

BOARD MEMBERS

The Rhode Island Water Resources Board consists of thirteen members; five are public members appointed by the Governor, two of which must be affiliated with public water supply systems. Public members serve for three years. There are five directors or their ex-officio designees including the Director of the RI Dept. of Administration, the Director of the RI Dept. of Environmental Management, the Director of the RI Dept. of Health, the Director of the RI Economic Development Corporation, and the Chair of the Joint Legislative Committee on Water Resources. The remaining members include a representative of the RI Agricultural Council, one state senator appointed by the Senate President and one state representative appointed by the Speaker of the House. Water Resources Board members are also members of the Board Corporate.

PUBLIC MEMBERS:

Daniel W. Varin, PCP - Chair

Mr. Varin is planner emeritus of the State of Rhode Island, having served for over 31 years as Associate Director of the RI Dept. of Administration and Chief of the Division of Statewide Planning. Mr. Varin is nationally recognized for his work in drafting the Rhode Island Comprehensive Planning and Land Use Regulation Act.

William Penn, - Vice Chair

Mr. Penn is a Financial Advisor specializing in Brownfield's redevelopment. He is President & Chief Executive Officer of the Clean Land Fund in New Shoreham, RI. Mr. Penn is an Adjunct Professor at the Steven L. Newman Real Estate Institute at Baruch College of the City University of New York.

Jon Schock

Mr. Schock is the Public Services Director for the Town of South Kingstown and past President of the RI Water Works Association. He is also a member of the Board of Certification of Operators of Wastewater Treatment Facilities.

John Milano

Mr. Milano of Bristol, RI spent 37 years in engineering and management positions for public and private utility-related organizations. Up until 1999, he was Administrator for the RI Division of Public Utilities and Carriers.

Timothy J. Brown, PE

Mr. Brown is the General Manager and Chief Engineer at the Kent County Water Authority. He is past President of both the RI Society of Civil Engineers and American Society of Civil Engineers-Rhode Island Section.

EX OFFICIO MEMBERS

Director of RI Dept. of Administration - Beverly E. Najarian

Ms. Najarian's designee is Robert Griffith, Ph.D., Chief, Office of Strategic Planning, Monitoring and Evaluation.

Director of RI Dept. of Health -

Patricia A. Nolan, MD, MPH

Dr. Nolan's designee is June Swallow, PE, Chief, Office of Drinking Water Quality.

Director of RI Dept. of Environmental Management - Frederick Vincent (Acting)

Mr. Vincent's designee is Alicia Good, Asst. Director, Office of Water Resources.

Executive Director of the RI Economic Development Corporation - Michael McMahon

Mr. McMahon's designee is William J. Parsons, Deputy Director.

Chair of the Joint Committee on Water Resources

Mr. Francis Perry, PE, is the designee of the Chairman to the Joint Committee on Water Resources. He is Chairman of the Kent County Water Authority and an Engineering Consultant in private practice. Mr. Perry is retired from RIDOT after 30 years service.

Rhode Island Agricultural Council

The Council's designee is William M. Stamp III, a third generation family farmer in Rhode Island. Mr. Stamp is the President of the Rhode Island Farm Bureau and Chairman of the RI Greenhouse and Vegetable Growers Committee.

Senator Leonidas P. Raptakis

Sen. Raptakis (Coventry-West Warwick) is a Restaurant Owner/Operator. Sen. Raptakis serves on the Senate Judiciary and Government Oversight Committees as well as the Joint Committee on Highway Safety.

Representative William Murphy, Esq.

Rep. Murphy (Coventry-West Warwick) is a self-employed attorney. Rep. Murphy serves as Speaker of the House.

Annual Report Photo Credits

Cover photo: Butterfly Pond - Lincoln, RI
Other photos: Blackstone River Falls - at Slater Mill, Pawtucket, RI, Stump Pond - Smithfield, RI,

Courtesy of Rick Antuono, Seekonk, MA

Capwell Pond, Courtesy of Emily Wild Map, Courtesy of Maguire Group, Inc.

STAFF

M. Paul Sams, General Manager (Retired - August 27, 2004)

Kathleen M. Crawley, Acting General Manager/ Staff Director

Thomas R. Walker, PE, Supervising Engineer

Brian J. Riggs, Chief Business Officer

Elaine A. Maguire, Real Estate Appraiser

Beverly O'Keefe, Supervising Planner

William D. Riverso, Programming Services Officer

Connie L. McGreavy, Programming Services Officer

Tracy A. Shields, Personnel Aide

Board Legal Counsel

Rebecca Partington, Esq., Deputy Chief - Civil Division, Office of Attorney General

Board Corporate Legal Counsel

Armando O. Monaco, II, Esq.

Bond Counsel

Normand G. Benoit, Esq., Partridge, Snow & Hahn

Karen Grande, Esq. Tillinghast, Licht, Perkins,

Smith & Cohen

Financial Advisor

First Southwest Company

Trustee

J.P. Morgan Trust Company

Auditor

Casale, Caliri & Jaroma, LLP.

