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Delaware River Basin Commission ANNUAL REPORT 1997



This report has a unifying theme—flowers. Flowers that, wild or cultivated, native or imported, are now indigenous—though not limited—to the Delaware River Basin. Our cover illustration is the Cardinal Flower (*Lobelia cardinalis*), a tall, vividly and uniquely scarlet wild flower found blooming from late July to September in wet areas and along stream banks throughout the Basin. A flower also introduces each of the report’s four main sections. These four flowers are the official state flowers of the four Compact states: Delaware (peach blossom), New Jersey (violet), New York (rose), and Pennsylvania (mountain laurel).

The report covers calendar year 1997. It was published in the summer of 1998. Christopher M. Roberts, the Commission’s public information officer, defined and compiled the report. Brennan Partners, Inc., New York, N.Y., and The Communications Collective, Bethesda, Md., edited and produced it. The Commission secretariat generated material for the report.

Free copies are available from the Commission at P.O. Box 7360, West Trenton, N.J., 08628 (phone: 609-883-9500, ext. 205; e-mail: croberts@drbc.state.nj.us; World Wide Web: <http://www.state.nj.us/drbc/>).

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The cover photograph (Cardinal Flower) was taken by Michael Hogan, as was the photo on pages 4–5 (violet). The photograph on pages 2–3 (loosestrife) was taken by D. Andrew Hornberger, as were those on pages 14–15 (mountain laurel), 18, 24, and 28.

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Report of the EXECUTIVE DIRECTOR

Participation Without Funding

It was 1773 when the people of Boston became quite irate with the English Parliament, which taxed oceanic trade with no input from American residents. “Taxation without representation” culminated in the famous Boston Tea Party.

Our U.S. Congress has produced the antithesis of that Boston Tea Party. Over the past two fiscal years ('97 and '98), Congress has failed to appropriate a single dollar towards the Commission's operating budget. However, it still retained federal membership on the Commission where it enjoys an equal vote along with Delaware, New Jersey, New York, and Pennsylvania; and reaps considerable dollar benefits from Commission operations. One might say the U.S. government has representation without taxation. Clearly, it has representation without funding participation.

After 35 years of paying its “fair share” contribution, which has been roughly 20 percent of the Commission's operating budget, why the Congressional change in attitude? We believe it may have stemmed from a misleading report by the

Heritage Foundation, which recommended to Congress that the federal government cease funding the three river-basin agencies—Delaware, Potomac, and Susquehanna.

The Heritage Foundation actually targeted 130 independent agencies for defunding. The cutting of certain specialized, perhaps outdated, organizations is laudable. Several, for example, exist only to honor a past political or military hero. However, it is difficult to compare the usefulness and financial benefit of such organizations with those of a comprehensive water management agency created by acts of Congress and four state legislatures. After all, the Delaware River Basin Compact is a solemn agreement among five sovereigns, and not merely a single-purpose piece of legislation.

The Heritage Foundation report concluded that:

- The benefits of the Commission's activities accrue mostly to states in the river basin;
- If those benefits are deemed valuable, then contiguous states should fund the program in its entirety;

- There is no reason for federal taxpayers to fund costly programs of strictly regional interest and benefit;
- Such programs invariably become vehicles for pork barrel spending; and
- To the extent that there are pressing and river-basin issues of national concern, existing programs and resources of the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers would be sufficient to meet them.

It is true that the Commission's programs do benefit the states, which do continue to pay their fair shares. However, the federal treasury also benefits, having saved tens of millions of dollars because of DRBC actions. The Commission served as the nonfederal sponsor of the Port Jervis Ice Jam Flood Control project. The Corps would not have built the project absent the DRBC's coordination of 10 disparate political units. Nine months after project completion, it prevented a

possible massive ice jam that would have resulted in a \$150- to \$200-million federal bailout. The flow at that time was the second-highest in recorded history, and the river was choked with ice.

A 1954 U.S. Supreme Court decree apportioned the waters of the Delaware between New York State/City and the three down-Basin states. The DRBC has temporarily modified that decree over 20 times with the unanimous consent of the five parties to that decree without going back to court. Such mediation not only has saved the states millions of dollars in litigation fees, but also has saved the United States court system significant costs. It has been reported that Nebraska and Kansas have spent over \$12 million in litigation squabbles over the North Platte River in the past three years. By contrast, there hasn't been a suit in the federal courts between the four Basin states over water matters during the DRBC's 36 years of operation.

Over the past 10 years, the DRBC has approved over 1,200 projects whose construction costs totaled about \$4.5 billion. These projects have boosted the economies in the region. Our approach is that you can have *both* economic development and water resource protection.

Environmentally safe development has occurred because of the even-handed regulations promulgated by our five-member Commission. Commission approvals are based upon the Basin Water Code, which is part of our Comprehensive Plan.

Millions in *avoided* federal tax revenue loss have resulted because of the operation of DRBC's emergency water allocation authority. During our most recent drought emergency, a major chemical manufacturer relied upon the Commission for emergency relief, avoiding a plant shutdown. Several other major water users were given emergency approval during that period. Imagine the corporate and individual tax revenue loss to the federal treasury if 2,800 employees from just one plant were idle for one month.

Often, federal agencies, such as the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration, and the National Park Service, rely upon the DRBC to perform special projects for them because it's quicker and less expensive than going elsewhere.

Pork barrel? This is a ludicrous accusation. We do participate in two

projects, Beltzville and Blue Marsh Reservoirs, whose construction and operation bring jobs, federal money, and drought protection to the region. However, on these projects we repay the U.S. government *100 percent* of the principal, interest, and operation and maintenance costs. And, we've never missed a payment.

Neither the EPA nor the Corps of Engineers can allocate surface and ground water. That is left to the states or interstate agencies, such as the DRBC. Neither the EPA nor the Corps establishes water quality standards. That again is a state or empowered interstate agency function. In summary, the five-point conclusion of the Heritage Foundation was *totally* incorrect as a matter of facts.

How may we reverse this funding crisis? All eight U.S. Senators representing the Basin states as well the states' 30 Congressional Representatives are on record in support of federal funding of the DRBC. All four governors and our Congressional leaders must increase their efforts to reinstate funding for the Commission. Then it is to be hoped that the federal government will once again assume its rightful place, mandated by the Delaware River Basin Compact, as a full funding partner.



THE PEOPLE OF THE COMMISSION

*Those Who Guide
Those Who Implement*

The common violet, official flower of the State of New Jersey, is found in abundance, both wild and cultivated, throughout the Delaware River Basin.

THE COMMISSION

The Hundred-Year Compact

It was bold. It was necessary. Following a deadly flood and decades of a water war that culminated in two U.S. Supreme Court decrees, the U.S. Congress and the legislatures of New York, New Jersey, Pennsylvania, and Delaware took an unprecedented action. They agreed among themselves to a Compact that would govern water management within the Delaware River Basin.

The terms of the Delaware River Basin Compact, adopted in 1961, require interstate cooperation and provide for planning, conservation, use, development, management, and control of the Delaware River Basin's water resources. Unlike any other prior interstate compact, the

Delaware River Basin Compact specifically made the federal government an equal partner with the four signatory states. For at least a century, the initial term of the Compact (renewable in 100-year increments), water resource decisions would be based on a majority vote among the five signatory parties.

The instrument through which the Compact's terms would be implemented is the Delaware River Basin Commission, which began life on the signing of the Compact in 1961.

Commission members are the governors of the four Basin states and, historically, the U.S. Secretary of the Interior. Each Commissioner traditionally appoints alternate Commissioners who have full voting powers in the principal's absence.

The Commission meets monthly to address plans, projects, and policies dealing with water supply, pollution control, flood protection, conservation, watershed management, recreation, and, on a rare occasion, hydroelectric power.

A secretariat of 39 professional and support staff carried out the policies, decisions, and wishes of the Commission in 1997.

The Delaware River Basin

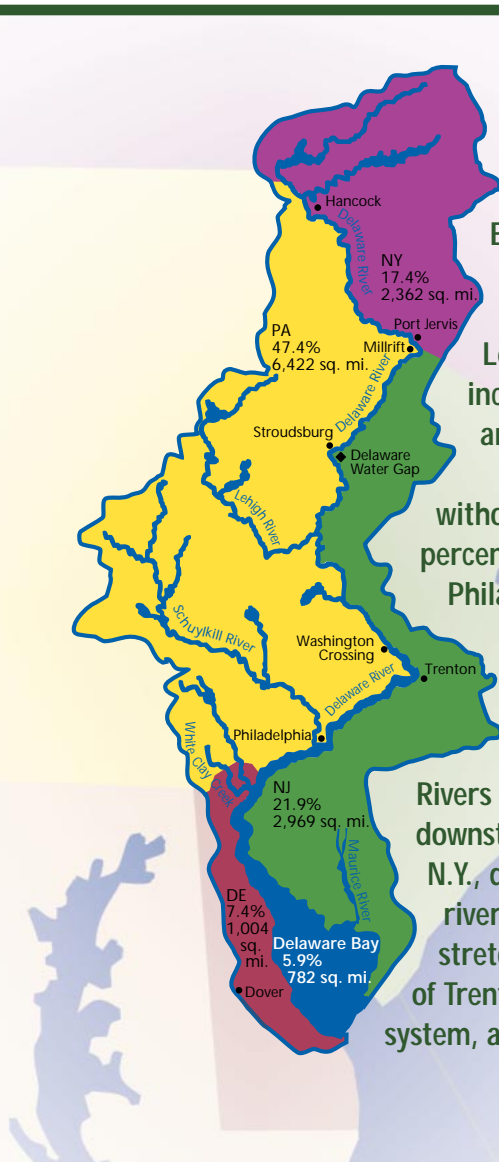
Vital Resource to Four States

The mainstream Delaware River extends 330 miles from the confluence of its East and West branches near Hancock, N.Y., to the mouth of the Delaware Bay. Its riparian states are Delaware, New Jersey, New York, and Pennsylvania.

The river is fed by 216 tributaries, the largest being the Schuylkill and Lehigh Rivers in Pennsylvania. In all, the Basin takes in 13,539 square miles, including the 782 square-mile Delaware Bay, which lies roughly half in New Jersey and half in Delaware.

The basin is the major source of water supply to communities both within and without its boundaries. Three of the many Basin reservoirs provide more than 50 percent of New York City's water needs, for example. Others supply water to the Philadelphia suburbs and many other towns and cities. In addition, the Basin includes the thousands of ground-water wells throughout the region that are the major—often sole—water sources for both communities and businesses.

