books. Nonetheless, a move developed in Congress, spearheaded by some New Jersey members, to have Tocks Island deauthorized. Also, New York State announced it favored deauthorization, joining the Corps of Engineers and the Council on Environmental Quality.

To a lesser degree, the future of the Delaware Water Gap National Recreation Area, the giant park that was to have had the 12,000-acre Tocks lake as its principal attraction, was uncertain also. Early opposition was aimed as much, if not more, at the park, which at one time was planned to accommodate 10½ million visitors a year, as at the reservoir. Local opponents protested that such hordes, later reduced to a planned 4 million, would put an unbearable strain on roads and other public facilities and accommodations. Gradually, the project opponents took to supporting a lakeless park that would offer "low density" activities more attractive to small numbers of outdoor people than to family and group outings.

Although there appeared to be broad support among Tocks foes for retaining the park as a more limited attraction, it was uncertain whether this could be accomplished without amendment to Congress' existing recreation area authorization, which some said applies only to a park-and-lake combination. The support of a lakeless park was reflected in the DRBC recommendation that Congress

Commission decision on Tocks Island at meeting in July at Newark announced by DRBC members, (l. to r.) Governors Byrne of New Jersey, Tribbitt of Delaware, Shapp of Pennsylvania, and Ogden R. Reid, then New York's Environmental Conservation Commissioner.

continue to appropriate funds to complete land acquisition in the Tocks area.

The Delaware Water Gap National Recreation Area already is a reality to a limited extent, and it has been offering some recreation services and facilities for several years.

Project's popularity wanes

On the longer-term scale, the DRBC action represented an end to the once near-traditional support for a giant multi-purpose impoundment on the upper Delaware as the keystone of a water resources management program for enhancing water supplies both down-basin and outside the valley in Northeast Jersey, for controlling flooding along the Delaware downstream to Burlington, for attracting millions of urban visitors to a massive national public recreation center, and for underpinning the region's energy production with peaking power.

Tocks Island had enjoyed wide endorsement for nearly a decade from the region's government, political, industrial, labor, civic, and journalistic leadership until the support began eroding in the early 1970s as war-induced delays in starting construction brought uncertainty and frustration to the project area and as the national environmental movement gained momentum in its fight against projects that would alter nature's order.

Although its planned benefits went far beyond flood protection, the basis for much of the popularity of Tocks Island was the memory of the Delaware River's most destructive flood in 1955. It was following that natural disaster that Congress ordered the Corps of Engineers to produce a comprehensive study of the basin's water resource needs, particularly water supply and flood control. It was that study that produced Tocks Island in its proposed form, although similar dam plans for the upper Delaware already had been discussed and proposed for decades. Also, it was that study that recommended other water management impoundments that have been either built, begun or anticipated over the past decade-and-a-half without Tocks-like controversy.

Yet Congress had tended to continue its long support for Tocks Island notwithstanding the growing hostility for the project among some members, one-time proponents among them. In 1974, DRBC brought the growing Tocks Island fight to a head by calling a hearing on whether Tocks should be cleared for construction. The outcries included demands for a new study of the project, which Congress ordered in August 1974 to be directed by the Corps of Engineers in cooperation with DRBC.

DRBC study involvement

Throughout the fall and winter, the Corps and DRBC worked day and night producing first a general scope of the study (formally known as the Comprehensive Review Study of the Tocks Island Lake and Alternatives), followed by a more detailed plan of study. Drafts and redrafts were prepared and submitted for public scrutiny. Sentence by sentence, they were analyzed at public hearings at which the basic arguments for and against Tocks Island tended to overshadow the hearings' purposes. Concurrently, a national consulting firm was selected from more than 130 screened at long sessions.

This exhaustive work on designing the course of the study and selecting consultants was performed by a study management team comprising DRBC's federal and four state members and the Corps, assisted by other federal agencies.

One of the management team's principal decisions was that there was to be maximum possible public information, disclosure and participation in the study from beginning to end. DRBC was designated to formulate and administer the information-and-participation program.

Besides the information and participation activities, DRBC's technical and management personnel monitored the study daily as it progressed. Further, DRBC's employees, intimately involved in the Tocks Island planning for years, some since the 1950s, became a primary source of technical data on the project for the scores of consulting personnel, all formerly unfamiliar with the subject. Also, DRBC's library and central file shelves offered seemingly endless material on the subject to those conducting the investigation. The demands on DRBC time and facilities were met without reservation or delay. With the exception of two persons engaged especially for the participation and information phase, DRBC's small staff provided the Tocks Island study services in addition to carrying out the normal full range of the agency's water resource work.

But it was the public information and participation program that was unique. Perhaps no government activity anywhere has been subjected to such magnitude of public scrutiny, dissemination of information, open hearings and solicitation of outside comments and suggestions.

The frequent hearings were held in several locations throughout the basin — on the scope and plan of study, on all five parts of the report, on the full document. Regular progress reports were prepared by DRBC's Tocks Island study office and distributed to an extensive special Tocks mailing list that included all known persons, organizations, institutions, news media and others interested in the controversy. Public progress reports were made at each DRBC monthly meeting.

As they came off printing presses in New York, dozens of copies of each of the many draft and final documents were rushed by DRBC special messenger to the agency's West Trenton offices for same-day mailing or delivery to principal public and private parties of interest.

At 10 separate locations in four states DRBC established and kept current repositories of all substantive Tocks-related materials from the consultants, Corps, DRBC, pro and con Tocks groups and others. The materials included new and old reports, announcements, notices, hearing transcripts, virtually all assembled, reproduced and distributed by the DRBC study office. Most of the repositories have been retained as a post-study public service.

Continuous liaison was maintained with Tocks opponent and proponent groups, state advisory committees, local, state and national lawmakers and agencies and news organizations.

DRBC's Tocks study office terminated operation in the fall, shortly after Congress had been notified of the Commission's views.

study findings

Following are highlights of the six-volume, 2,000-page report of the Tocks Island lake project restudy conducted jointly by the consulting firms of URS/Madigan-Praeger, Inc., and Conklin & Rossant, as summarized for the Congress:

Besides the Tocks Island reservoir, three alternative programs were studied. To meet a high-growth pattern, the study devised an alternative of seven tributary reservoirs (six in Pennsylvania and one in New Jersey) for water supply, expansion of state parks and programs for recreation, a "dry" dam on the Delaware to impound only storm waters for flood control, and combination gas and fossil-fueled generators for electricity. For a medium-growth future was a similar program for water supply and energy, but with seven tributary dams (five in Pennsylvania, one each in New Jersey and New York) and more non-structural measures for flood control, and with more use of present facilities for recreation. A low-growth alternative for minimum environmental impact offered the same electric generating plan but no new water supply or recreation provisions, and only non-structural means for flood control.