GENERAL INFORMATION

Administrative Offices

100 North Main Street, 5th Fl.

Providence, RI 02903

(401) 222-2217/2218

(401) 222-4707 FAX

www@wrb.state.ri.us


Big River Management Area Field Office

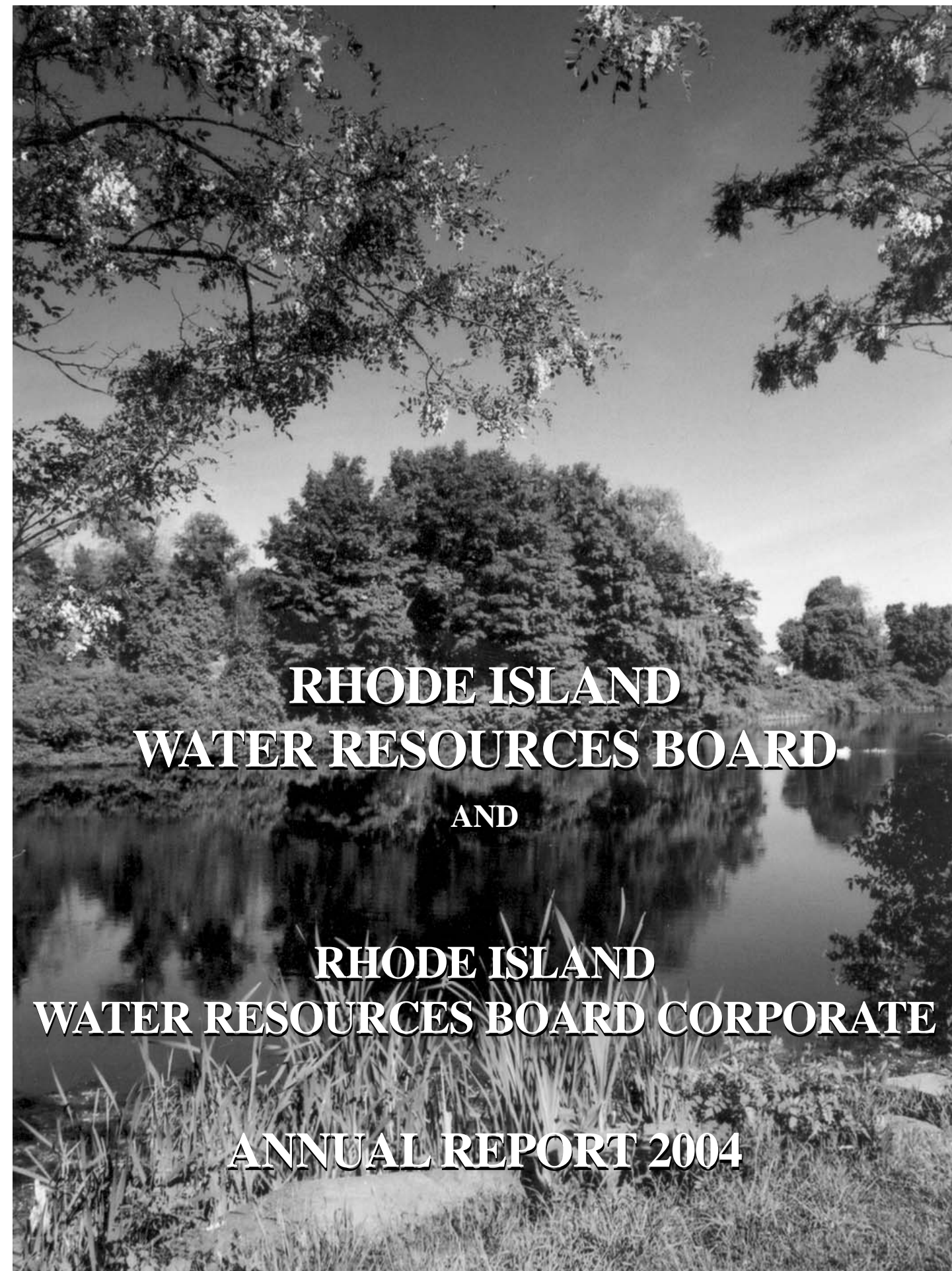
612 Nooseneck Hill Road

West Greenwich, RI 02817

(401) 397-7053 • (401) 397-8067



 This report is printed on recycled paper



FINANCIAL REPORTS

RI WATER RESOURCES BOARD

Rhode Island Water Resources Board

Detailed Listing of Expenditures as of June 30, 2004

Account	B C	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual
2 3 10000						
Classified Permanent	210	404,911	395,230	422,764	468,348	397,502
Classified Permanent Overtime	215	347	5,000	82		
Unclassified Permanent	230	46,766	88,895	99,042	111,225	114,832
Employees Retirement	280	39,194	38,554	29,169	44,555	46,277
FICA	281	33,860	36,591	38,886	43,045	37,521
WC Self Ins. Employer Assess.	283	876	18,772	19,828	22,024	19,469
Employee Cost Retire Health	294	2,782	4,808	4,524	6,067	6,298
Medical	295	41,705	48,755	48,079	57,775	69,221
Dental	297	4,155	4,178	3,995	4,497	4,815
Vision	298	550	550	541	1,305	1,208
Salaries and Benefits		14	41 333	10	41	143
Architect/Engineering Services	262	90,250	40,550	75,000		
Bldg & Grounds Maint.	264	5,511	7,200	7,271	7,200	7200
Security Services	265	3,303		2,858	2,541	2826.41
Management/Audit	267	12,596	20739	63,674	8,721	31660.27
Contractual Services		111 0	4	14 03	1 4 2	41
Personnel Services		0	0 22	1 13	303	3 2
Postage	321	1,364	1,538	1,522	1,093	1,343
Telephone	322	504	707	1,133	230	825
Supplies	323	4,950	7,123	3,884	4,448	4,818
Dues and Subscriptions	324	2,284	2,139	3,019	1,216	319
Insurance	326	77,336	81,939	96,622	93,440	1,663
Centrex Telephone	327	6,271	6,716	6,730	6,589	5,823
Printing	331	3,913	2,009	1,167	1,513	1,611
Advertising	332	1,285	982	939	484	332
Mileage In	341	5,856	6,067	5,905	5,073	5,014
Out of State Travel	342	702	2,046		1,787	
Other Travel	343	61	495	446	832	416
Repair - Buildings and Structures	361	462	769	(5,451)	3,528	
Repair Highways	362	10,000	10,000	10,000	7,000	7,000
Other Repairs	363	1,529	2,926	1,458	2,414	1,384
Replace Office Equipment	378	4,107				
Rental Property	381	56,399	58,894	59,859	61,027	80,099
Rental Equipment	382	2,172	2,172	3,579	15	2,112
Fuel Oil	402	955	1,074	579	1,421	881
Electricity	409	966		10		
Highway & Landscaping Exp.	436		356	15		46
Central Services	438	2,946	3,816	6,389	8,565	5,506
Education	441	1,445	1,830	55		
Computer Supplies	442	4,336	2,738	4,818	2,968	1,044
Computer Software	445	2,030	892	24	285	374
Other	455	1,454	1,638	2,073	1,441	1,882
Other Equipment	659		745			
Computer Equipment	660	6,196	5,949	1,200	1,272	1,418
Total Personnel Services		1 21	20 0	20	20 41	123 10
Education Grant	582	38,871	40,939	45,156	44,453	43,123
Grants	589	5,157	5,276	5,253	3,461	4,960
Supp Pension	477	612	612	51		
Grants and Benefits		44 40	4 2	0 4 0	4 14	4 0 3
Total 2 3 10000		30	2 20	1 0 2 14	1 031	10 22
Capital Development Funds						
BRMA Maintenance		225,264	89,958	82,425	49,208	92,447
BRMA Water Survey		67,738	112,261			
Water Allocation Plan		270,245	464,867	266,304	97,405	69,782
Ground Water Protection			83,334	14,441		
Supplemental Water				54,487		39,316