Two reaches of the Delaware River and the Maurice River in New Jersey, a Delaware River tributary, have been included in the national Wild and Scenic Rivers System. The first section of the Scenic Delaware extends 73 miles from Hancock, N.Y., downstream to the Delaware Water Gap near Stroudsburg, Pa. Combined, the two river corridors take in 124,929 acres. Another reach of the Delaware, a 54-mile stretch linking the Delaware Water Gap and Washington Crossing, Pa., just upstream of Trenton, N.J., has been studied and recommended for possible inclusion in the system, as has White Clay Creek, which flows from Pennsylvania into Delaware.



The Commission 1997

Pennsylvania



Gov. Tom Ridge
Chair



Irene B. Brooks
Alternate

New York



Gov. George E. Pataki
Vice Chair



N.G. Kaul
Alternate

New Jersey



Gov. Christine Todd Whitman
Second Vice Chair



Robert C. Shinn, Jr.
Alternate

Delaware



Gov. Thomas R. Carper
Member



Christophe A.G. Tulou
Alternate

United States



Interior Secretary Bruce Babbitt
Member



Vincent P. D'Anna
Alternate

Second/Third Alternates and Advisors

Pennsylvania

Stephen A. Runkle
Second Alternate

Kumar Kishinchand
Advisor

New York

John L. Middelkoop
Second Alternate

Warren T. Lavery
Third Alternate

Joel A. Miele, Sr.
Advisor

New Jersey

Steven P. Nieswand
Second Alternate

Delaware

Gerard L. Esposito
Second Alternate

United States

Lt. Col. Robert B. Keyser
Advisor

NEW OFFICERS ELECTED

The Rotation Continues

The Commission elected Pennsylvania Gov. Thomas R. Ridge as its Chair for the 1997 fiscal year at the June 25, 1997, meeting. Also elected were New York Gov. George E. Pataki as Vice Chair and New Jersey Gov. Christine Todd Whitman as Second Vice Chair.

Delaware Gov. Thomas R Carper, former Chair, and U.S. Secretary of the Interior, Bruce Babbitt, former Vice Chair, continue as Commission members.

The annual election of officers has historically been based on a rotation of the five signatory parties to the Commission.

OUR VISION, OUR MISSION, AND OUR CORE VALUES

The DRBC Examines and Reaffirms Its Role

No organization or individual can exist for 35 years or more without stopping once in awhile to examine where it has been and where it should be going. The DRBC is no exception.

In 1995, as the Commission approached its 35th birthday, it began a process intended to examine its very reason for being, how well it had responded to its mandates over the years, how it related to its various constituencies, and what it might do to restate—and, if necessary, reorient—its vision, its mission, and its core values. The process, which continued for over two years, was called a retreat, though the retreat itself, a gathering of staff, Commissioners, and other interested parties at an off-site location where they engaged in intense debate and discussion, actually consumed little of the time.

The retreat process began in December 1995 with a two-day meeting between Commissioners and staff. The purpose was to promote discussion and reach consensus on perceived DRBC problems and issues, objectives, and possible actions. The process continued through 1996 through one-on-one interviews with 19 key constituents, conducted by an outside consultant. The interviewees were asked five key questions dealing with services, functions and responsibilities, and possible changes to the DRBC.

In 1997, the process reached a far wider audience seeking a still broader consensus. In April, the Commission mailed 2,083 questionnaires to a broad range of individuals and groups. The four-part survey sought opinions concerning the DRBC's performance relating to the terms of the Compact, opinions about the effectiveness of current

The success of the past serves as a promise for the future as the Commission and the region move into the 21st century.

Charting the Future: The DRBC Vision and Mission Statements

Preamble

The Delaware River Basin Commission was formed in 1961 by the signatory parties to the Delaware River Basin Compact (Delaware, New Jersey, New York, Pennsylvania, and the United States) to share the responsibility of managing the water resources of the Basin. Since its formation, the Commission has provided leadership in restoring the Delaware River and protecting water quality, resolving interstate water disputes without costly litigation, allocating and conserving water, managing river flow, and providing numerous

other services to the signatory parties. The success of the past serves as a promise for the future as the Commission and the region move into the 21st century. In implementing the Compact, we will be guided by our Vision, Mission, and Core Values.

Vision of the Delaware River Basin Commission

The Commission will be the leader in protecting, enhancing, and developing the water resources of the Delaware River Basin for present and future generations. In performing this leadership role, the Commission will serve as a

policymaker, regulator, planner, manager, and mediator on behalf of the Signatories to the Delaware River Basin Compact and the citizens of the Basin.

Mission

We will:

- Provide comprehensive watershed management.
- Act as stewards of the Basin's water resources particularly with respect to:
 - Surface water quality, including both point and nonpoint sources of pollution;
 - Ground and surface water quantity, including water

demands, water withdrawals, water allocations, water conservation, and protected areas;

- Drought management; and
- In-stream flow management.

- Promote effective interagency coordination to prevent duplication of efforts.

- Seek increased public involvement by:

- Serving primarily Basin-wide and interstate interests, and national, statewide, regional, and local watershed interests, as the need arises;
- Resolving interstate disputes through mediation;

- Regularly updating the Comprehensive Plan;
- Adopting and implementing policies to manage the Basin's water resources in an integrated, planned fashion;
- Integrating environmental and economic needs;
- Basing decisions on sound science; and
- Providing meetings, conferences, seminars, and other opportunities for public education, information exchange, involvement, and resolution of issues.

Core Values

We believe in:

- Serving the public.
- Treating everyone with fairness and respect.
- Acting in an open, honest, and professional manner.
- Listening and responding to our constituents.
- Encouraging innovative, creative solutions to water management problems.
- Improving our expertise.
- Enjoying and respecting the magnificent resource that is the watershed of the Delaware River.

DRBC activities, reactions to a series of statements about the DRBC, and comments on future activities.

The response rate was gratifying. Commission staff received 302 completed questionnaires, or 14.4 percent of those mailed. For so complex and subjective a survey, such a return rate is considered good and is itself an indication of the high profile the DRBC has among its constituents. The survey resulted in a staff-written report, which was published in August 1997 and made available to the public. But the report was not the end of the process; rather, it was the beginning of renewal. Based on the report, the Commissioners decided that the DRBC needed to analyze and define its unique role and to devise vision and mission statements as well as an action plan to implement the now nearly three-year-old retreat process. Thus in the fall of 1997 the Commission began a “niche” selection process to define activities that the DRBC could perform better than any other organization.

The process concluded that the DRBC should serve primarily Basin-wide and interstate interests, as well as national, statewide, regional, and local watershed interests as the need arises. The DRBC should also serve as the steward of the Basin’s water resources. The Commissioners will use the niche selection process as the basis for developing an action plan for overall directions of the Commission, including staffing and funding needs. And the niche selections also provided the basis for the Commission’s vision and mission statements presented in “Charting the Future,” the final version of which was adopted in December 1997.

OUR SECRETARIAT: EVOLVING COMPETENCE

Promotions, Additions, Transfers, Honors

THOMAS L. BRAND was named head of the Commission’s Project Review Branch. Mr. Brand, a professional engineer, joined the Project Review staff in February 1989. He holds a bachelor of science degree in civil engineering from the University of Delaware and a bachelor’s degree in fine arts from the University of the Arts.

ROBERT L. LIMBECK, a thirteen-year veteran of the Commission and formerly a water resources analyst, was appointed environmental scientist in the Water Quality Planning and Evaluation section of the Planning Branch. A native of Morrisville, Pa., and now a resident of Pottstown, Pa., Mr. Limbeck holds a bachelor of science degree in biology from Lafayette College, Easton, Pa., and a master’s degree in zoology from the University of Arkansas.

MARGARET A. LEBO joined the Commission staff as Planning Branch secretary. She previously was employed for 16 years by BetzDearborn Water Management Group of Horsham, Pa. Ms. Lebo resides in Levittown, Pa. where she is active in area charitable events. She replaces Pauline Ditmars, who retired after 17 years with the Commission.

EDWARD D. SANTORO joined the Commission as the Basin’s monitoring coordinator, a position created as a component of the Delaware Estuary Program’s Management Plan. Mr. Santoro previously was a senior environmental scientist and associate with William F. Cosulich Associates P.C., of Woodbury, N.Y. Prior to that he served as president of Sci Con Associates of Lakewood, N.J., and from 1981 to 1986 was a senior environmental scientist with the U.S. Environmental Protection Agency, Region II. He holds a bachelor of science degree in biology from Montclair State College and a master’s degree in marine and environmental science from C.W. Post Center of Long Island University.

CHIHSHENG (JASON) TSAI is the Commission’s new water resources engineer/modeler. Mr. Chihsheng is a Ph.D candidate in civil and environmental engineering at Rutgers University, where he earned a master’s degree in the same field. He also holds a master of science degree in power mechanical engineering from Tsinghua National University, HsinChu, Taiwan. He came to the Commission after serving an internship with the New Jersey Department of Environmental Protection.

Veteran staffer **WARREN R. HUFF** was named supervisor of computer operations, a newly created position in the Operations Branch. Mr. Huff holds a degree in computer science from Beaver College. He joined the Commission’s Water Quality Branch (now the Planning Branch) in 1967 as a technician.

JEFFREY FEATHERSTONE, the Commission’s policy analyst, has received a “Best Paper” award from the American Water Works Association for an article he wrote on water conservation.

KARL S. HEINICKE was named data manager for the Regional Information Management Service (RIMS), a computer web site that is an outgrowth of the Delaware Estuary Program. Mr. Heinicke, a graduate of Syracuse University, joined the Commission in 1988 as a geological technician.

TODD W. KRATZER, a water resources engineer in the DRBC’s Planning Branch, has been certified by the Commonwealth of Pennsylvania as a professional engineer. Mr. Kratzer, who holds a bachelor of science

DRBC Secretariat 1997

with phone extensions and e-mail ID

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Gerald M. Hansler

degree in environmental resource management and a master's degree in environmental pollution control, both from Penn State, joined the Commission in 1987.

THOMAS J. FIKSLIN, Ph.D., director of the Commission's Estuary Toxics Management Program, was a speaker at the seventh annual meeting of the Society of Environmental Toxicology and Chemistry in Amsterdam, The Netherlands.

COMMISSION STAFFER WINS AWARD

Conservation Ideas Gain Credibility Boost

In June 1997, policy analyst Jeffrey P. Featherstone received a "Best Paper" award at the American Water Works Association conference in Atlanta, Ga., for his article on conservation.