Capital costs would be $722 million for Tocks, $1.2 billion for the high-growth alternative, $909 million for the medium-growth option, and $460 million for the low-growth plan. Annual costs slightly exceed annual benefits in each of the alternatives, compared to Tocks Island, where yearly benefits would be about $14 million higher than the $93 million annual costs.

Irrespective of future growth patterns, the basin region will require additional water supply, flood control, electric power and water-based recreation.

Northeastern New Jersey has a significant need for water supply, as supported by a recent state report, "Water Supply Management in New Jersey," which cites that there is not enough water for the state in event of another 1960s-like drought and adds that continued growth exacerbates problems every year.

But except for water supply in a no-growth future, meeting all these future needs would be far beyond the capability of either Tocks Island or any other single alternative program.

While the needs can be met only partially by any of the several alternative means, the multi-purpose Tocks Island project would be the most economical and would produce the most net benefits.

The Tocks lake and park plan and all alternative programs offer adverse environmental and institutional impacts. These can be greatly reduced by adequate land use controls and a well-coordinated local, state and federal program for recreation development, traffic management and the resolution of public-support requirements.

The project area likely will suffer substantial adverse environmental impact due to existing trends whether Tocks is built or not.

In terms of impacts on water and air quality, noise levels, wildlife and fish, vegetation and especially archaeological and historic sites, Tocks Island scored worse than the alternatives.

The Tocks lake would become eutrophic, not unlike other lakes in the area, to the extent that some swimmers and boaters would find it aesthetically displeasing, but not enough to reduce park patronage.

Eutrophication would have negligible or no effect on water supply, power generation and flood control and should not be of major significance to a Tocks decision.

Primary and secondary economic impacts such as those on employment, residential development, commercial activity, and local taxation would be more unfavorable from the three principal alternative programs studied than from Tocks.

The summary that went to the Congress from the Corps of Engineers concluded that Tocks Island should be constructed as an engineeringly-sound and economically-justified project whose institutional and environmental impacts are outweighed by the benefits. The Corps added that it recognized that others hold that the adverse environmental impacts outweigh the benefits, that the Delaware River should be left free-flowing, and that alternative means should be employed to meet the region's needs.

Because of the opposition of three of four basin state governors to starting construction, the Corps concluded that the project should be deauthorized, so that alternatives could be pursued, rather than deferred, which it said would be detrimental to sound planning by public and private interests.

the aftermath

The DRBC recommendation against proceeding with Tocks Island has substantially affected the practical application of its comprehensive plan and will require significant revision of the plan to compensate for the loss of Tocks' capabilities. Even if Congress decides to defer rather than deauthorize the project (or if it stays in DRBC's plan as a distant-future project), Tocks can no longer be a factor in planning for the interim water picture of the region.

In the wake of the Tocks decision, DRBC's staff has laid before the commissioners what it sees as nine basic policy issues for resolution before the basin's comprehensive plan can be revised to reflect the decision on Tocks Island.

Salinity intrusion

Perhaps the most crucial of the nine issues is how to control salinity intrusion from the ocean up the tidal estuary without a big fresh water impoundment to augment nature's occasional low flows. Simply stated, the smaller the inflows of fresh water from upstream into the estuary's head of tide at Trenton, the greater the salinity penetration. The deepest intrusion of the salt front (250 parts per million) to date was to within a few miles of Philadelphia's water supply intake during the depths of the mid-1960s drought. To a much lesser extent, salts emanate also from land runoff, industrial wastes and sewage.

Saline water impairs use of water for industrial and household purposes. It is harmful to water-using industrial operations along the Delaware between Philadelphia and Wilmington, a stretch where salinity concentrations fluctuate according to season and upstream flows. It is an acknowledged contamination threat to Philadelphia's water supply, to the well fields that supply fresh water to the Camden area, and to groundwater concentrations generally from Burlington to Salem. A current U.S. Geological Survey mathematical study of the vast aquifer system in the southern New Jersey coastal plain suggests that the Delaware River is a major source of recharge to the aquifers underlying Burlington, Camden, Gloucester and Salem Counties, where long-term pumping has caused a large cone of depression. Salty groundwater on the fringes of the "cone" is being induced inland and the Geological Survey suggests that its proximity to the pumping could be an eventual contamination threat. Such contamination is generally irreversible.

Until remedial measures are taken, future estuary salinity concentrations will rise gradually as depletive uses (exportation, evaporation and transpiration) of the basin's waters increase due to growing municipal, industrial, electric generating and agricultural uses and diversions out of the basin. These would leave even less fresh water than now in the river to dilute salinity in the estuary.

Seen as essential is a policy on establishing an appropriate flow objective for minimum fresh water flows into the estuary at Trenton. This has long been set — assuming Tocks Island's construction — at 3,000 cubic feet per second (cfs), or about 300 cfs more than would currently be available in event of recurrence of the 1960s drought. Moreover, average basinwide depletive uses are increasing by about 50 cfs annually. Without flows released from Tocks Island or other alternatives, 3,000 cfs is regarded as an unrealistic dry-period goal.

A minimum flow policy would be based on investigations and data collections that have been proposed or initiated, including a salinity-impact survey of estuary industries. A special DRBC consulting board recommended specific research projects to determine the flows needed to repel salinity and, at the same time, carry off and assimilate wastes discharged in compliance with DRBC and federal treatment standards. The consulting board was convened to evaluate conflicting analyses on the magnitude of and solutions to the salinity problem between the DRBC staff and the authors of the 1975 Tocks Island restudy. The board generally corroborated the staff's position that the Tocks report did not adequately assess the salinity threat.

Drought frequency

The problems associated with developing additional water supplies require reevaluation of current policy on supply vs. demand planning for severest drought conditions. This could necessitate, for instance, standby emergency conservation and water allocation measures in shortage periods.