Total Capital Development		3 24	0 420	41	14 13	201 4
Restricted Receipts						
Water Allocation Plan				79,334	504,519	161,635
Supplemental Water				16,970	92,036	194,771
Water Development					172,500	
Operating Support						181,570
Total Restricted Receipts		0	0	304	0	3
Federal Funds						
Water Development						553,805
Total Federal Funds		0	0	0	0	3 0
Agency Total		1 4 4 214	1 12 2	1 10	1 4 2	2 204 14

HISTORY

The Rhode Island Water Resources Coordinating Board was formed in 1964 for the explicit purpose to acquire and protect 8600 acres in West Greenwich and Coventry for the proposed Big River Reservoir Water Supply Project. In 1967, under Governor John Chafee's leadership, the agency was renamed the RI Water Resources Board and empowered with broad legislative authority over statewide water supply. Shortly thereafter in 1970, the RI Water Resources Board Corporate was established as a water facilities and infrastructure financing arm of the Water Resources Board. Over the years, the two agencies have invested millions of dollars in scientific investigations, municipal water supply infrastructure design and construction, watershed protection, strategic planning, conservation education and policy development for public drinking water supply.

In 1993, the General Assembly declared that the Big River Management Area would be considered "Open Space" until needed for drinking water supply. During this decade, several other major engineering projects were undertaken across the state in which the agency played a significant role. Those most familiar to the public include the East Bay Bristol County Pipeline and the Providence Project. The Providence Project consists of the construction of storage and pumping facilities, and modifications to the distribution system for the new Fruit Hill Extra High Service System, located in the Towns of North Providence and Smithfield.

In 1997, the Water Resources Board assumed water supply system planning duties previously carried out by the RI Dept. of Environmental Management. In 1999, legislation was passed clarifying the powers and duties of the agency regarding its sole water allocation authority. The 1999 law also provided for a means to diversify the Board by adding two new members. The agency was granted authority to investigate sources of groundwater in the Big River Management Area after a determination that exploration or development of groundwater for future supply was indeed needed.

The Board has used effective adaptive management strategies to address statewide challenges to water resource management. For example, the prolonged drought in 2001 signaled the need for the Board and subsequently, a newly formed Drought Steering Committee, to develop a new State Guide Plan Element #724, RI Drought Management Plan. During that same year, the World Trade Towers tragedy on Sept. 11 pressed the Board to divert resources toward increased security of water resource infrastructure and information. Today, the Water Resources Board embraces an integrated water management approach that considers water and wastewater, water quantity and water quality that provides guidance for local land use decisions.

