

People Who Help Make It Happen on the Charles

The work highlighted in this report is made possible through the generous support of more than 3500 CRWA donors and volunteers. We regret that space limits us from listing all our members here, but we extend our deep appreciation to everyone who contributed to CRWA in the Fiscal Year ending September 30, 2000. Special thanks to employers who match their employees' gifts or who participate in a work-place-giving program through the Environmental Federation of New England.

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ANNUAL REPORT

Charles River Watershed Association 2000

Applied Science



A half dozen years ago, as we set out to better understand the ecology of the Charles River watershed, our objective was to develop the scientific base necessary to insure a cleaner, healthier Charles River. Much of our focus remains on building information and refining our understanding. In fact it's unlikely we'll ever get to the point where we know enough. The challenges of a metropolitan ecosystem are myriad and complex.

Our focus has been shifting, however, to include major efforts to apply the science and methods we have developed to better manage the watershed. We have looked for sites to demonstrate ways to make urban and suburban landscapes work in harmony with the river that runs through, such as in Holliston, Medfield, Franklin, Cambridge, and Boston.

In this undertaking, fiscal 2000 was an exciting, frustrating, and challenging year for CRWA. Staff capacity and our facilities were stretched, and we learned a lot about what it means to create and promote sustainable approaches to growth and development.

We discovered that the issues of awareness and education associated with new approaches to old environmental problems are as important as solving the problems themselves. The Holliston wastewater treatment plan is a good case in point. We learned the importance of anticipating the reactions of neighbors, and developing a "glass box" approach to our work to keep a large segment of interested organizations and individuals aware of the effort, and opening the process of data acquisition and computer model configuration to scrutiny early on. We remain committed to our environmental zoning work in Holliston. With a strong committee of interested residents, we expect to introduce new zoning by-laws based on our environmental resource and hydrologic assessments to Holliston Town Meeting in May, 2001.

Believing our approach of sound science and focused advocacy can help resolve environmental issues in most watersheds, we created the Watershed Technology Consortium. The consortium is a group of 13 watershed organizations across Massachusetts, Rhode Island, Connecticut, Vermont, and New Hampshire. With foundation support, CRWA was able to provide consortium members equipment and personnel training this past summer to help them develop their technical capacities. Together, we will pursue environmental resource assessments and hydrologic analyses across the state and New England, helping raise awareness about the impacts of development on water resources, habitat, and quality of life.

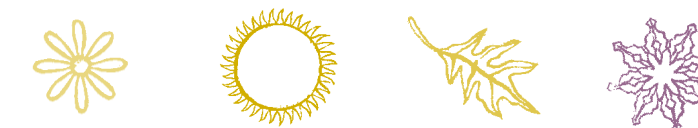
We broadened our own capabilities, as well. Early this summer, we added Mary Crain Penniman to our staff. With degrees in horticulture and landscape design, she is leading our efforts in ecological design and river access, spear-heading our opposition to the conversion of public parkland and conservation land to other public or private uses, and working on parkland restoration and rehabilitation. We added Margaret Van Deusen as Deputy Director and General Counsel. She is responsible for our environmental zoning work, and brings a wealth of legal insight and information to all of our projects.

Whether exciting, frustrating, or challenging, fiscal 2000 has been a year of CRWA initiatives beginning to take hold. Our influence has been felt throughout the watershed and across the state. We're changing water policy, protecting open space, enhancing parks, and redesigning our cities. We're making a real difference.

We also want to take a moment to thank outgoing directors Charlie Lord, and Geri Payne who made enormous contributions to the governance of CRWA, to the river, and the environment. We also want to wish Marty Sender, a board member since 1993, a speedy recovery. We miss his insights, humor, and advice. Finally, we want to wish staffers Pam DiBona and Kate Bowditch the very best in their new endeavors. We'll always have a place for them on the Charles.


 Bob Zimmerman
 Executive Director


 Kelly McClintock
 President



STATE OF THE RIVER 2000

a year in review

By Kathy Baskin, CRWA Project Manager

Water Quality

Since 1995, when the Charles River Watershed Association (CRWA) began monitoring the Charles and the U.S. Environmental Protection Agency (EPA) ordered lower watershed municipalities to clean up their discharges, nearly 0.4 billion gallons of sanitary waste have been removed from the river each year. The Massachusetts Water Resources Authority has removed another 1.4 billion gallons per year of combined sewage, a mixture of sanitary waste and stormwater since 1988. As a result, our data indicates that the basin now meets the state swimming standard for fecal coliform bacteria 58 percent of the time, compared to 53 percent of the time in 1998 (figure 1).

In addition to tracking fecal coliform contamination on a monthly basis, we have begun to examine other pollutants affecting our enjoyment of the river. A serious offender is phosphorus, which makes our lawns flourish and our waterways soupy green. Phosphorus in the Charles originates from treated wastewater effluent, stormwater runoff from lawns and agricultural land, poorly functioning septic systems, pet waste, and the atmosphere. This nutrient causes algae blooms, the proliferation of aquatic vegetation which can lead to fish kills, objectionable odors, and inhibited recreational access.

Lakes and impounded areas with harmful amounts of phosphorus and nitrogen are called "eutrophic". With eutrophication occurring at phosphorus levels of 0.05 milligrams per liter or higher, we examine our data to determine the stretches of the

river most at risk (Figure 2). Phosphorus levels in the headwaters of the Charles are low but sharply increase downstream of the wastewater treatment plants in Milford and Medfield. Concentrations decrease in the Lakes District of Newton and Waltham where the water slows and phosphorus feeds the lush vegetation clogging the river.