Water priorities

Establishment of a water supply priority system for uses and users under drought conditions may be essential for a Delaware Valley with a prospect for demands exceeding supplies. Policy to be considered might include, for example, instream uses (such as salinity and pollution control) vs. withdrawal uses; consumptive vs. non-consumptive uses, in-basin vs. exported uses, and also municipal, industrial, energy, agricultural and other specific supplies.

Water for energy

Some recent DRBC approvals of big water-using electric generators have contained conditions that consumptive — or evaporative — withdrawals will be banned in the absence of reservoir-supported makeup water under extreme drought conditions. However, the staff seeks more formal policy development on dedicating water for energy use so that planning for electric generating facilities can proceed on a firm basis.

Flood protection

Recognizing the extreme difficulty in obtaining approval of major flood control dams, a policy is sought to optimize non-structural measures to hold down flood losses. This would be in addition to the flood plain regulations that have been imposed along the Delaware by New Jersey and proposed by Pennsylvania, and also above and beyond zoning by municipalities and imposition by DRBC of controls over flood plain uses as now under consideration. Also, a flood history of the main stem downstream of the Delaware Water Gap was completed by the Corps of Engineers and DRBC several years ago.

The new policy could deal with flood plain regulation, flow forecasting, evacuation warnings, land treatment, stormwater runoff management, tax incentives, and flood proofing or removal of existing structures or acquisition of them for demolition.

Reservoir scheduling

Based on policy determinations on minimum streamflow maintenance and drought frequency planning, additional water storage facilities for flow regulation may be needed. The sequence, timing and magnitude of the smaller projects in the comprehensive plan become more critical to the region's water needs. A policy more precisely tying such project factors to the needs picture is regarded as imperative.

Compensatory storage

The staff supports a requirement that future exports of water from the basin be firmly conditioned upon installation of storage facilities to provide compensating downstream flows. The U.S. Supreme Court decree on Delaware water exports imposes compensatory release requirements on New York City and also requires that New Jersey provide compensating flows for any exports beyond the 100 million gallons daily to which it is now entitled without make-up releases.

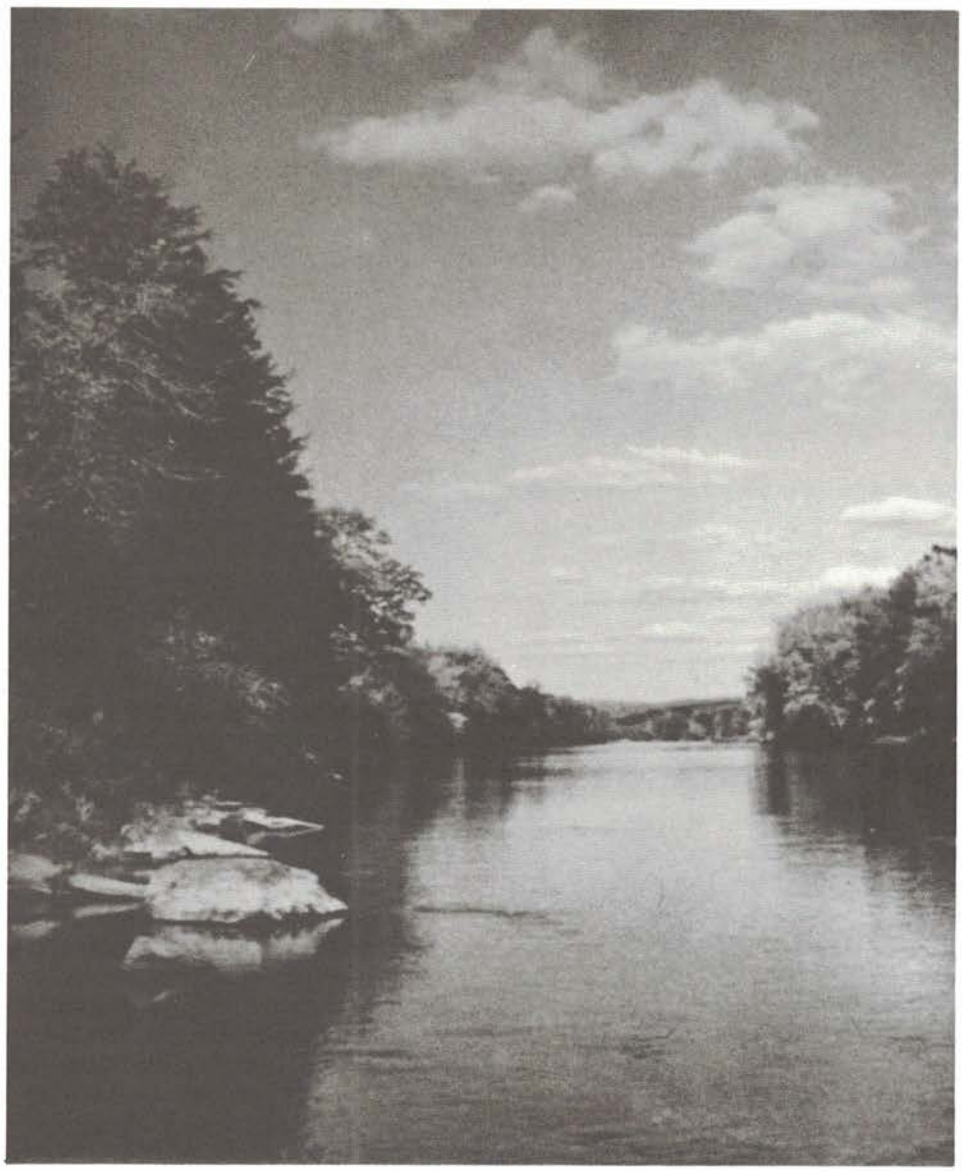
Intrabasin transfers

The staff seeks a policy determination that sub-basins in the Delaware Valley should develop to the maximum extent possible their local water resource potential before reaching into neighboring areas to augment supplies. Until now, economics generally has been the determining criterion.

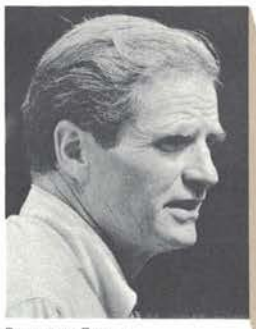
Water conservation

Conservation measures may be necessary in some areas where there will be increasing competition for limited available water and where there also are constraints on imports and on developing additional supplies. DRBC, which fostered broad conservation measures during the 1960s drought, already has a policy requiring metering at new developments, but the staff urges a further policy exploration of using the agency's regulatory powers in non-drought periods to impose long-range conservation.