MISSION

The Rhode Island Water Resources Board is an executive agency of state government charged with managing the proper development, utilization and conservation of water resources. Its primary responsibility is to ensure that sufficient water supply is available for present and future generations, apportioning available water to all areas of the state, if necessary.

The Rhode Island Water Resources Board Corporate is a quasi-public corporation separate and apart from the Board. Its primary mission is to establish public water supply facilities, lease facilities or sell water derived from those facilities. Water facilities include wells, well sites, reservoirs, transmission or distribution systems and all associated real estate interests inclusive of water supply equipment. The Board Corporate has the power to revenue bond for the purpose of carrying out the mission of the Water Resources Board.

Since 1991, the Water Resources Board and Board Corporate have jointly administered a state surcharge levied on customers located in major water supply districts. The surcharge levied on every gallon of water used by customers (with the exception of senior citizens and commercial agricultural users) is collected by the state and deposited into the General Fund and a Corporate Trust account. The money is used to offset costs of new infrastructure, to pay down debt service on bonds and to cover a proportion of agency operations associated with supply functions. By law a percentage of the surcharge is retained by the water suppliers to administer the water supply systems management planning program, 36.1% for watershed protection and 57% for the state general fund-debt service.

POWERS, DUTIES, POWERS AND DUTIES & REGULATORY AUTHORITY

RI Gen. Laws §46-15 *et seq.*

The RI Water Resources Board and the RI Water Resources Board Corporate have broad authority in planning, developing, and managing public water supplies. The agencies work closely with the RI Dept. of Administration, Statewide Planning Program, the Departments of Environmental Management and Health, and the Public Utilities Commission to develop and refine policies affecting water supply resources, including emergency resource planning and availability.

The RI Water Resources Board and the RI Water Resources Board Corporate are defined by statute as agencies which can acquire lands, water rights, and easements for all water supply needs; design and/or construct water supply facilities; lease, sell or effect mergers of water supply systems; and loan or borrow money for water supply infrastructure improvement and land acquisition to protect watersheds. If necessary, the agencies can "take" additional water from an existing water supply source or develop a new water source to supply water beyond the corporate or municipal limits of an existing water district. The agencies accomplish many objectives working in tandem with the twenty-eight major public water suppliers in the state.

PROGRAMS

WATER ALLOCATION

Water Allocation/Water Management Program

In 1999, the RI General Assembly granted the agency sole authority to devise a fair and equitable allocation of water resources among users and uses to ensure that long-range considerations of water supply prevail over short-term considerations. Towards this end, the Board has initiated a collaborative water allocation program development process, watershed studies, hydrologic modeling efforts, drought planning and management, and further work to develop a water supply in the Big River Management Area.



Blackstone River at Slater Mill, Pawtucket, RI

Phase I: Water Allocation Program Advisory Committee (WAPAC)

In June 2002, the Board launched an inclusive water allocation planning effort with 66 participating organizations (150 individuals) to develop a water allocation program for the state. The Board considered twenty-one priority recommendations during 2003. The Board approved 6 of these recommendations at the March 2004 meeting to form the basis for a Rhode Island Water Allocation program:

1. Adopt a Priority Water Use Policy;
2. Create a Water Management System Using a Watershed Approach;
3. Continue the Detailed Water Resources Inventory and Expand the Water Use Data Reporting System;
4. Establish a Water Allocation Program Implementation Team (to work with staff in the design of a water management system and develop a pilot project in a RI watershed);
5. Establish a separate WRB/DEM Partnership to be known as the Streamflow Working Group to address streamflow issues such as: aquatic base flow and the further development of a statewide streamflow gaging network); and
6. Establish an Education and Outreach Program (working collaboratively with existing public and not-for-profit organization programs).

Phase II Water Allocation Implementation Team

The Phase II Implementation Team was tasked to begin implementation of the six water allocation recommendations. The Team, includes a diverse group of municipal planners, water suppliers, state partner agencies and environmental advocacy groups, has worked throughout 2004 to design a water management system that identifies the water resources available within a basin and sub-basin. A long-term water budget based on basin and sub-basin fact sheets using the Lower Blackstone River Basin have been designed based on a series of consensus planning meetings. A technical subcommittee was formed to fully evaluate basin ratios and baseflow system triggers. During 2004, the Implementation Team efforts have also resulted in a draft report that will be presented to the Board for action at the March 2005 meeting. The pilot study in the Lower Blackstone River basin will commence during Spring 2005 and will include a series of workshops and meetings with planners and decision-makers in communities throughout the Lower Blackstone basin. It is anticipated that new guidance for local comprehensive plans and a technical assistance document will result from the 2005 pilot project.