Published in the January 1996 edition of the *AWWA Journal*, the article explained how conservation has become an integral component of the Commission's strategy to manage water supplies in the four-state Basin. It also detailed the benefits of such a program, including cost savings, improved drought preparedness, and enhanced environmental protection.

Mr. Featherstone served as the first chair of the AWWA's Water Conservation Division. He chaired the AWWA's Water Conservation Standing and Working Committees from 1993 through 1996. Under his leadership, the AWWA's conservation group grew from about 80 members to 200 members. Mr. Featherstone remains active in the AWWA, serving on its Technical and Educational Council, which coordinates the activities of the organization's eight divisions and sets policy for technical and educational programs.

Mr. Featherstone joined the Commission in 1982. He has had a lead role in the adoption of water conservation regulations pertaining to source and service metering, water-saving performance standards for plumbing fixtures and fittings, and water pricing rate structures that encourage reduced water use. He has also worked with other organizations in sponsoring seminars on ways to reduce water use in the industrial and commercial sectors and workshops on selected water conservation topics.

Conservation has become an integral component of the Commission's strategy to manage water supplies in the four-state Basin.

DRBC STAFFER INVITED TO AMSTERDAM

Speaks at Environmental Conclave

Thomas J. Fikslin, director of the Commission's Estuary Toxics Management Program, was invited to speak at the seventh annual meeting of the Society of Environmental Toxicology and Chemistry in Amsterdam, The Netherlands.

The theme of the meeting, held in April 1997, was "Prospects for the European Environment Beyond 2000."

Dr. Fikslin presented two papers entitled *Calibration/Validation of an Estuary Model for Chronic Toxicity* and *Toxic Pollutant Management in an Interstate River Basin*.

Dr. Fikslin came to the Commission in March 1989 on loan from the U.S. Environmental Protection Agency. The transfer was facilitated under the Intergovernmental Personnel Act, which permits interagency transfers of state and federal employees. He became a full-time Commission employee in April 1993.

The many canals of Amsterdam that encircle the center of the city and bind it both to the sea and to the Amstel River provided a suitable backdrop for DRBC staffer Tom Fikslin's presentation on river management issues.



THE RIVER AND THE BASIN

*Measuring
Monitoring
Controlling
Allocating*

Mountain laurel, the official flower of the Commonwealth of Pennsylvania, is common in the Basin—and not confined to mountains alone.

HYDROLOGIC REPORT

Too much. Too little.

Mother Nature all too often seems to have problems providing just the right amount of water to all places at all times. Nineteen ninety-seven was no exception.

The year began with unusually high storage levels in most reservoirs: the two largest Delaware Basin reservoirs, Cannonsville and Pepacton, were actually spilling at the start of the year. This caused major concerns regarding potential flooding in the areas downstream from the reservoirs. The flooding that occurred in January 1996 was still fresh in the minds of area residents. They recalled that reservoirs were low at the time and thus had the capacity to hold back more than 45 billion gallons, thereby reducing the severity of the flooding.

In response to many requests, including letters to the member governors of the Delaware River Basin Commission, the Commission adopted a Resolution (No.97-2) on January 22,1997, recommending that Pepacton Reservoir be drawn down with releases until a storage volume of 5 billion gallons was available for emergency storage. All parties to the 1954 U.S. Supreme Court decree, including the City of New York, agreed to the resolution. Reserves were released, and the reservoir remained below full until March. It was then allowed to refill to be available for later use if and when needed for water supply and/or downstream releases. Fortunately, no major storms occurred during this period.

Below-average precipitation during January and February was of little concern since the reservoirs were full. However, continued below-average precipitation from April through July required significant directed releases from the reservoirs to maintain the minimum required flow in the Delaware River. On August 6, the Commissioners, with the concurrence of New York City, met and, in an effort to conserve as much storage as possible, agreed to bank (retain) the remaining quantity of excess release water. Banking the remaining excess release water delays entering drought warning if storage continues to decrease. By the end of September, the nearly seven inches of precipitation deficit had also caused ground-water levels to fall below average, and purveyors were starting to experience problems with poor yields from supply wells.

Precipitation continued below average during September and October. On October 22, storage in the New York City Delaware River Basin reservoirs dropped below the drought warning level. Five days later, a drought warning for the Delaware River Basin was officially declared. This was the ninth drought warning for the Basin since the early 1980s when the drought plan was adopted. Twice, in 1981 and 1985, conditions worsened and the Commission declared

drought emergencies. The most recent drought warning occurred in September 1995 and lasted roughly two months.

Even with drought warning operations in place, storage continued to drop until November 1, when storage was only 98 billion

gallons, or 36.5 percent of capacity. However, more precipitation in parts of the Basin and substantially reduced diversions by New York City allowed storage to increase slowly. By the end of 1997, storage was 126 billion gallons, or 46.8 percent of capacity, but the Basin would remain in drought warning into 1998 until storage increased to 15 billion gallons above drought warning for five days.

While 1997 began with reservoirs full and a concern for potential flooding, the year ended in drought warning and fear that the reservoirs might not refill for the summer/fall drawdown season. Once again Mother Nature proved to be a very fickle lady.

GROUND-WATER REGULATIONS

Public's Feedback Shapes Commission's Approach

The Commission devoted much time and discussion to proposed regulations that would establish numerical ground-water withdrawal limits for subbasins in portions of southeastern Pennsylvania. Several well-attended public meetings, together with written comments from many interested parties, were strongly influential in determining the regulations' final shape.

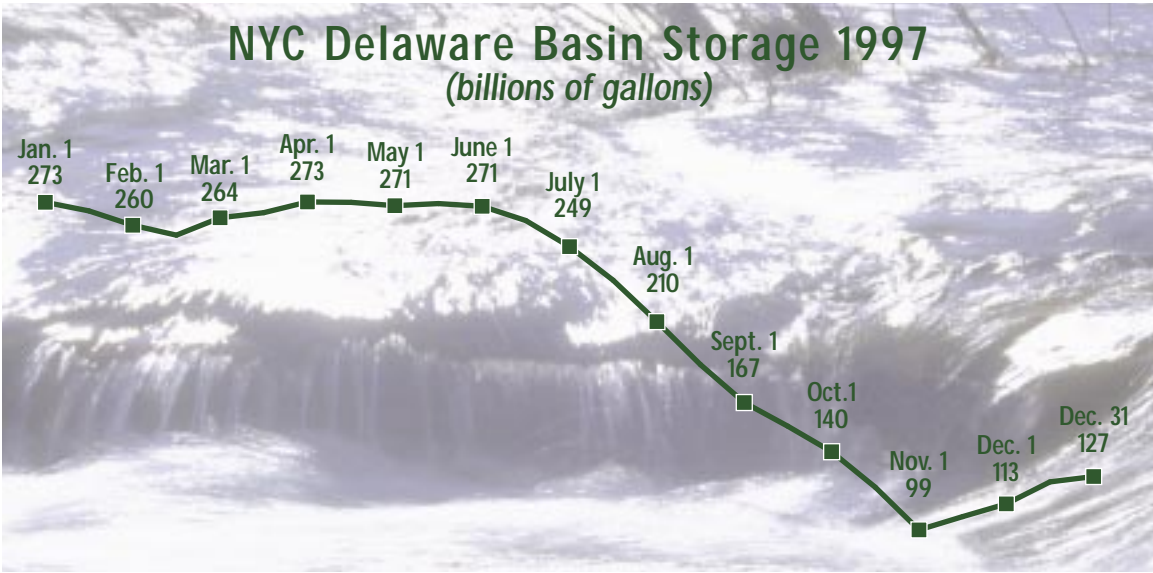
The U.S. Geological Survey in cooperation with the Commission prepared the ground-water study that provided the base flow analyses for geologic formations in the 14 subbasins, or watersheds, in the Neshaminy Creek Basin. Limits for the remaining 52 subbasins within the Ground Water Protected Area of Southeastern Pennsylvania are being established as additional base flow analyses are completed.

In 1980 at the request of the Commonwealth of Pennsylvania, the Commission established the Southeastern Pennsylvania Ground Water Protected Area, where more stringent regulations apply to ground-water withdrawals than they do in the rest of the Delaware River Basin. The goal is to prevent depletion of ground water, protect the interests and rights of lawful users of the same water source, and balance and reconcile alternative and conflicting uses of limited water resources in the region.

Ground-water pumping has contributed to reduced flows in streams in the area. Such reductions can interfere with instream and downstream water uses, adversely affect fisheries and other aquatic life, and reduce the capacity of streams to assimilate natural and man-made pollutants.

While it is clear that ground-water withdrawals can affect the flows of perennial streams, it has been difficult to address the impact on stream flow on a project-by-project basis. The regulations address that problem by evaluating the cumulative impacts of all withdrawals within a subbasin.

Mother Nature all too often seems to have problems providing just the right amount of water to all places at all times. Nineteen ninety-seven was no exception.



The regulations create a two-tiered system of withdrawal limits. The first tier serves as a warning that a subbasin is “potentially stressed.” In potentially stressed subbasins, the regulations will require applicants for new or expanded ground-water withdrawals to implement one or more programs to mitigate adverse impacts of additional ground-water withdrawals. Acceptable programs include: conjunctive use of ground water and surface water; expanded water conservation programs; programs to control ground-water infiltration; and artificial recharge and spray irrigation.

The second tier serves as the maximum withdrawal limit. Under the new regulations, ground-water withdrawals may not exceed that limit.

The proposed regulations also:

- Provide incentives for holders of existing DRBC dockets and protected area permits to implement one or more of the first-tier programs to reduce the adverse impacts of their ground-water withdrawals. If docket or permit holders successfully implement one or more programs, the Commission will extend the docket or permit for up to 10 years.
- Specify criteria for the issuance and review of dockets and permits, as well as procedures for revising withdrawal limits to correspond with integrated water resource plans adopted by municipalities for subbasins.
- Establish protocols for updating and revising withdrawal limits to provide additional protection for streams designated by the Commonwealth of Pennsylvania as “high quality,” or “wild, scenic or pastoral” as defined by the state’s scenic rivers program.

Reduced stream flow from ground-water pumping can harm aquatic life and limit the capacity of streams to assimilate pollutants.



SURFACE-WATER QUALITY

Our Primary Concern

The Commission continued to supervise development of the estuary waste-assimilative model that is being completed under a contract with HydroQual, Inc., a mathematical modeling firm.

The model, successor to an earlier less sophisticated one, helps to address a constant problem: what is the pollutant loading of the estuary in wet and dry seasons and how can it be controlled? The computer model simulates the fate and transport of pollutants and helps to determine cost-effective solutions to the problems they pose.