Site of the controversial Tocks Island dam as it apparently is destined to remain.



commission membership


Governor Byrne


Governor Tribbitt


Governor Shapp


Secretary Kleppe


Governor Carey

new jersey

Governor
Brendan T. Byrne
Chairman

David J. Bardin
Alternate


David J. Bardin

delaware

Governor
Sherman W. Tribbitt
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John C. Bryson
Alternate


John C. Bryson

pennsylvania

Governor
Milton J. Shapp

Maurice K. Goddard
Alternate

Carmen F. Guarino
Advisor


Maurice K. Goddard

united states

Secretary of the Interior
Thomas S. Kleppe

Thomas F. Schweigert
Alternate

Colonel
Harry V. Dutchyshyn, ACE
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Theodore L. Hullar
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Robert A. Low
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Chief Administrative Officer

planning division

Herbert A. Howlett
Chief Engineer

C. H. J. Hull
Staff Engineer

branch heads

Seymour D. Selzer
Program Planning

Robert L. Goodell
Operations

David B. Everett
Project Review

Seymour P. Gross
Water Quality

1930 and 1975. Aerial photographs depict same scene 45 years apart. View is of main stem of Delaware River looking upstream, with Lambertville on the right and New Hope left. In foreground are the wing dams that DRBC rebuilt in 1968. In distance of 1975 picture is the new Route 202 bridge.

1975

flood plains protection

An advisory committee to the Basin Commission on flood plain regulations concluded a year of deliberations in July 1975 and submitted to DRBC a report whose recommendations may become the basis for far-reaching programs to help limit damages for the entire major river basin by non-structural techniques.

Completion of the committee's work, which deals with non-dam methods of restricting damages, coincided with the decision by the governors sitting as DRBC members to recommend against commencing construction of the Tocks Island reservoir plan, which encompassed the largest single structural flood control facility ever envisioned for the Delaware Valley.

Since one of the principal river stretches that could benefit from the advisory committee's flood plain regulation program is the same reach of the Delaware that Tocks Island would have protected, the timing and contents of the report could be fortuitious as they were coincidental.

As 1975 ended, the Commission was reviewing the advisory report and planning to schedule public hearings on its recommendations.

Essentially, the advisory group urged DRBC adoption of standards of use for flood plains — those streamside lands which have been or could be flooded. The standards would entail minimum basinwide restriction that could be made even tougher by state or local action.

The flood plain standards under Commission consideration are intended for state and local use to regulate streamside development. For example, local governments could zone flood plains compatibly with the standards to control a multitude of residential, industrial, business and public works projects. DRBC has no power to zone.

The advisory committee offered definitions of the various component lands that make up flood plains — graded according to the severity of damage threat — and suggested prohibited and allowable uses for each.

For example, a floodway is defined as the area required to carry off a flood of once-a-century intensity (known as a regulatory flood). Expressly prohibited there would be virtually any structure for habitation and excavations of toxic materials, while specifically permitted would be farm operations, commercial loading and parking areas, air landing strips, and various recreation facilities. All other uses would be subject to regulation, such as transient entertainment operations, drive-in movies, excavation of non-toxic materials, boating installations, fish hatcheries, and public facilities including railroads, streets, bridges and pipelines. Pre-existing structures could be kept and repaired within limitations, but not expanded.

Similarly, the flood fringe, a less hazardous flood plain area outside the floodway, is set aside for more liberal usage, such as residences built so neither the basement nor first floor would be below the 100-year flood line. Regulated uses on the fringe would be elevated or flood-proofed non-residential and commercial structures, industrial buildings flood-proofed to the potential high-water mark, streets and railroads designed to avoid obstructing high waters, and water supply and waste treatment facilities built with anti-contamination allowances in event of flooding.

The advisory committee comprised representatives of the four states and Federal Government that are the Commission's signatory parties. The five commissioners designated experts from their jurisdictions to serve on the committee, which was chaired by Selden Lee Tinsley, retired New Jersey State Conservationist for the U.S. Soil Conservation Service.

One of the principal sources of technical information for the committee was a 1973 consulting report to DRBC recommending a basinwide program of uniform delineation of flood plains. It was that report that first suggested standards of flood plain use as part of a total management program including regulations, forecasting and warning for evacuation, land acquisition and treatment, tax incentives, reservoirs, dikes, flood proofing and channel improvements to help cut the $8 million average flood losses in the Delaware Valley.

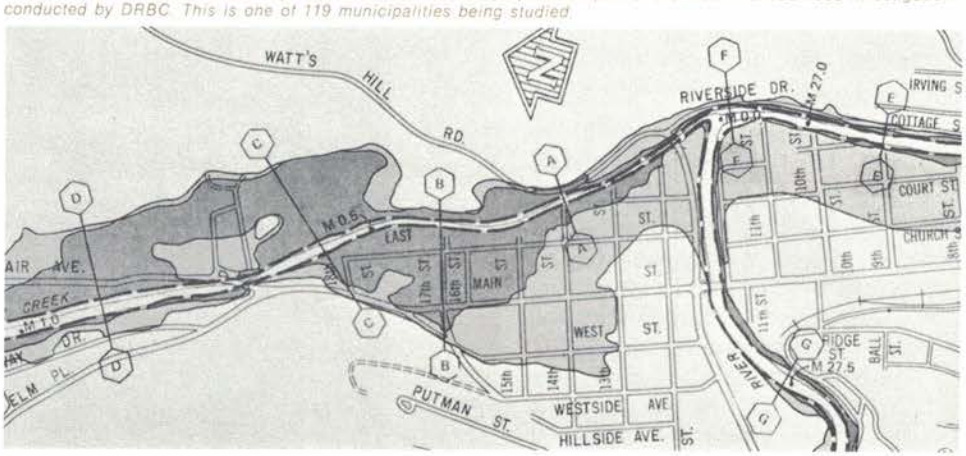
DRBC presses local flood studies

Concurrently, DRBC proceeded under $2.5 million in contracts with the U.S. Department of Housing and Urban Development with its flood plain studies in 119 municipalities in the Delaware Basin.