Water Use and Availability Studies - A Watershed Approach

Working with the US Geological Survey (USGS) and the University of Rhode Island (URI), the agency is completing a comprehensive statewide inventory of surface water and groundwater resources currently existing, used, or available to support future uses in nine basins, i.e., watersheds. The amount of water available is determined based on historical stream flow levels and areas of stratified drift in the watersheds. The USGS and URI collect known water use data from Water Supply Systems Management Plans prepared by major public water suppliers, other individual businesses that are metered, or by estimating according to predetermined formulas. The Block Island, the Wood-Pawcatuck and the Blackstone River basin studies have been completed and the others are in draft form. A statewide summary report is planned once all the basin studies have been completed. All water data is being compiled in a database under development by USGS for use by New England states. Once complete, the studies will provide important trend data to be compared to the findings and recommendations of the 1990 study titled *Water Supply Analysis for the State of Rhode Island* (later adopted as State Guide Plan Element 722).

Low flow Analysis

The Board is in the second year of a two-phased project to assess existing stream flow data, develop estimates and ultimately a web-based, stream statistics program compatible with the National Hydrologic Database (NHD).

WATER CONSERVATION

PUBLIC EDUCATION AND OUTREACH

The protection and conservation of the State's water resources for future generations can only occur through comprehensive stewardship practices that include both public education and community outreach. During 2004, public education and conservation activities included state agencies, watershed and conservation groups, and institutions of higher education. For example, working in conjunction with the RI Water Works Association (RIWWA), the Board promoted education and outreach activities during RI Water Week in May providing educational materials and tours of water utilities to elementary and middle school students.

Staff was invited to address environmental classes at local colleges and universities that resulted in both undergraduate and graduate students working on the water resource projects. During 2004 Brown University, Roger Williams University School of Law, and University of Rhode Island students took advantage of this opportunity. Student interns worked with staff on Board projects. Several completed projects were presented to the Board. For example, students actively participated on the Water Allocation committee to identify recommendations in the design of a statewide water allocation system.

The Board is very aware that public outreach includes informing members of the state legislature, state agencies, and municipal governments on the value of water. Throughout

2004, presentations, press releases and fact sheets were prepared and distributed providing information on the availability of supply of water in relationship to demand, the cost to produce water and maintain reliable infrastructure, the effect of water use on the environment, and the need to conserve the resource, especially during dry periods. Annual site visits to water suppliers provided an opportunity to provide conservation materials, and review of local concerns.

National education and outreach efforts include cooperative work with the National Oceanic and Atmospheric Administration (NOAA), education and information presentations at New England Water Works Association (NEWWA), and American Water Works Association (AWWA) sponsored events. During 2004, staff reviewed two rounds of NOAA's Bay-Watershed Education and Training (B-WET) Project proposals. The B-WET program is a competitively based program that supports existing environmental education programs, fosters the growth of new programs, and encourages the development of partnerships among environmental education programs throughout watersheds. Projects provide meaningful outdoor experiences for students and professional development opportunities for teachers in the area of environmental education. Public outreach through NEWWA and AWWA sponsored events provided current information and education materials to water suppliers and municipal planners, and the community at-large.

MANAGEMENT INFORMATION SYSTEMS "MIS"

The ability of the state to provide dependable, high quality water for multiple purposes, including economic development, is highly contingent upon having the technological means to do so. A critical management issue faced by the Water Resources Board is how to improve the collection, availability, and usefulness of water-related information, whether it is generated by government, the water supply community or other contributing sectors.

A water resources inventory is basic to a water management system (RIGL §46-15). It must be ongoing and expanded as additional information becomes available. This year, work progressed on a joint effort with the US Geological Survey and a private consultant to design and manage two databases for water data collected for the inventory as well as from Water Supply Systems Management Plans. The hydrologic database is called the New England Water Use Data System and is being populated with information from statewide water use studies as they are completed. The water supply plan database contains information from major public water suppliers that is required by regulation that is not captured in the water use database.

To supplement the baseline inventory and plan data, this year, the Board recommended that water quantity and use data be collected more frequently from major public water suppliers. The Board also recommended that minor public water suppliers and private, self-suppliers be asked to voluntarily contribute data. In the aggregate, analysis performed in these core databases will enable the Board to evaluate a broad range of water supply and demand scenarios. These information systems build the state's capacity to appropriately evaluate local, regional and statewide water resource needs and strengthen the Board's ability to inform local comprehensive planning and land use.

As a member of the RI Geographic Information Systems consortium, the Board is responsible for updating statewide geographic data for water district boundaries, water system transmission lines in roads, emergency interconnections, major facilities and pumping points. This data had not been updated for over ten years, though it is heavily relied upon by government and the private sector. Once all coverages are thoroughly reviewed, certain data layers will be updated, as permitted by law.

PROGRAMS

BIG RIVER MANAGEMENT AREA

PROPERTY MANAGEMENT

The Big River Management Area (BRMA) consists of approximately 8600 acres of open space. It is the largest, publicly owned, land parcel in Rhode Island. Its borders extend through portions of the towns of West Greenwich, East Greenwich, Coventry, and Exeter. Largely undeveloped, the land was originally condemned for water supply purposes. Some two hundred, single-family dwellings were once located there. The Board maintains leases on 39 residential properties, 3 commercial properties as well as the state-owned portion of Maple Root Corporation, a mobile home park. A survey of the BRMA to legally define and monument the boundary is nearly complete.