During the model’s development, Commission staff incorporated suggestions of the Peer Review Team, comprised of renowned scientists and engineers with modeling expertise, and other members of the Estuary Model and Combined Sewer Overflow Subcommittees. The dry-weather component of HydroQual’s estuary assimilative model is nearly complete. The new model incorporates a representative kinetic structure, is time variable, and is three dimensional. It replaces the old estuary model that was developed in the 1960s and that no longer accurately represents estuarine environmental processes.

The model has been calibrated against low-flow, summer conditions for dissolved oxygen, nitrogen, phosphorus, and chlorophyll concentrations. The model does not completely predict surface-water quality (dissolved oxygen concentrations) at all locations. The team has yet to identify why model data occasionally depart from actual concentrations in this manner, but there is an indication that aquatic vegetation and bivalves may be implicated.

The Peer Review Team deemed the model sufficiently developed so that the Commission could use it to evaluate the impacts of various wastewater treatment schemes on dissolved oxygen. The Team further suggested that an interagency work group, comprised of regulators from the Basin area, be convened to compute total maximum daily loads to the estuary. The summer of 1998 is the target date for convening the work group, for final documentation of the model, and for training of regulators and the regulated community.

To evaluate the impacts of aquatic vegetation and bivalves on water quality and to better predict surface-water quality, the Commission prepared field studies. It selected the Academy of Natural Sciences to conduct an aquatic vegetation study and the Delaware Department of Natural Resources and Environmental Control to conduct a bivalve study. Both field studies were completed in the summer of 1997 and both indicated substantial impact on water quality by aquatic life. However, the issue requires more study, partly because though emergent aquatic vegetation could be readily evaluated, the assessment of submerged vegetation was not com-

The Commission continually addresses a constant problem: what is the pollutant loading of the estuary in wet and dry seasons? And how can it be controlled?

pleted. Model runs to evaluate the impact of aquatic life, and possibly to recalibrate the model, have been scheduled for 1998.

The Peer Review Team and other members of the Estuary Model and Combined Sewer Overflow (CSO) Subcommittees (owner/operators of CSOs and the regulating agencies) assisted Commission staff in defining the scope of study for wet-weather modeling, which is scheduled for 1998. The wet-weather modeling will include development of a framework for mixing zones about clusters of CSOs. As an initial field study of the impact of CSOs, the Commission contracted HydroQual, Inc., for a dye study to evaluate CSO plumes. The field work, subcontracted to Ocean Surveys, Inc., was conducted in late November 1997. That study showed that initially the dye hugged the shoreline and did not completely disperse laterally. The Commission is seeking grants to fund additional studies of this and other types.

WATER SNAPSHOT '97

A Week in the Life

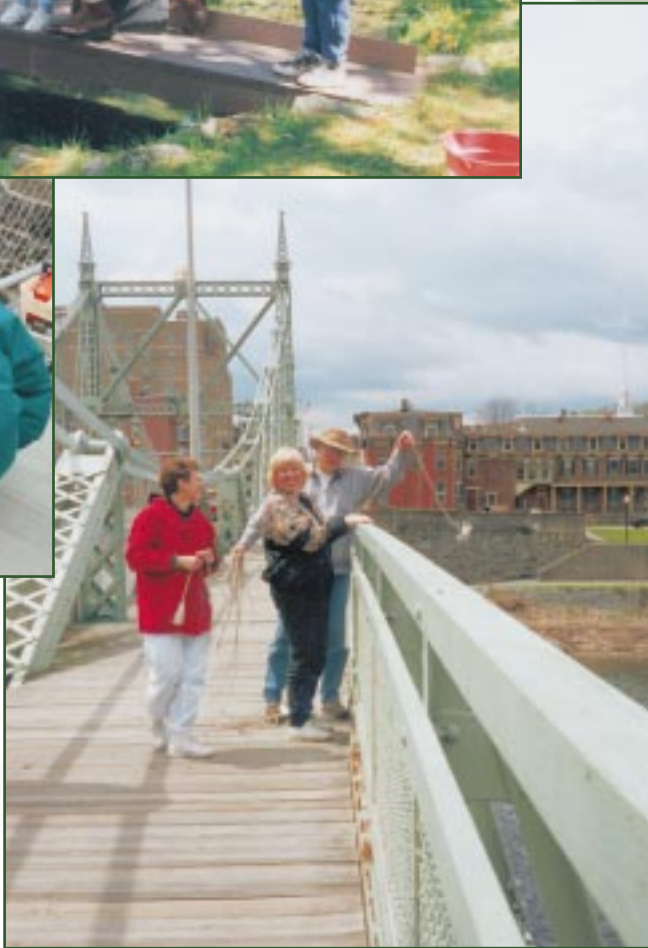
In 1996, the Commission took the lead in developing the first Water Snapshot event. Held during the week of Earth Day, Water Snapshot is an opportunity for every water quality monitoring program in the Delaware River Basin to sample water quality as one big Basinwide monitoring program. Co-sponsoring the event with the Commission have been the four basin states, the two Environmental Protection Agency regions, and the Delaware River Keeper Network.

Because *Water Snapshot '96* was so successful, the sponsors decided to launch the Water Snapshot as an annual event. EPA Region III in Philadelphia took the lead for running *Water Snapshot '97*, with the Commission and others helping out. A statewide Pennsylvania effort led by the Pennsylvania Department of Environmental Protection joined the Delaware River Basin effort in 1997. The two Water Snapshots were coordinated.

Water Snapshot uses six common parameters: water and air temperature; dissolved oxygen; pH; phosphorus, and nitrate-nitrogen. The volunteers also record observations concerning the presence of aquatic vegetation and animal life, recent rain, and other factors. Though limited, the information gathered by Water Snapshot has been quite effective in highlighting local problems as well as regional differences and the general “flow” of Delaware River Basin water quality from its headwaters, through its heart, and finally to the Atlantic Ocean.

For *Water Snapshot '97*, nearly 80 organizations sampled 350 locations on 172 streams and rivers. The real importance of Water Snapshot, however, is not the numbers, but the individuals. Water Snapshotters in both 1996 and 1997 ranged from elementary school students to citizen volunteers to water and wastewater treatment per-

The real importance of Water Snapshot is not the numbers, but the individuals.



RIGHT: DRBC staff members out of the office for a day participated in Water Snapshot '97 as they take samples from the Delaware River at the bridge above Lambertville.

ABOVE, RIGHT: The river is for all, and so are the little rivers that lead to the big ones, as this trio of young and old checks samples from a tiny tributary of the Delaware.

ABOVE, LEFT: DRBC staffers sample the river at Washington Crossing.

sonnel to Commission secretaries to scientists who work for government and private organizations. Just as the success of the Delaware River Basin's water pollution control efforts can be attributed to the dedication of many, so can each year's Water Snapshot.

A report on *Water Snapshot '97* is available from the Commission and can also be found on the Commission's web site at <http://www.state.nj.us/drbc/snap97.htm>

HEALTH CHECKS FOR BAY AND ESTUARY

Mid-Atlantic Integrated Assessment Program

The DRBC is a participant in a major federally managed undertaking to establish a baseline biological and taxonomic profile for the lower Delaware Estuary and Delaware Bay. The Mid-Atlantic Integrated Assessment Program began in 1997 under the auspices of the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency. Both the DRBC and the State of Delaware Department of Natural Resources and Environmental Control are providing local assistance to the federal project.

The purpose of the project is to determine a baseline health index for the bottom-dwelling, or benthic, community of organisms in the

bay and estuary. The data collected will also help to evaluate how significant the effects of various contaminants are in both distribution and magnitude.

Ninety-one sites within the estuary and in adjacent waters were sampled from the NOAA ship *Ferrel* and her small boats, augmented by additional small boats belonging to the State of Delaware.

The sampling fleet collected two samples of sediment from each site. One of each sample pair was sieved and preserved for later analysis of benthic taxonomy—i.e., biologic classification of sea-bottom-dwelling organisms in the samples. The other sample of each pair was used to determine sediment grain size and total organic carbon.

The scientists also examined the samples for the presence or absence of surface floc, color and smell, and any visible fauna. Conductivity, temperature, depth, and dissolved oxygen were also determined for each station. Additional surface, bottom, and mid-column water samples were

collected at a few stations to determine chlorophyll-a, particulate and dissolved nutrients, and suspended solids. Samples for future radionuclide and sediment core analyses were also taken at a few selected sites.

Additional sediment samples were collected for amphipod (e.g., sand fleas) and sea urchin fertilization and embryonic development, as well as for toxicity tests, organic and metal contaminant analyses, ratios of silt to clay, and more.

Analyses of the mountain of data collected in the 1997 effort should be completed by the end of 1998.