The DRBC-directed flood investigations of the communities will help qualify their property owners — those already entitled to limited coverage at subsidized rates — for additional insurance at actuarial rates. Participating towns must adopt local flood regulations. Work will be completed on more than a fourth of the studies in mid-1976, and the remainder by year-end.

DRBC has a three-man team coordinating and supervising the studies, which are being performed by eight consulting groups.

Section of a flood hazard boundary map of Honesdale, Pa., prepared as part of the HUD-financed flood investigation conducted by DRBC. This is one of 119 municipalities being studied.



Lewis's Island in Lambertville is submerged by late-winter flooding following heavy rain and ice floes.

Assunpink Creek at Trenton (right) suffered its worst flooding in history in July. Firemen pump water from severely damaged Trenton filtration plant (above) following breakdown of the facility over Labor Day weekend.

river conditions

Trenton area hit by floods, water plant failure; sewer collapses in Philadelphia

As they had been for nearly a decade since the Delaware's worst drought ended, 1975 precipitation and streamflows in the basin were higher than the long-term averages. And once again there was one of the relatively harmless near-floods that have been occurring with more frequency on the main stem of the river.

But 1975 was anything but uneventful for Trenton and the Assunpink Creek that flows into the Delaware there after draining most of Mercer County, N.J.

The Assunpink was barely drying out from its July 14 flooding, the third worst ever, when seven days later it was hit by new record crests following a weekend of rain torrents. Residential and industrial areas in and near Trenton were hard-hit. Important roads and the nation's busiest rail line were impassable for days. Trenton's July rainfall of 13.39 inches had been exceeded only twice in a century.

Other local watersheds in the lower basin region, including Perkiomen and Neshaminy Creeks in Pennsylvania and the St. Jones River in Delaware, also overflowed following the July storms, with some damage and evacuations.

Breakdowns in Trenton and Philadelphia

But July didn't end Trenton's water problems. Already hit by its worst tributary flooding in history, the Greater Trenton area went virtually dry for days following a fluke breakdown of the city's filtration plant over Labor Day weekend. Flooding after a valve failure resulted in extensive damage and shutdown of the plant. The whole system, serving 225,000 people including the heavily developed adjacent townships, was without water for up to seven days. Full service restoration within a week was regarded as rapid considering the inundation of all pumping motors. Other suburbs and neighboring water companies mobilized to help their neighbors through the crisis by various interconnections that replenished shortages by up to 10 million gallons a day. The system normally draws 35 million gallons from the Delaware.

Twenty-five miles downriver, another serious breakdown — this time a late-summer cave-in of Philadelphia's main interceptor sewer line beneath Delaware Avenue along the river — posed serious traffic congestion and sewer repair problems. In order to assess the extent of sewer line damage and needed repairs, the city proposed a 48-hour bypass of untreated wastewater to the Delaware. After the inspection, made by DRBC at the request of the U.S. Environmental Protection Agency, the city was given 30 days during mid-winter to make the repairs, which were completed on schedule in January 1976. The repairs were made in winter, when stream quality is better, to minimize the impact of the untreated discharge on the river.

A rupture occurred on November 22 at Crosswicks, N.J., in the transcontinental Colonial Pipeline that carries refined petroleum products from Texas to the Northeast, including several delivery points in the Delaware Basin. Oil geysered 30 feet, spilling 12,000 barrels. A third of this got into Crosswicks Creek, but all except 1,000 barrels was recovered in the cleanup. The company blamed a pipe weakness. DRBC recommended a series of followup actions to deal with any deficiencies in pipeline design or operation. DRBC originally approved the pipeline in the early 1960s, with special stream protection conditions, and this was the first failure reported along the 94-mile route through the basin.

Rains, flows and shad

As with streamflows, the year's precipitation of 54.4 inches in the upper basin area was about a third more than normal.

A combination of snow melt and heavy precipitation in late February swelled the main Delaware to within 2.6 feet of flood stage at Trenton. And in September, heavy rains of up to 10 inches in the Trenton-Philadelphia area caused mild flooding in the wake of Hurricane Eloise. Both the September and October flows in the upper Delaware were the largest ever recorded for those months.

Reservoir storage for water supply was abundant through 1975.

The shad run was a good one, with catches by one commercial fishing operation at Lambertville being four times that of 1974.

electric generator siting

For the third year in the past four, the electric utility companies operating in the Delaware Basin issued a new power plant master siting study report to the Commission, and the trend pointed sharply to even further reduced increases of energy produced in the coming 15 years.

Most electric generating plants rely heavily on water availability to cool nuclear or fossil-fueled reactors or generators. More water is drawn from the river system for household use than for power plants, but generating activities have a greater impact because more of the supplies they draw are evaporated off and do not get back into the streams. This poses a problem for resources planners to provide for large volumes of water to compensate for the losses.

To better equip it to plan for future river management conditions, DRBC has arranged to have the utilities publish periodic reports disclosing locations of planned new or expanded plants, along with generating capacity, fuel to be used and water needed.

In their 1975 report, the 12 companies predicted a total system-wide load growth from 27,100 megawatts (mw) to 54,500 mw through 1989. This means doubled growth, or about 5 percent annually, in the 15-year survey period. But the earlier reports foresaw far larger growth peaks of 72,000 mw by 1986 and 67,100 mw by 1988.

The latest report calls for a boost in installed capacity by all companies from 33,500 mw in 1974 to 66,400 in 1989, including 20 percent reserves. Of this expanded capacity, 31 percent of the water-related capacity would be located in the Delaware Basin. By comparison, some 40 percent and 55 percent, respectively, of the even higher capacity increases seen in the earlier reports would have been along Delaware streams, for a far greater water impact. But even at the slowed down rate, the in-basin water-using capacity would grow two-and-one-half times from 6,676 mw to 16,901 mw under the new projections.

The reduced utility projections were interpreted by DRBC's staff as reflections of a combination of conditions including the energy shortage, the depressed economy, capital financing difficulties, environmental constraints, and uncertainties about future power technology.

Among the plants shown as under way in the siting report are two nuclear generating operations that received final DRBC approval in 1975. They are Public Service Electric & Gas Company's Hope Creek plant in Salem County, N.J., once slated for location at Newbold Island in Burlington County, and Philadelphia Electric Company's Limerick plant, under construction on the Schuylkill River below Pottstown, Pa.