Today, the land is managed as Open Space, yet the BRMA's intended use remains water supply oriented. The property is largely managed according to recommendations put forth in a 1996 land use study. The report established guidelines for uses that would not impact future water supply including wildlife management, sustainable forestry, historic preservation, environmental education, and passive recreation. This year, Brown University developed a baseline inventory of the natural communities in the BRMA, the first phase of developing a management plan for the area.

The Water Resources Board maintains a solid relationship with nearby communities and residents living in the area by providing a broad range of educational and recreational opportunities in the management area. A multi-year, habitat restoration project on twenty acres is ongoing with help from the Natural Resources Conservation Service and a local farmer. Elementary school students have taken field trips to learn first-hand about the biology in the BRMA. The agency continues to take an active role in the planning, zoning and administrative decisions of the towns as they pertain to the BRMA.



AMGEN'S temporary parking lot built over gravel pit in BRMA

In 2004, the Board completed Phase V of a model forestry management program, on approximately eighty acres. The Board worked in partnership with Dr. Josef Gorres of the University of Rhode Island and the RI Dept. of Environmental Management-Forest Environment Division. The purpose of the project is to assess the effects of logging on



Capwell Pond, West Greenwich, RI

environmental quality. The intent is to improve the health of the forest, preserve diverse fish and wildlife habitat and protect the watershed. This effort is part of a larger undertaking to monitor soil quality, nutrient leaching and the impact on nearby wetlands. Phase VI of the selective cutting project will take place on the north side of Hopkins Hill Road, an area which has never been harvested.

AMGEN is the world's largest biotechnology company with a facility in West Greenwich, RI. During 2002, AMGEN received permission from the State to construct a temporary parking lot in the gravel pit. The firm employed best management practices to build the parking lot. In November 2004, the lot was removed.

AMGEN generously donated 600 trees, thousands of linear feet of drainage pipes and fencing, hundreds of bushes, dozens of parking lights, and other

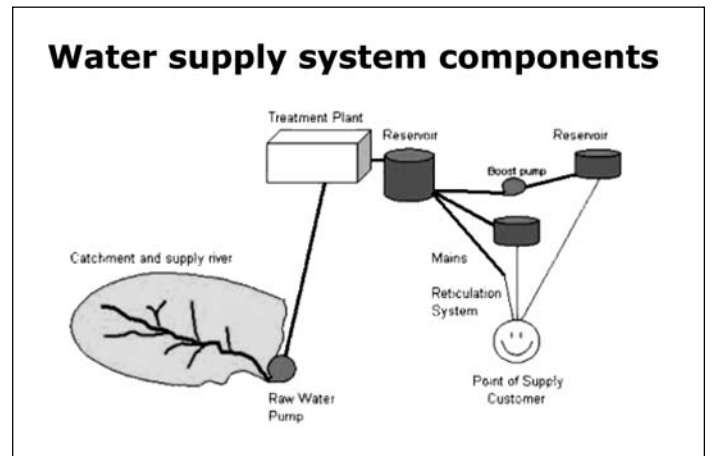
equipment to the towns of West Greenwich and Coventry, the RI Dept. of Environmental Management and the RI Dept. of Transportation. These donations have resulted in landscape improvements to public parks and roadside areas that will be enjoyed by Rhode Islanders and the general public for years to come. AMGEN will complete restoration of the area by planting grass in the spring of 2005. This successful project demonstrates the State's sincere efforts to support our growing industries as they become firmly established.

During 2004, the Water Resources Board has continued to work cooperatively with the US Geological Survey, undertaking groundwater investigations to supplement the state's water supply. As managers of the BRMA property, the Board must also maintain the area's roads and bridges. During 2004, portions of Congdon Mill Road were improved. Additional improvements include the installation of two security gates to discourage dumping in the area. The RI National Guard and the United States Marine Corps continue to utilize the property for vital training exercises in the interest of national security.

PROGRAMS

WATER SUPPLY SYSTEMS MANAGEMENT PLANNING

The Water Resources Board has administered the water supply systems planning process since 1997. Integrated with the RI Dept. of Administration's Comprehensive Community Planning process, the Water Supply System Management Planning (WSSMP) program works with 28 water suppliers that produce over fifty million gallons of water per year to prepare 5-year plans. The plans must be updated every 5 years with a 30-Month Interim Report required at the halfway point. These plans contain historical and current system data including source water, infrastructure, production information such as safe yield, volume of water withdrawn, water use by category, and watershed protection. The information from these plans and updates is used to manage and forecast water supply and demand.