AQUATIC PLANTS INDICATE RIVER'S HEALTH

Rooted Vegetation Can Show What's in the Water

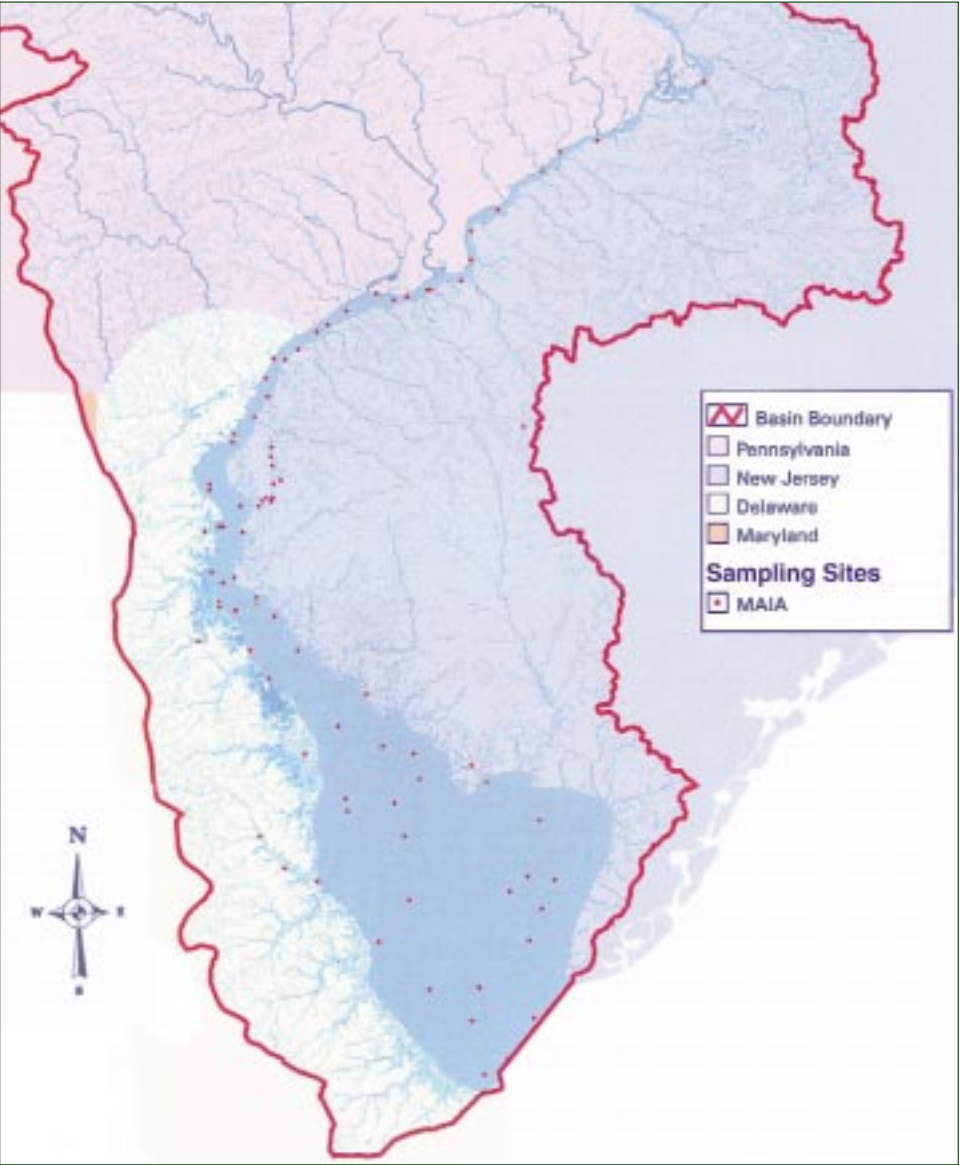
The Delaware River Basin Commission in cooperation with the Upper Delaware Scenic and Recreational River and the Delaware Water Gap National Recreation Area units of the National Park Service performed a rooted aquatic plant (macrophyte) biomass study in the Delaware River. The joint effort was part of the 1997 Scenic Rivers Monitoring Program. The study reach spanned 7.7 miles of the Delaware River from Port Jervis, N.Y., to Milford, Pa.

Aquatic plants are indicators of nutrient (nitrogen and phosphorus) discharges to waterways from wastewater treatment plants, malfunctioning septic systems, and runoff from fertilized lawns and agricultural practices. Since aquatic plants can also accumulate metals and polychlorinated biphenyls (PCBs), they are also being considered as a biological index for these contaminants.

Square-foot samples of entire plants were measured for average length, then collected, dried, and weighed for each of three plant genus: *Elodea* (water weed), *Potamogeton* (pond weed), and *Vallisneria* (eelgrass).

To determine the extent of plant beds, the study used traditional manual surveying methods and the Global Positioning System (GPS). People normally think of GPS as a navigational tool, a space satellite-based system that can determine a person's or an object's precise location on the Earth's surface. However, the system is just as precise in locating points around the boundary of an area and thus in determining the exact size of that area. And, in the aquatic environment in particular, GPS is far more convenient than manual surveying methods.

Having determined the area covered by the plants and knowing their weight per square foot, analysts could then calculate the total mass of a specific plant type in the region under study.



Aquatic plants are indicators of nutrient (nitrogen and phosphorus) discharges to waterways from wastewater treatment plants, malfunctioning septic systems, and runoff from fertilized lawns and agricultural practices.

The results from this study will be compared with those from a similar 1989 one that the DRBC and the Delaware Water Gap National Recreation Area performed in a subsection of this study reach. Findings from this study will serve to calibrate an aquatic-plant growth model for the Delaware River. The model, combined with a watershed model, will enable planners to determine how changes in various land uses in the adjoining watersheds may affect Delaware River water quality. Potential impacts on water quality will be reviewed to prevent changes to existing water quality as defined by the DRBC “Special Protection Waters” regulations.

PFIESTERIA’S WORRISOME NORTHWARD MARCH

Commission Co-sponsors Conference on Threat

Pfiesteria Piscicida (fee-STEER-ee-uh pis-uh-SEED-uh)—what is it? Despite the sound of its name, it’s not a flowering plant.

Pfiesteria is a microscopic, free-swimming, single-celled organism—a dinoflagellate—that usually and harmlessly feeds on algae and bacteria. It was first identified only in 1991 by researchers at North Carolina State University who were seeking the cause of massive fish kills in North Carolina waters. The scientists found that under some conditions not fully understood Pfiesteria can shift form and emit a powerful neurotoxin that causes respiratory distress in fish. A second toxin dissolves the protective mucous and breaks down the fish’s skin tissue, causing sores and bleeding. The organisms have caused fish kills and fish lesions in coastal waters from the Gulf of Mexico to, most recently, tributaries of Chesapeake Bay and Delaware inland bays, uncomfortably close to Delaware Bay.

Pfiesteria blooms have affected humans, not from eating infected fish, but merely because the people were in the area during the event. Symptoms include skin irritation, memory loss, nausea, and respiratory, kidney, liver, vision, and immune system problems.

To educate Basin citizens concerning Pfiesteria and the potential problem it poses to Basin waterways, the Commission co-

sponsored a conference with the Water Resources Association, the Susquehanna River Basin Commission, and the Partnership for the Delaware Estuary, Inc. Entitled “Pfiesteria—Facts and Fallacies,” the conference at the University of Delaware’s Newark, Del., campus was attended by some 45 people who discussed the causes of Pfiesteria blooms, the organism’s possible effects on the Basin environment and fish, and its northward migration.

THE GEOGRAPHIC INFORMATION SYSTEM

Steady Progress in Using Technology to Catalog the Basin

Our geographic information system (GIS) program, first brought online in 1996, progressed on several fronts in 1997.

These included: expanding the coverage of the Neshaminy Creek watershed; contracting with the U.S. Geological Survey (USGS) to complete a basic GIS water-use analysis program for the balance of the Southeastern Pennsylvania Ground Water Protected Area; coordinating funding efforts to obtain modern soils data for certain areas of the Basin; preparing base maps containing data layers, such as watershed boundaries, streams, political boundaries, and roads; preparing other data layers for staff to access on the DRBC network; and contracting with the New Castle Water Resources Agency to supplement GIS staffing needs.

Southeastern Pennsylvania Ground Water Protected Area

During 1997, the Pennsylvania District of the USGS continued to perform its contract with the DRBC to develop a basic GIS water-use analysis program for the balance of the Protected Area. It expects to complete this work in mid-1998. Geographically, this area includes all of Montgomery County, a significant portion of Bucks and Chester Counties, three townships in Berks County, and one in Lehigh County—a total of 127 municipalities in the 1,175 square miles. More than a million people reside within the Protected Area.

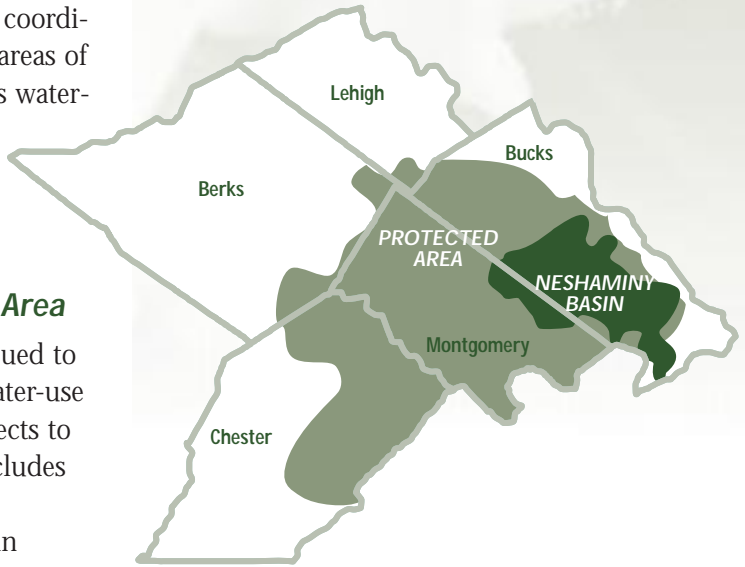
Neshaminy Project

The USGS, under a contract with the Commission, has developed a water-use analysis computer program for the Neshaminy Creek basin, a 232-square-mile watershed in a heavily populated area of southeastern Pennsylvania. The Neshaminy basin is located within the 1,200-square-mile Southeastern Pennsylvania Ground Water Protected Area, where special ground-water allocation requirements apply. The USGS effort involved the creation of several GIS data lay-

The organism Pfiesteria has killed fish in coastal waters from the Gulf of Mexico to tributaries of Chesapeake and Delaware Bays.



Southeastern Pennsylvania Ground Water Protected Area



ers that included drainage basins, bedrock geology, and political boundaries. The USGS developed other information important to the water-use analysis aspects of the program. This included information on well and subsurface discharge locations, surface-water intakes, and outfall locations, along with some attribute data for each.

To demonstrate the utility of a GIS for the entire Ground Water Protected Area, the DRBC in 1997 began a pilot GIS to enhance the Neshaminy study and to make it more useful to the Commission's Project Review Branch and to other entities involved with planning. These enhancements include land-use and land-cover data, water quality monitoring sites, stream-gauging sites, wetlands, county

and state parks, roads, railroads, dams, and local boundaries. The Commission plans to add more data layers, including designated stream segments, flood plain delineation, soils, and hazardous waste sites. Upon completion, the data will be exported to a desktop program that will allow the user to visualize, query, and analyze the data spatially.

The DRBC acquired many data layers either from sources on the Internet or on compact disk (CD) from the Pennsylvania Department of Environmental Protection. Integral with expansion of the Neshaminy Creek GIS will be the

design, management, and construction of an overall database. Once completed, the Neshaminy basin pilot project will be used by government agencies and other entities in planning and other activities. Another measure of how effective the project is at filling in data gaps and keeping data current will be any partnership that develops between the Commission and the counties and other government agencies. Based on this effort's success, the Commissioners have agreed to establish a similar program for the remainder of the Pennsylvania Ground Water Protected Area.

Soils Data Needs

The Commissioners have shown great interest in developing GIS data that all levels of government and the private sector can use. During 1997, as Commission staff sought to determine priorities and possible funding sources, they found a lack of up-to-date soils data in digital GIS format for certain areas of the Basin. These data are useful in many water-related and land-use disciplines. At the end

of 1997, the DRBC made the first of several presentations seeking matching funds from the U.S. Army Corps of Engineers to support this initiative.