The utility group was proceeding on schedule with its companion environmental overview investigation to measure the cumulative impact of the installations projected in the plant siting reports. The DRBC-requested overview report, scheduled for 1976 publication, will encompass impacts on water supply, air quality, noise, aquatic and terrestrial ecology, flood plains, secondary social, cultural and economic effects.

Petroleum and gas facilities

In 1975 major petroleum companies with existing or prospective facilities in the basin, particularly the lower tidal sector, notified the Commission they would be unable to join in conducting a petroleum facilities siting study similar to those performed by the basin's electric utility companies. They explained they could not perform the work as a consortium due to anti-trust constraints and lack of utility-like franchised service areas, but did indicate willingness to cooperate as individual companies in a DRBC-conducted survey. The Commission expressed an interest in pursuing its own project but must first find research funds to support it.

In cooperation with New Jersey Department of Environmental Protection, DRBC sponsored a well-attended and spirited public information meeting in 1975 on two hotly contested proposed facilities for receiving and storing liquified natural gas, both in Gloucester County. The projects were still under review by the Federal Power Commission at year-end.

power plant cleared

Philadelphia Electric Company's long-contested plan for a giant twin-reactor nuclear generating station in Limerick Township on the Schuylkill River won approval of the Basin Commission in November 1975.

DRBC had been cleared to proceed with its decision by the finding of a special judicial-type hearing in July that the agency had "diligently pursued" its review responsibilities under the National Environmental Policy Act (NEPA) and its own regulations.

Earlier in the year, the federal Nuclear Regulatory Commission (NRC), successor to the old Atomic Energy Commission, had given the company its final consent to build the plant. The reactors are slated to go into operation in the early 1980s.

The massive volume of water to be used, principally that portion evaporated while cooling the two reactors, and still-unresolved questions about the sources of the water were the principal issues before the Commission, along with DRBC's obligations to protect the water quality of the wastewater-receiving Schuylkill.

Because existing reservoir facilities cannot always assure adequate minimum flows in the basin's streams and still meet basinwide demands for water use in event of a repetition of the drought of the 1960s, DRBC's approval of the Limerick plant contained a series of complex water supply conditions.

Basically, DRBC's determination was that use of water from three streams for the Limerick plant is allowable provided their flows do not fall below critical levels. (This approach of allowing use of water from streamflows when they are adequate is known as the "river follower" method.) The decision further mandates, however, that the company soon must provide its own reservoir facilities at DRBC's direction unless the network of public reservoirs is expanded beyond its present limited capacity.

The approved DRBC docket provides, with Philadelphia Electric's concurrence, that the Limerick plant will be subject to DRBC-ordered interim curtailment or shutdown of operations in event of extreme drought conditions occurring before additional water storage facilities are built.

In addition to the Schuylkill River, the streams protected by the conditions are Perkiomen Creek and the Delaware main stem, both alternative water sources for the generating plant. A pump-and-pipeline operation is proposed to transfer water from the Delaware at Point Pleasant, Pa., to the nearby headwaters of the East Branch Perkiomen Creek, which then flows to the Schuylkill near the Limerick plant.

The water supply conditions in DRBC's 1975 decision approving the Limerick plant were the same as those imposed by the agency early in 1973 when the NRC interrupted its own Limerick review pending a DRBC determination on the issue of water availability.

In July 1974, shortly after NRC's initial decision was reached to grant construction permits for the Limerick project, DRBC gave public notice of its intention to act on the application for its own approval of Limerick. However, the Environmental Coalition on Nuclear Power, which had been fighting the project from its inception, petitioned DRBC under its rules for further hearings of a judicial nature, raising several "substantial" objections. DRBC's contemplated action was postponed when the further hearings were granted and Sidney Goldmann, prominent retired member of the New Jersey Superior Court Appellate Division, was named to hear and rule on the complaints.

Principally, the Coalition complained that DRBC could not properly rule on the Limerick application without first establishing the specific reservoir site for augmenting the water supply needed by Limerick for year-round, all-conditions operation, and until it studied and determined the environmental impacts, cost-benefit balance and any alternative water source.

Judge Goldmann supported DRBC in its insistence that it would not choose a specific future reservoir site to serve Limerick until a later date since there are many potentially suitable sites. "The environmental impacts of the many possible sites cannot reasonably be assessed at this time," he wrote.

Judge Goldmann said that when and if DRBC decides that a company-built reservoir is necessary, alternative locations must be considered. It then must undertake the required environmental review, including preparation of a full impact statement, and select the specific reservoir site or sites required under the circumstances then existing, the judge wrote.

Responding to the Coalition's complaint of an inadequate environmental review, for which NRC had been designated as lead agency assisted by others including DRBC, Judge Goldmann noted that the environmental procedures and reports apparently had been acceptable to the President's Council on Environmental Quality (CEQ), under whose direction the review arrangements were made.

"I cannot agree with Coalition's contention that the CEQ-approved environmental review process pursued thus far has not been as fully responsive as possible to NEPA requirements to identify and evaluate the reasonable foreseeable impacts of the Limerick project, including a full exposition of alternatives that were identified," Judge Goldmann wrote.

Later in 1975, the U.S. Court of Appeals heard arguments in a suit against NRC and Philadelphia Electric by three environmental groups seeking to have set aside the federal approval of the project. On November 12 the court ruled against the plaintiffs — the Environmental Coalition on Nuclear Power, Limerick Ecology Action and Delaware Valley Committee for Protection of the Environment — and supported the findings and procedures followed by DRBC.

water quality programs

The relatively new science of computerized modeling of rivers and their conditions has been invaluable in devising programs for river basin management in the Delaware, especially in water quality. The standards and wasteload allocations that are major parts of the cleanup program for the tidal estuary grew directly from a federal investigation of Delaware pollution problems using the first mathematical model ever of a major river.

With the 10-year-old estuary pollution abatement program progressing toward its advanced stages, the region's water quality agencies are looking ahead to the time when existing allocations are attained and asking what new goals and programs should be established then in the light of continuing growth and changing legal requirements.

A sophisticated new modeling program that is to help answer these questions was begun in 1975 by DRBC, acting in behalf of its signatory state and federal pollution control agencies. It grew out of discussions within DRBC's water quality advisory committee comprising those agencies.