Watershed schematic provided by Touranga Water System, New Zealand

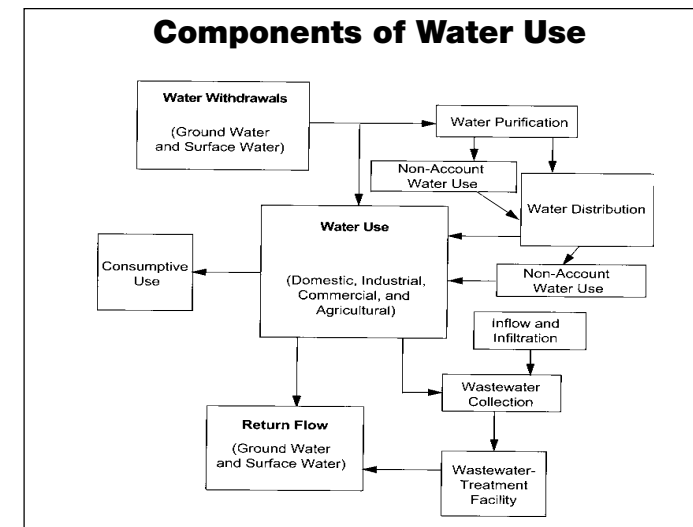
Hydrogeologic Models: Optimizing Water Use

The Board is conducting specialized modeling activities in the Usquepaug-Queen sub-basin of the Wood Pawcatuck watershed (published December, 2004), the Big River Management Area and the Blackstone River basin. A future study is planned for the Chipuxet sub-basin. The Board is in the final year of a contract with USGS and the Natural Resources Conservation Service (NRCS) to create an optimization model in the Wood-Pawcatuck. These models evaluate the effect of present and future water withdrawals by public suppliers, industry, agriculture, and other water users on stream flow and water supply. Various rates of population growth, pumping, and stream flow can be plugged into the model to evaluate alternatives for future water use. The optimization model study for the Hunt River aquifer was completed and published. The model illustrates various scenarios by which groundwater withdrawals [pumping] can be managed to minimize stream flow depletion and maximize supply.

Drought Planning and Management

The Water Resources Board continues to take a leadership role in drought management. During this past year, the Board has assessed conditions on a monthly basis. For example, the monthly report is prepared consolidating information from the National Weather Service, Climate Prediction Center and the US Geological Survey. The ongoing monitoring compares current conditions to an "average" year. It is important to note that if drought conditions had occurred, a Drought Steering Committee comprised of state agencies, suppliers, academics, and scientists would have been convened by the Water Resources Board to prepare recommendations for the Office of the Governor. The collaborative drought management and planning process pools resources, minimizes duplication of effort, coordinates response and provides a forum for ongoing assessment of drought conditions, impacts and mitigation strategies.

Together, these initiatives assist state agencies and local communities to make projections regarding threatened sources, anticipate water shortages, and resolve potential water demand disputes. They provide valuable guidance for major capital improvement projects, residential growth and economic development consistent with state and local policies and plans.



USGS Water Use and Availability Studies, Commissioned by RIWRB

As of September 2004, all 28 WSSMP have been approved. Plan approvals for 2004 include the University of Rhode Island (an institutional supplier), Portsmouth Water District, Bristol County Water Authority and the Woonsocket Public Works Department. In addition, 30-month Interim Reports have been approved for the Greenville Water District, Jamestown Water Division, Narragansett Water Department, and the Pawtucket Water Supply Board. Technical assistance and conservation education materials have been distributed to water suppliers on a regular basis throughout 2004. Staff participate in RI Water Works Association and New England Water Works Association meetings to maintain the open dialogue between the Board, water suppliers, and the community.

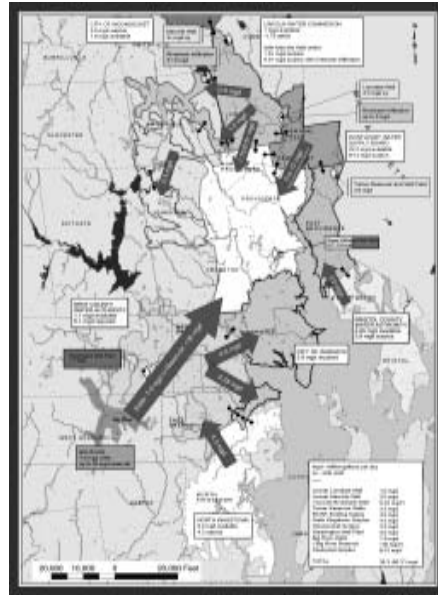
The WSSMP program continues to work with the RI Departments of Administration, Statewide Planning Program, Environmental Management, Division of Public Utilities, and Health in the review and comment on plans. This program coordinates water supply management planning with local comprehensive planning, infrastructure plans, intergovernmental project reviews, new source approvals, and regional water supply analysis and forecasting. During 2004, staff participated in emergency management exercises sponsored by the Department of Health and the RI Emergency Management Agency.

PROGRAMS

SUPPLEMENTAL WATER SUPPLY STUDY PHASES I and II

During 2004, the Water Resources Board joined the Providence Water Supply Board to evaluate options for developing supplemental water supplies for the central service area of the state. Phase I of the study identifies sources and systems capable of augmenting up to 40 million gallons of water per day in emergency circumstances. The study identifies a combination of nearby water system interconnections and new or abandoned groundwater sources to sustain emergency water demand for over 600,000 people served within the central portion of

the state in case of failure in the Scituate Reservoir system. Phase II of this study extends to include the state's remaining water supply service areas. Initiated by the Board, the results will identify potential methods for supply augmentation for individual water systems, as well as provide additional information to support the Emergency Interconnection, Water Allocation, and the Water Supply Systems Management programs.