DRBC GIS Base Maps

The Commission began the GIS program in 1996, but lack of full-time staff impeded progress. Since completing their first effort of preparing a Basin map, staff members have used GIS to develop maps for presentations, reports, and other activities. In July, the Commission contracted with the New Castle County Water Resources Agency for its help in building basic data layers that the Commission staff could use. State agencies provide much of the data, the projections and format of which the DRBC must then adapt to meet its own needs.

The DRBC's GIS program has now reached the point where data layers are being loaded into the Commission's computer network. Staff can then readily access and use the data with Arc/View, a desktop mapping tool.

REGIONAL INFORMATION MANAGEMENT SERVICE

An Exciting Year for RIMS

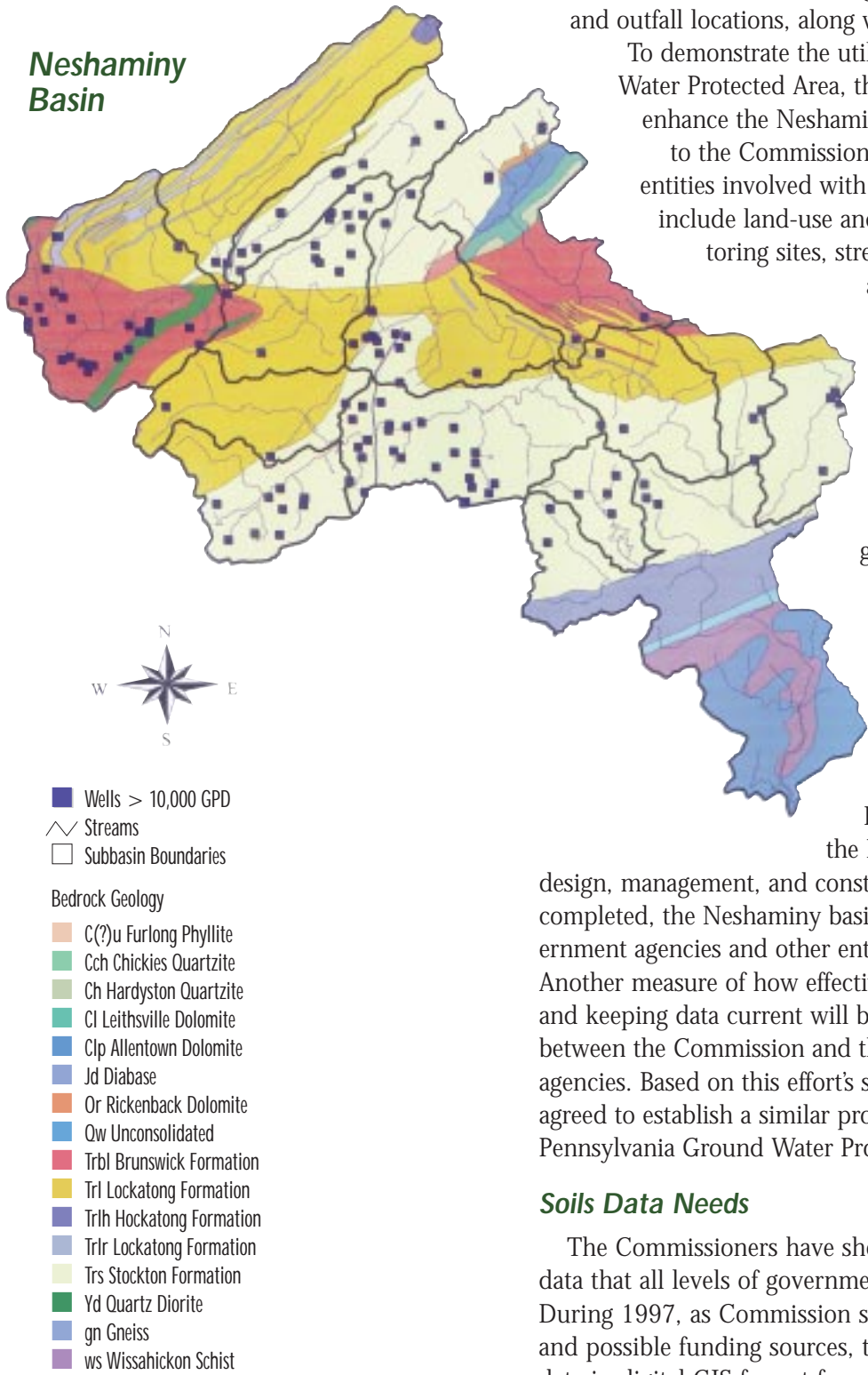
Over the year the Regional Information Management Service (RIMS) underwent some exciting changes.

In early 1997, the Commission expanded the RIMS web pages to include a variety of environmental information, such as data links to volunteer organizations, a bibliography, a newsletter from the Delaware Estuary Program, and a data-source index file that enables users to search for archival environmental studies and other information.

As part of the RIMS outreach program, the Commission provided a workshop for some 25 school teachers as part of the Pennsylvania Education Institute Program. Run by the Pennsylvania Department of Conservation and Natural Resources, this program provided a week of training in environmental issues related to the Delaware Estuary. One introductory session on the use and purpose of RIMS on the web was conducted at the Commission's offices. Then most of the staff's personal computers were made available to the teachers so that they could connect to the Commission's web page through its network as well as to other web sites. The teachers' enthusiasm promoted interaction among the Commission staff itself regarding use of the Internet and personal computers to find and collect data and information relating to the estuary.

Later in 1997, the Commission hired a full time data manager for the RIMS. The web pages were revamped to help nontechnical users

The Commissioners have shown great interest in developing GIS data that all levels of government and the private sector can use.



find information about recreational interests, such as boating and fishing. The new pages were also simplified to help others who might be having trouble finding specific information.

More changes are planned for 1998. These will expand the RIMS web pages to a new level. To stay abreast as the changes occur, point your web browser to <http://www.state.nj.us/drbc/rims.html>!

WATER REUSE AND GREY-WATER RECYCLING

Seminar Tackled Murky Topic

The Delaware River Basin Commission sponsored a seminar on Wastewater Reuse and Greywater Recycling on November 6, 1997, at the Grass Dale Center in Delaware City, Del. The seminar was promoted by several other organizations: the Water Resources Association of the Delaware River Basin, the American Water Works Association (Pennsylvania Section), the Water-Wise Council of New York, Inc., the Southeast New York Intergovernmental Water Supply Advisory Council, and the Water Resources Agency for New Castle County. About 120 people attended.

The one-day seminar was designed to give participants an introduction to this emerging technology, which presents industries and communities with an alternative to discharging effluent to sensitive waters. It also has become an attractive option for conserving and extending water supplies. Panelists consisting of local and national experts discussed opportunities and issues associated with wastewater reuse and grey-water recycling and successful case studies. The panel discussions were followed by a field trip to the New Castle County Spray Irrigation and Reclamation Plant near Odessa, Del.

Grey-water recycling has become an attractive option for conserving and extending water supplies.



INTEGRATED RESOURCE PLANNING SEMINAR

Symposium on Growth and Regulations

The Delaware River Basin Commission and the American Water Works Association co-sponsored a seminar on Integrated Resource Planning (IRP) on October 21, 1997, in Washington Crossing, Pa. The seminar was promoted by several other organizations: the Water Resources Association of the Delaware River Basin, the Delaware Riverkeeper Network, the Waterworks Operators' Association of Pennsylvania, the League of Women Voters of New Jersey, and the Pennsylvania State Association of Township Supervisors. About 100 people attended.

The one-day seminar presented information on several topics. In the morning, a national expert discussed the regulatory aspects of IRP, how IRP planning and execution are solving resource concerns, who is using IRP across the United States, components of IRP, and the importance of IRP in an increasingly competitive environment. In the afternoon, a panel of local experts discussed the applicability of IRP in the Delaware River Basin. A few of the many topics covered included: the proposed DRBC's regulations encouraging IRPs by municipalities in the Southeastern Pennsylvania Ground Water Protected Area, state efforts to promote IRP as part of their planning processes, how IRP is being used at the local level, utility perspectives on IRP, and the appropriateness of using IRP to plan growth while protecting environmental resources.

PUBLIC INFORMATION & EDUCATION

Involving the People of the Basin

Native beach rose,
the official flower of
the State of New York.

AN AMERICAN HERITAGE RIVER OR TWO?

*Our Basin Rivers Among
the First Nominations*

President Clinton's 1997 announcement of a new initiative to enhance river-related economic revitalization, natural resource protection, and historical and cultural resource preservation created excitement in the Delaware River Basin and around the country. The initiative solicited nominations of rivers and river reaches to be the first 10 "American Heritage Rivers." These 10 will be selected from the 126 rivers that were nominated by the December 10, 1997, deadline.

Among the nominated rivers are the Delaware River main stem and, also in the Delaware River Basin, the Beaverkill in New York and the Lehigh and Schuylkill

Rivers in Pennsylvania. A decision on these and the other 122 nominated rivers is expected in the spring of 1998.

The 330-mile-long Delaware River main stem from Hancock, N.Y., to the mouth of Delaware Bay was jointly nominated by the Delaware River Basin Commission and the Delaware River Greenway Partnership. The nomination package was developed by an *ad hoc* committee with members from the Commission; the Heritage Conservancy, which hosts the Greenway Partnership; the Delaware & Raritan Greenway; the New Jersey Department of Environmental Protection; and the Delaware Department of Natural Resources & Environmental Control. Letters from dozens of groups, agencies, governmental units, legislators, and individuals endorsed the river's nomination.

The Delaware River's American Heritage Rivers nomination recognizes that four distinct planning activities have occurred along the river in recent years. Collectively these plans cover the entire length of the Delaware River, including Delaware Bay. Specifically, the plans are the Upper Delaware Scenic & Recreational River's "River Management Plan," the Delaware Water Gap National Recreation Area's "General Management Plan," the "Lower Delaware River Management Plan" prepared for the proposed Lower Delaware national recreational river, and the Delaware Estuary Program's "Management Plan for the Delaware Estuary." The nomination noted that these plans contain numerous common goals derived from each of the four public planning processes and that these goals, therefore, collectively represent a Delaware River community vision.

The overall thrust of a Delaware River American Heritage River would be to pull these four major river planning activities under one umbrella and to develop common programs in five areas: eco-tourism/heritage tourism promotion, signage, land-use guidance for sustainable development, water quality monitoring, and regional information management.

The placid, classic riverfront of Bristol, Pa., evidences the long heritage going back to Colonial times that so many of the Delaware River's towns and cities share, amply justifying the river's proposed designation as an American Heritage River.