The modeling is part of a larger planning project of the Delaware Valley Regional Planning Commission being carried out in accordance with a requirement of the federal water pollution control law. DVRPC was designated by Pennsylvania and New Jersey to prepare an area-wide wastewater management plan encompassing its region's needs over the next 20 years. DVRPC contracted DRBC to handle the $900,000 modeling phase, which entails extensive collection and analysis of river samples from the Trenton-to-Wilmington region in a four-part scientific investigation, with emphasis on wastes from unidentifiable, or non-point, sources.

The results should better enable the Commission, DVRPC, the U.S. Environmental Protection Agency and the state agencies to evaluate the alternatives available to maintain or enhance the estuary's water quality.

Trenton-to-Easton report

The 110-mile reach of the non-tidal Delaware from Trenton upstream was analyzed in another modeling investigation which found the waterway's 1975 quality generally very good but subject to eventual deterioration unless sound water and related land resources management is imposed. The study, aimed at giving future programs a good scientific basis, simulated the river's good quality and projected how it could be preserved under various combinations of pollution controls.

Among the recommendations was an investigation of cause-effect factors involved in a depressed oxygen condition in the upper tidal river below Trenton. A possible cause of the drop was viewed as oxygen-consuming substances flowing into the estuary from upstream of Trenton. The additional study entered its early stages in 1975.

Heat pollution, N.J. studies

DRBC initiated two studies in 1975, both entailing modeling, to deal with the problem of thermal — or heat — pollution. The results are expected in 1976. One will forecast the cumulative effect of temperature increases from many sources along the non-tidal river above Trenton, while the other will evaluate and suggest a plan to allocate thermal wasteloads to the tidal river below Trenton.

Under the federal water pollution control law, each state must have a continuing water quality planning process. New Jersey engaged DRBC to do this work on its Delaware tributary streams from Sussex to Gloucester Counties. The process, also involving stream modeling and dealing with point sources of pollution, is to identify reaches of the tributaries where present minimum effluent requirements are inadequate and to recommend wasteload allocations.

Estuary cleanup encouraging

When DRBC launched its unique program of attacking the notorious pollution of the tidal Delaware River through a system of wasteload allocations a decade ago, the worst problem was the estuary's depressed oxygen levels.

Oxygen content is a primary measure of water quality. About 8 parts per million of the element represents saturation in warm weather. DRBC's 1965 water quality standards call for a minimum daily average of 5 parts in the upper estuary above Philadelphia to Trenton, 3.5-to-4.5 parts in the depressed Philadelphia-Wilmington reach that receives massive waste discharges, and 6 parts in the area farther downstream where development is more sparse.

For years, summer oxygen levels had sagged regularly to 2 parts or lower, sometimes hitting zero. But in 1973, some measurable improvement was noted, particularly in the downstream portion of the depressed area. The 1974 count was better yet, and 1975 samplings showed even higher readings in the downstream area than before, sometimes attaining or approaching the minimum standards.

One of the big cities with an improved sewerage operation is Wilmington, located adjacent to the area of recent improvement. Its treatment plant operated virtually at compliance levels through the 1975 warm spell, greatly reducing its load to the river. Another factor in the observed improvement could have been poor economic conditions resulting in curtailed manufacturing activity, thus producing a significant drop in the total industrial wasteload. Further, in 1975 an algal bloom which affects oxygen levels was noted in the river.

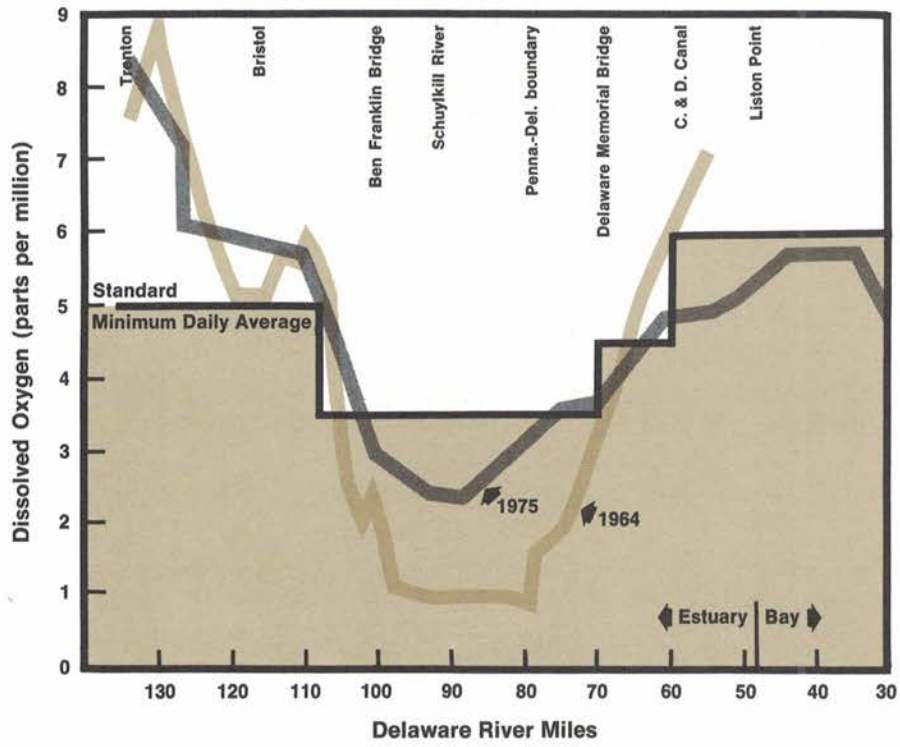
Summer temperatures that increase stream biological activity were higher than usual and thus might have been expected to keep the oxygen levels depressed. But the Commission's water quality experts were encouraged that oxygen conditions improved notwithstanding the warm water.

Another indicator of improved quality is large migrations of American shad, especially through the low-oxygen area. The shad run of 1975 was one of the best of modern years, following several other recent improved seasons in the effort to revive the once-thriving crops.

It is organic wastes emanating mostly from households, but coming also from some major industries, that trigger the oxygen-consuming biological activity in the estuary. Restoring stream oxygen to tolerable levels is a primary goal of DRBC's water quality program, under which the oxygen-demanding discharges are to be reduced ultimately by two-thirds of the total wasteload of the mid-1960s.