Alternative Water Supply Options

WATER FACILITIES ASSISTANCE

Since 1983, the Water Resources Board has administered a grant program to finance up to 50% of design and construction costs for new public water supply facilities. Funding for this program is provided through periodic general obligation bonds passed by statewide voter referendum. To date, over twenty major system improvements benefiting fourteen water districts have been funded. The program allowed construction of the Bristol County Water Authority (BCWA) interconnection to the Providence and East Providence water systems, relieving the historically troublesome supply problems for Barrington, Bristol and Warren. The Board continues to work with BCWA regarding rehabilitation of aging supply, transmission, and treatment facilities. The Water Facilities Assistance Program has been a model of cooperation between state government and local water suppliers.

During 2004, work continued to complete construction on a 12-million gallon addition to the Providence Water Supply Board's Longview Reservoir, a 3-million gallon, water storage tank, and the upgrade of three major pump stations. Funded through revenue bonds sold by Board Corporate, the work addresses the inadequate water pressure in the high service area and fire protection in the downtown Providence retail district.

EMERGENCY INTERCONNECTIONS

The Water Resources Board is working with all major public water suppliers throughout the state to establish much needed emergency interconnections between systems. Emergency water System interconnections provide redundancy of supply and the ability to address water emergencies rapidly and efficiently across water supply districts should they occur.

This innovative program was implemented in 1999. Ten interconnections have been constructed to date and three more are under construction or under agreement, representing grants of \$5 million dollars. The North Tiverton Fire District continues constructing an interconnection with Fall River, Massachusetts. This project provides the ability to supply redundancy to the Stone Bridge Fire District treatment plant at Stafford Pond. This project is a cooperative, regional effort between Rhode Island and Massachusetts, and ensures that water will be available should an emergency occur. The second project will provide emergency water resources to South Kingstown from United Water of Rhode Island. Finally, during 2004, the Martin Street reconstruction project will connect Lincoln and Cumberland, and is scheduled for completion in 2005. The Rhode Island Water Resources Board has been recognized for this innovative program, with many states expressing interest in developing a similar program. This program is funded with general obligation bond dollars. The goal is to continue until all water supply systems in the state have secondary water supply sources available should an emergency occur.



Tiverton Fire District Interconnection at Fall River

PROTECTION

PUMP CENTER INVESTIGATIONS & GROUNDWATER RESOURCES PROTECTION



USGS Groundwater Drilling Team

The Board encourages responsible development and management of the state's groundwater resources and encourages efforts to minimize stream flow depletion during summer months and drought periods when stream flow can be critically low. As early as the 1970's, the Board recognized the need to provide redundant, alternative and/or additional supply in those areas of the state that are groundwater dependent and growing rapidly. In cooperation with the US Geological Survey (USGS), the Board identified 33 potential high yield wells that were capable of producing at least one million gallons of water per day. Hydrologic well testing continued by drilling 8-inch production wells and 2-1/2-inch groundwater observation wells, as well as aquifer testing and mapping. These well sites are located

in the Wood-Pawcatuck Watershed, a sole source aquifer in Washington County.

In 2004, the Board continued well site research and investigations, which also included well drilling, water quality testing and mapping. The Board appraised and initiated negotiations for five sites, seeking to protect these sites from future development. Also, during 2004, the citizens of Rhode Island approved \$8 million in general obligation bonds to fund this important program and preserve future drinking water supplies. The Board works collaboratively with other state and local agencies to leverage funds and maximize the amount of land protected.

PUBLIC DRINKING WATER PROTECTION PROGRAM

This popular program is often referred to by municipal water suppliers as the "penny per hundred" program. For every one hundred gallons of water delivered [by major water suppliers] one cent is collected and set aside for land acquisition or for water quality improvement projects to protect the quality of drinking water supplies. Each water supplier participating in this program must spend a minimum of 55% for land acquisition – the primary protection activity. Examples of other projects that contribute to improved water quality include nonpoint source pollution or run-off prevention measures, treatment facility upgrades, water main cleaning or relining, and even the purchase of water conservation kits or watershed signage.

Since 1994, the Board Corporate successfully administered Phases I & II of the program, which consisted of disbursing \$18,343,382. Of this total \$13,614,265 protected 2,410 watershed acres through land acquisition or purchase of development rights. \$244,254 was spent to develop watershed protection plans and \$4,484,863 was spent on forty-nine water quality improvement projects. These results reflect significant progress toward protecting the quality of the state's drinking water resources investing 78% of the total funds for land protection.

In November of 2002, the state issued approximately \$7.2 million in new bonds for Phase III of this successful program which will run through February of 2006. In 2004, \$1.14 million (61%) protected 144 acres of watershed land through land acquisition or purchase of development rights. An additional \$740,000 funded eight water quality improvement projects for six water supply districts.

Protecting the quality of the public drinking water supply—not only for today, but also for future generations—is an on-going challenge. The success of this program is made possible through the partnership and cooperation of land conservation groups and the water supply community. The Board is appreciative of all those who played a role in helping the agency reach these goals.



Water Quality Protection Check Presentation in Pascoag, RI (left to right) Ted Garille, M. Paul Sams