Justification of the Delaware River as an American Heritage River included five notable historical distinctions, five notable natural and scenic resource distinctions, and five notable economic and cultural distinctions. These unique aspects of the Delaware River include Washington's Crossing of the Delaware, the Delaware as one of the last large rivers without a dam on its main stem, the Delaware as being within a 500-mile radius of 40 percent of the U.S. population and 60 percent of Canada's, and others. The full nomination package is available from the Commission.

DELAWARE RIVER AND LEHIGH VALLEY SOJOURNS

Renewed Waterways Nourish the Soul

Sojourn: abide for a time. And abide they did, in their dozens and for days along the developed and wild sections of the Upper Delaware and the Lehigh. Via canoe and kayak they floated and paddled down the rivers, through placid pools and white-water rapids, viewing the June landscape from a vantage seldom seen and long neglected. No longer a fetid, dying waste conduit for much of America's smokestack industry over many generations, the rivers now teem with restored aquatic life, their clean waters open to recreational activities of all sorts on and around them. And not just for short demonstration stretches, but for the whole lengths of the rivers, requiring many days of sojourning to traverse.

In June 1997, both the Delaware and the Lehigh were hosts to Sojourns—organized educational and recreational expeditions of up to eight days in length.

Lehigh Legacy Sojourn

The Lehigh Sojourn, called the Lehigh Legacy Sojourn, was organized to help boaters appreciate the scenic waterway from the vantage point of raft and canoe. The Sojourn was the 1997 version of an eight-year-old Pennsylvania initiative to promote the Poster River of the Year, intended to educate the public to the recreational resources of the state's waterways. Sojourners could abide for one day or up to six days as they floated or paddled down the Lehigh gorge 70 miles from White Haven to Easton, Pa. The upper reaches were for rafters in the occasional patches of turbulent white water, while the lower portions past Jim Thorpe lent themselves more to contemplative canoeing. Unfortunately, low water levels precluded rafting for part of the journey, so bicycling along the banks had to suffice. Interspersed with on-the-water activities were lectures and demonstrations about the history of the region, the geology and ecology, not to mention food and drink, music, and storytelling. Day trippers, those who

***“Tonight, I announce
that this year I will
designate 10 American
Heritage Rivers to help
communities alongside
them to revitalize their
waterfront and clean up
pollution.”***

***– President Clinton
State of the
Union Address
February 4, 1997***

signed on for one leg of the six-day journey, boarded vans each evening for return to their boarding locations, while those in for the longer haul set up camp. Some 112 adventurers signed up for all or part of the trip—41 especially hardy ones signed on for the entire voyage.

Delaware River Sojourn

A week before the Lehigh Legacy, the Delaware River Sojourn shoved off at Deposit, N.Y., for a 110-mile canoe and kayak trip down the river to the Delaware Canal, ending in New Hope, Pa. The eight-day trip, the third annual Delaware Sojourn, was organized by a partnership of various public and private groups, including the Heritage Conservancy of Doylestown, Pa., the National Park Service, the Pennsylvania Department of Environmental Protection, and the Pennsylvania Environmental Council, with the active participation of and promotion by the DRBC.

As many as 60 people took part in each day's activities, some of them a little wetter for the wear but spirits undamped when their canoes capsized. Eighteen hardy voyagers became "through trippers," having stayed the course for the entire distance. DRBC Executive Director Jerry Hansler served as "Lord Admiral of the Delaware" for the Sojourn—an honor that goes all the way back to Dan Skinner, the first lumber rafter down the Delaware (1767) and, thus, the first Lord Admiral.



LEFT: The end of the trail: Tired survivors of the 1997 Delaware River Sojourn paddle into New Hope, Pa., on the Pennsylvania Delaware Canal paralleling the river. Their arrival was to the accompaniment of the fifes and drums of the Coryellis Ferry Militia.

INSET: "Lord Admiral of the Delaware," Executive Director Gerald M. Hansler (right) discusses the finer points of river rafting and canoeing with U.S. Congressman Maurice D. Hinchey, Jr. (D., N.Y., 26th District).

WONDERFUL PROGRAM

Teachers Delve into the Delaware

A committee of over 50 dedicated partners hosted a week-long workshop for 25 teachers in July 1997 on resource issues affecting the Delaware Estuary.

The teachers, who came from classrooms in 17 counties in the tri-state area (Pennsylvania, New Jersey, and Delaware) studied the ecological, historical, social, economic, agricultural, and political impacts on the region.

They swam with dolphins at Cape Henlopen, Del., checked out urban planning in Philadelphia, feasted on blue crabs, journeyed across Delaware Bay in an oyster schooner, and walked the historic streets of Burlington, N.J.

Remarked one Pennsylvania teacher when it was over: "This experience has changed my focus. I am filled with a sense of wonder coupled with knowledge. I hope to pass along these tools to my students. It is a true gift to feel the synergistic effect the participants in this program had on each other."

Commission staff played an active role in the program, lecturing on the overall health of the estuary and hosting a work session on the application of computer technology to water resource management.

The workshop, titled the Delaware Estuary Educational Institute, ran from July 25 to July 30. It was funded by the Delaware Estuary Program and the Pennsylvania Department of Environmental Protection, in partnership with the Pennsylvania Department of Conservation and Natural Resources. Another teacher workshop is planned for the summer of 1998.

The teachers who attended the 1997 session left with boxes of resource materials and hearts full of memories. Not surprisingly, they also handed out report cards.

Richard Beach, a Delaware teacher, scored it this way: "The Institute allowed me to better understand the complexities involved in protecting the Estuary by putting me on location and providing a wide variety of hands-on experiences. It was a wonderful program."

Noted a New Jersey teacher: "It has been an incredible learning experience. The teaching and reference resources provided are outstanding. The entire week was magical and confirmed how important the Estuary is for my students. The link to the Estuary is now stronger than ever."

"It was the best program I ever attended," remarked a teacher from Pennsylvania.

For information on the 1998 Delaware Estuary Education Institute, contact Kathy Kline, Delaware Estuary Partnership, 302-793-1701. For information on teacher programs of the Delaware Watershed Consortium, contact Estelle Ruppert, program coordinator



TOP: Where are we? Teachers participating in the Delaware Estuary Educational Institute program on board the oyster schooner *A.J. Meerwald* try their hands at nautical navigation.

CENTER: An ancient mode of transportation still has a place on the Delaware, where the old oyster schooner *A.J. Meerwald*, her sails silently driving, still serves as a school ship and ghostly quiet base for sampling the water and life of the Delaware Estuary.

BOTTOM: The expressions on the faces of these teacher-participants in the week-long 1997 Delaware Estuary Educational Institute program say more than words ever could about the natural world beyond the classroom walls.

for the Pennsylvania Bureau of State Parks at the Jacobsburg (Pa.) Environmental Education Center, 610-746-2806.

<http://www.state.nj.us/drbc/>

Our Web Site Proliferates

Since the debut of its web site, <http://www.state.nj.us/drbc/>, in 1996, the Commission has posted a large quantity of water-related information. Interest in the DRBC web site continues to grow based on the number of “hits”—accesses by the public via the Internet and World Wide Web—that it receives. The graph shows how many hits to the home page alone and the trend. The number of total hits to all pages on our site is much greater because we have rapidly increased the number of pages.

Regular features now include hydrologic information, meeting notices, minutes of Commission meetings, and water quality information. Two of the most popular pages are the New York City Delaware Basin Reservoir Storage graph and the Flow and Storage Data page.

The Commission updates these pages every day. The Storage Graph shows the combined three in-basin water supply reservoirs (Pepacton, Cannonsville, and Neversink). The flows for the Delaware, Schuylkill,

and Lehigh Rivers are presented in the Flow Data page. Links are provided to real-time stream-flow data sites for New Jersey, New York, and Pennsylvania. River statements concerning flood conditions are also available. For those interested in droughts, a link is provided to the National Drought Mitigation Center.

The Commissioners adopted the web page's banner as the official DRBC logo. Designed by Thomas Brand, Project Review Branch Head, the logo is being incorporated in the Commission's publications and other outreach media.

One of several major additions to the web site during 1997 was the Regional Information Management Service (RIMS). RIMS began in 1995 as a computer bulletin board service that provided information about the Delaware Estuary. The bulletin board format was successful, but as more and more computer users began to use the Internet, the bulletin board became obsolete.

The number of web site hits shows that the public has great interest in water-related recreation information. The site contains information for specific areas as well as canoe and boating interests. There is even a link to the U.S. Coast Guard Safe Boating site. Another link to the National Oceanic and Atmospheric Administration provides high- and low-tide predictions for 16 locations on the Delaware River and Bay.

The web has proven to be a useful tool beyond expectations for both Commission staff and the public. During the 1997 drought warning, for example, media reporters often accessed the site for information about the Commission and the Delaware River Basin—an expanded interest reflected in the increased number of hits in October. As the Commissioners labored over the DRBC Vision Statement and the Retreat process, they used the web to inform the public and to solicit comments. Future plans for the web site include addition of downloadable regulations and other documents.

The DRBC web site is hosted by the State of New Jersey.

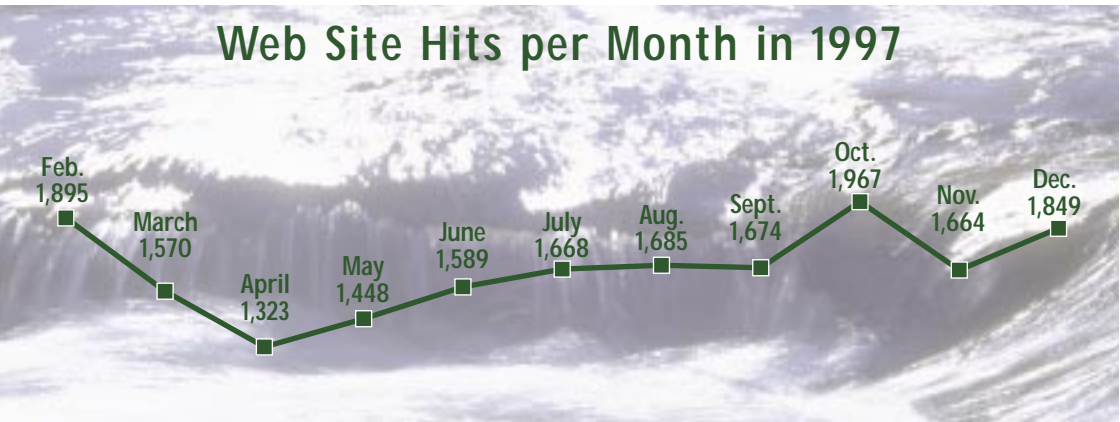
DRBC DISPLAY

Showing It Like It Is

As part of an effort to expand the Commission's public outreach program, we bought a new table-top display. The light-weight and easily transportable display was set up in a variety of locations ranging from the RiverFest in Narrowsburg, N.Y., to Delaware Bay Day in Port Norris, N.J., and Coast Day in Lewes, Del. These events are very popular among local residents and area visitors. Delaware Bay Day and Coast Day are geared toward educating people about water-related issues in tidal areas.