Although compliance with abatement schedules of many dischargers has fallen frustratingly behind schedule, especially at big sewage treatment plants of financially-burdened municipalities, 36 of the 89 schedule-holding organic waste dischargers along the estuary are now meeting requirements. Unfortunately, the 40 percent who are complying represent only 16 percent of the problem. A year earlier, 30 percent were in compliance, representing but 7 percent of the total wasteload.

The cleanup of a river's pollution, especially in tidal areas, is a slow process with innumerable interacting factors. Even long periods of continuing improvement are interrupted by seemingly inexplicable drops. But water managers of the Delaware River are encouraged that the long-range program is working.



Graph shows trend of improved oxygen content in pollution problem reach of Delaware estuary from 1964 to 1975.

DRBC upheld on pipeline

One of the most prolonged controversies in which DRBC has figured came to a conclusion in November 1975 when the Federal District Court in Philadelphia upheld the Commission's environmental clearance and approval of the 90-mile Interstate Energy Company oil pipeline from a shipping terminal at Marcus Hook on the Delaware to Northampton County.

Meanwhile, the pipeline, which will supply fuel to fire the expanded Martins Creek electric generating station of Pennsylvania Power & Light Company on the Delaware upstream of Easton and possibly to another generating station in Hunterdon County, N.J., neared completion for expected operation in 1976.

The project was hotly contested from the time it was first disclosed in the early 1970s, continuing through the processing of the company's application by regulatory agencies that included the Pennsylvania Public Utility Commission (PUC) and DRBC.

DRBC performed two roles in clearing the project and was the center of storms on both. They involved investigation of the proposal under the Commission's project review responsibilities and also preparation of the required environmental impact statement as the principal federal agency reviewing the pipeline.

DRBC advised Interstate in 1972 of its intention to investigate the project under the requirements of the National Environmental Policy Act (NEPA), a process that continued some 43 months until the court ruled.

Prominent citizen environmental watchdog groups that helped sink the Tocks Island reservoir plan declined to fight the pipeline despite its alignment through five conservation-conscious Eastern Pennsylvania counties. Nonetheless, the limited opposition was vocal and adamant, comprising an anti-pipeline organization and citizens and officials of some of the areas traversed. It was the anti-pipeline group and Bucks County that unsuccessfully challenged DRBC and the project sponsor in federal court.

The project was fought through the PUC and DRBC proceedings. The latter comprised marathon informational meetings, public hearings on related environmental impact statements describing two proposed power plants, a public hearing on the pipeline application itself and impact statement, and denial of requests by opponents for additional judicial-type hearings.

DRBC cleared the application in September 1974 and within a month the project's opponents filed the suit challenging that action.

The Commission had concluded that, on balance, the project would be beneficial to the region in helping provide needed electric energy and that the pipeline's potentially harmful environmental impacts would be less than those from such alternative oil carriers as railroad and highway tankers, a view that enjoys broad endorsement in the transportation and resource fields.

Plaintiffs sought a declaration that DRBC's regulations, policies and procedures are unconstitutional and violated their civil rights. They charged that NEPA's requirements were not observed by DRBC when it prepared the environmental statement and when it denied them a judicial-type adversary hearing.

The federal court decision ruled against them on all counts and noted that the plaintiffs failed to establish damage to individual property owners. It further declared that the cost-benefit analysis they contended DRBC should have prepared was beyond NEPA's requirements covering non-public projects. The court disagreed that DRBC had "rubber-stamped" the company's application, calling the agency's environmental statement a "detailed statement evidencing an inter-disciplined approach to environmental considerations." The court said DRBC's conclusions were "supported with objective factual data, in turn supported by numerous tables and footnoted references to scientific studies." The court added:

"Similarly, DRBC's in-depth study demonstrates that all practical means were used to prevent damage to the environment, thereby fulfilling NEPA's substantive charge as well. DRBC carefully evaluated the need for the project and considered alternative ways to minimize any adverse environmental impacts caused by it."

"It is clear from the studies which were undertaken that DRBC's conclusions were the result of a rigorous and independent examination of the project," the court concluded.

Derailment of oil tank cars on Penn Central Railroad's Belvidere line sent oil into the Delaware between Stockton and Frenchtown in December. Train was enroute to Martins Creek generating station, whose future oil supplies will come from new pipeline.

financial summary

budgetary

1975 REVENUES

	Budgeted	Received
Delaware	$ 129,300	$ 129,300
New Jersey	357,700	357,700
New York	282,900	282,900
Pennsylvania	410,700	410,700
United States	209,000	209,000
EPA Grant	193,571	214,951
Miscellaneous	3,000	9,833
Project Review Fees	—	10,081
Judgments	—	15,000
Interest Income	—	19,865
Budgetary Revenue Transfer	13,000	—
Water Sales	7,755	91,126
Contractual Services	3,526	3,526
	$1,610,452	$1,753,982
Excess of revenues over budgeted funds	143,530	0
TOTAL	$1,753,982	$1,753,982

The records of the Commission are independently audited each year as required by the Compact.

1975 EXPENDITURES

	Appropriations	Expended
By Organization		
Directorate	$ 336,249	$ 315,887
Administrative Division	165,871	229,895
Planning Division	1,108,332*	1,062,766*
TOTAL	$1,610,452	$1,608,548
By Program		
Water Supply	29,000	31,597
Water Demand	26,000	29,961
Recreation	56,000	56,598
Power	36,000	49,911
Project Review	154,526	120,791
Water Quality	648,171	662,408
Comprehensive Plan	154,000	286,427
Flood Loss	56,000	56,112
Basin Operation	194,755*	151,576*
Small Watersheds	27,000	15,647
Environmental Analysis	229,000	147,520
	$1,610,452	$1,608,548
Excess of appropriations over expenditures	0	1,904
TOTAL	$1,610,452	$1,610,452

*$27,000 Capital included.

non-budgetary

	Funds Available	Expenditures	Unexpended Dedicated Allotment
Tocks Island Region Environmental Study	$ 3,146	$ 0	$ 3,146
Tocks Island Fish Research	13,450	2,902	10,548
Thermal Study	42,494	36,603	5,891
Flood Plain Contract	1,761,740	1,143,298	618,442
Tocks Island Army Corps of Engineer Study	82,000	62,202	19,798
TOTAL	$1,902,830	$1,245,005	$657,825

Delaware Bay photo by W. B. Whitall shows abandoned Coast Guard station on shoreline at Port Mahon, Del.

delaware river
basin commission
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