Staff also used the display at special events, such as the Delaware Estuary Program Monitoring Conference in Newark, Del., and the Heritage Conservancy meeting in Washington Crossing, Pa.

Curious visitors to the Commission's traveling exhibit inform themselves on a pleasant Saturday afternoon about the river basin that is central to their environment.



The DRBC's web site has proven to be very popular. October saw the highest number of hits, reflecting an interest in data posted about the latest drought.





A 50-foot model of the Delaware River fills the DRBC lobby as the students of a local school who built it from paper-mâché as a class project explain it to their elders.

STUDENTS BUILD A RIVER

All the Delaware at a Glance

In observance of Earth Week, sixth graders at the Lambertville, N.J., Public School built a 50-foot-long paper-mâché working model of their local river, the Delaware. Then the youngsters transported the huge display some 10 miles downstream to the Commission's offices in West Trenton, where it occupied the lobby for some weeks. Visitors to the Commission, perhaps unable to grasp the idea of the entire Delaware from the portion that flows by not far from the DRBC office, could gain a better sense of its extent and of the Commission's mission from this model.

For the students, the rewards were the satisfaction of a job well done, intimate acquaintance with a natural feature that in part defines their world, local fame, and all the pizza they could eat.

DOMESTIC AND FOREIGN RELATIONS

Not Just a Regional Influence

The Commission continues to be a model institution for comprehensive water resources management. States continue to squabble over water—both quantity and quality. Foreign nations, especially those of developing countries, as well as former and present Communist regimes, are also grappling with various aspects of their water management.

In the U.S., the DRBC was used as a model by the framers of two new interstate compacts. Congress approved compacts in 1997 to help Alabama, Florida, and Georgia settle their longstanding and sometimes bitter feud over shared water resources. House Joint Resolution 91 (H.J.R. 91) created a compact between the three states concerning the Apalachicola-Chatahoochee-Flint River Basin, while H.J.R. 92 established the Alabama-Coosa-Tallapoosa River Basin Compact. DRBC Executive Director Gerald M. Hansler advised and consulted with officials of all three states and with the U.S. Army Corps of Engineers in planning for these compacts.

The states of Arkansas and Oklahoma were in dispute over water quality in the interstate Illinois River during 1997. Oklahoma was chagrined with phosphorus loadings entering from Arkansas, both municipal point and nonpoint sources. Evidently, discharges from both states were accelerating a eutrophication problem downstream in an Oklahoma reservoir. Randy Young, Executive Director of the Arkansas Soil and Water Conservation Commission, consulted with DRBC officials concerning the way the Commission handles such problems. He acquired copies of the Commission's Compact and of

its rules and regulations relating to water quality. Both states used these documents to amicably develop a joint control program.

Three foreign governments received study tours at the Commission in 1997: Jordan, Turkey, and the People's Republic of China. Also, Commission employees addressed two different groups of Chinese water experts on comprehensive watershed management at the invitation of the Region III office of the U.S. Environmental Protection Agency (EPA). This appears to be a rather common request now, since the EPA does not concern itself with both water quantity and quality. The Commission is rare in that its powers and authorities cover both. The Commission regulates water quality and effluent standards as well as surface- and ground-water allocations.

Finally, the World Bank, during its annual week-long "World Water Week" in December 1997, called on the Commission's expertise in comprehensive water management. Representatives from many foreign countries attended this meeting, held in Annapolis, Md., to receive new insights into water management policies and programs—and even pitfalls.



A group of mayors from several cities in Turkey, invited to the Commission for a briefing on river basin management, brave the cold of a Delaware winter for a first-hand look at the river.



FINANCIAL SUMMARY

In Constrained Circumstances

The designation of the peach blossom as the official flower of the State of Delaware dates from a time when Delaware was better known for peach orchards than any other state.

The failure of the federal government to appropriate funds for the Commission in fiscal year 1997 produced a \$427,000 shortfall. Despite urgings by the congressional and state delegations of the four signatory states and testimony by DRBC staff, the federal government for the second year (FY98) declined to provide the \$534,000 that is its fair share of the Commission's funding.

While the Commission does generate additional revenues through project review fees, penalties, sales of publications, various grants for special projects, and interest on capital, the absence of what otherwise would have been 20 percent of total revenues has had a constraining effect on the Commission's activities. The absence of federal funding has obligated the Commission to adjust forward planning for expanded active management of the Delaware River Basin environment.

Nonetheless, careful management of Commission assets and reduced expenditures in several areas—notably personnel services and contractual services—enabled the Commission to show a small surplus for fiscal year 1997 instead of a deficit.

Statement of Revenues & Expenditures—General Fund

Year Ended June 30, 1997	Budget	Actual
Revenues		
Signatory parties:		
Delaware	\$344,000	\$344,000
New Jersey	688,000	688,000
New York	481,500	481,500
Pennsylvania	688,000	688,000
United States	107,000	107,000
Water Quality Pollution Control Grant	240,000	240,000
Sale of Publications & Sundry	5,000	8,653
Project Review Fees	16,000	16,078
Reimbursement of Overhead-Agency Fund	60,000	60,000
Fines, Assessments & Other Income	15,000	24,000
Interest	158,000	182,974
TOTAL REVENUES	\$2,802,500	\$2,840,205
Expenditures		
Personnel Services	\$1,850,600	\$1,769,741
Special & Contractual Services	301,600	276,419
Other Services	102,900	117,422
Supplies & Materials	80,300	72,227
Space	226,300	227,992
Communications	47,000	47,031
Travel	36,500	38,835
Maintenance, Replacements & Acquisitions	143,519	162,803
Fringe Benefits	453,100	432,937
TOTAL EXPENDITURES	\$3,241,819	\$3,145,407
Excess of Revenues Over (Under) Expenditures	(\$439,319)	(\$305,202)
Other Financing Sources:		
Operating Transfers In	\$0	\$573,428
Operating Transfers Out	—	(32,982)
Net Transfers In	\$0	\$540,446
EXCESS OF REVENUES OVER (UNDER) EXPENDITURES AND OTHER FINANCING SOURCES*	(\$439,319)	\$235,244

Statement of Revenues & Expenditures—Capital Projects

Revenues		
Commonwealth of Pennsylvania	\$25,000	\$25,000
State of New Jersey	2,000	2,000
Water Charges	1,800,000	1,801,170
Western Berks	20,500	21,288
Interest Income	300,000	469,833
TOTAL REVENUES	\$2,147,500	\$2,319,291
Expenditures		
Debt Service on Projects	\$862,000	\$861,142
Operation & Maintenance Cost on Projects	400,000	155,387
Administrative Cost	712,500	699,415
TOTAL EXPENDITURES	\$1,974,500	\$1,715,944
EXCESS OF REVENUES OVER EXPENDITURES	\$173,000	\$603,347

Note: Debt services and operating and maintenance costs are for the Beltzville and Blue Marsh Reservoir Projects. Payments are made to the United States Army Corps of Engineers.

Schedule of Changes in Special Projects Advance/(Receivable) Balance—by Project

Project	Advance Balances July 1, 1996	Cash Receipts (A)	Transfers	Expenditures (B)	Balances at June 30, 1997
Advances					
USGS Monitors	\$28,491	\$23,600	\$58,575	(\$110,666)	\$ —
Groundwater—PA Protected Area	68,525	265,000	(140,222)	(174,747)	18,556
Upper Delaware Ice Jam Project	190,584	19,393	2,391	(3,181)	209,187
Delaware Estuary Project—PA	18,246	19,374	—	(36,669)	951
Delaware Estuary Project—DE	—	20,093	—	(20,061)	32
National Pollution Discharge Study	—	51,826	281	(43,880)	8,227
Subtotal Advances	\$305,846	\$399,286	(\$78,975)	(\$389,204)	\$236,953
Accounts Receivable					
Delaware Estuary Project—EPA	(\$17,638)	\$240,683	\$1,204	(\$248,706)	(\$24457)
USGS Monitors	—	—	—	(39,001)	(39,001)
Delaware Estuary (RIMS)—EPA	(3001)	31,110	20,870	(53,650)	(4,671)
High Flow Management Objectives	—	—	—	(8,333)	(8,333)
Christina River Basin Study	—	—	—	(54,588)	(54,588)
Toxics Management Studies—EPA	—	9,679	(5,874)	(30,019)	(26,214)
Estuary Salinity Model	(4,974)	—	—	—	(4,974)
Groundwater—PA Protected Area	(66,250)	66,250	—	—	—
Delaware Estuary Project—DE	(10,707)	10,707	—	—	—
National Pollution Discharge Study	(39,133)	39,133	—	—	—
Chester County Soil Map Digitizing	—	45,000	—	(45,000)	—
Subtotal Accounts Receivable	(\$141,703)	\$442,562	\$16,200	(\$479,297)	(\$162,238)
TOTALS	\$164,143	\$841,848	(\$62,775)	(\$868,501)	\$74,715

(A) Cash receipts were derived from:

United States Government	\$417,431
Commonwealth of Pennsylvania	350,624
State of Delaware	30,800
Interest	19,393
Third-party fees for services	23,600
TOTAL	\$841,848

(B) Expenditures were primarily for payroll costs and contractual services.

The records of the Commission are audited annually as required by the Compact.

* On December 6, 1995, the Delaware River Basin Commission adopted its fiscal year 1997 operating budget (July 1, 1996, through June 30, 1997). This budget anticipated a receipt of federal funds in the amount of \$534,000. The Energy and Water Appropriations Bill (P. L. 104-206) eliminated federal funding for the Delaware River Basin Commission for the federal fiscal year 1997 (October 1, 1996, through September 30, 1997). The impact of this action amounted to a \$427,000 decrease in federal funding. The fiscal year 1997 budget was amended to reflect this action, and the fiscal year 1998 budget was adopted on June 25, 1997, without a federal contribution. Efforts have been undertaken for the restoration of federal funding. At this time the results of such efforts are unknown. Comprehensive audited financial statements are available for inspection at the Commission's headquarters.