This year, EPA took a bold step forward in reducing the amount of phosphorus in the river when it drafted renewals of permits for the six wastewater treatment facilities that discharge treated effluent to the Charles or the Stop River, a Charles River tributary. The treatment plants were ordered to reduce phosphorus concentrations in their effluent by 80 percent, from concentrations of 1.0 to 0.2 milligrams per liter. This is a key step toward controlling nuisance vegetation and algal growth in the river. CRWA will continue to monitor phosphorus levels in the river, advocating a significant reduction in the coming years.

Streamflow

During the Drought of 1999, Charles River tributaries ran dry and wastewater effluent represented nearly 90 percent of the river's flow at the U.S. Geological Survey's Dover streamflow gage. Upper watershed communities carefully monitored groundwater levels in municipal wells and water bans were in effect. So why were there still water bans this summer during the Downpour of 2000?

There are several reasons why the plentiful rainfall this summer did not lead to an overflowing river and gushing wells. First, replenishment of an aquifer occurs over months and years rather than days and weeks. So, rain this summer helped to offset the lower precipitation of the preceding seasons. Second, during intense storms, more rain runs directly into the river and tributaries from streets and open spaces, leaving less water to soak into the ground as recharge. Third, more of the rain is evaporated and used by plants during the summer, leaving even less available for river flow or groundwater recharge. For instance, there was much less flow in the river following a 4-inch rainstorm on June 6 than after 2.5 inches of rain between April 21 and 22 (Figure 3). These natural conditions, coupled with high water use of summer, means that less water than one would expect was available as baseflow to the river or as water supply.

The key to maintaining groundwater supplies and keeping our rivers flowing is to recycle rainwater. While we certainly can't control if or when it will rain, we can capture precipitation, allowing it to infiltrate to the groundwater. CRWA has been working hard to do just that by insisting that developments include infiltration systems in their designs and by advocating for the preservation of forested and open areas.

Figure 1
Percent of Time CHARLES RIVER BASIN Meets State Water Quality Standards

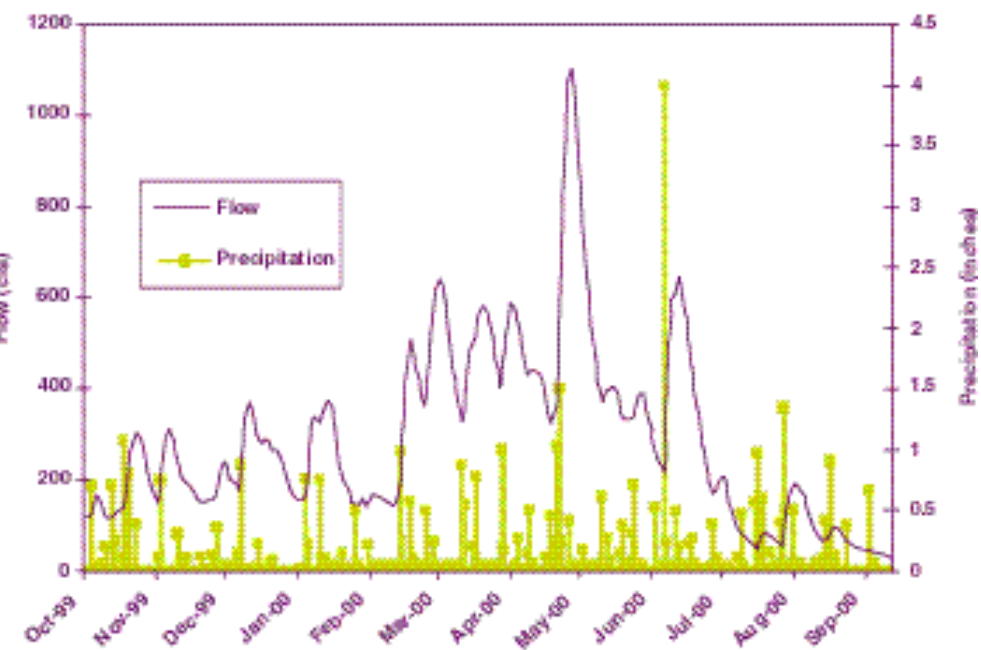
	2000 ¹	1999 ²	1998 ³
Overall			
Boating	90	92	84
Swimming	58	64	53
Dry Weather			
Boating	96	98	97
Swimming	74	77	59
Wet Weather			
Boating	87	86	72
Swimming	47	50	26

2000 Project funded by US-EPA, MDC, BWSC, Stop and Shop, and Triumvirate.
1 Data collected from June 20 - October 13, 2000.
2 Data collected from May 24 - October 22, 1999.
3 Data collected from May 11 - October 16, 1998.

Figure 2
Total Phosphorus Levels (October 1999 - September 2000)



Figure 3
Flow in the Charles River at Dover Gage (October 1999 to September 2000)



ACCOMPLISHMENTS

In its 35th year of advocacy for the Charles, the Charles River Watershed Association continued to mark improvements in the health of the Charles and provide national leadership in watershed management, as recognized by U.S. Environmental Protection Agency, Natural Resources Defense Council, and River Network. We are most proud of our accomplishments in the areas highlighted below.

sustainable development

CRWA secured funding to provide 13 watershed organizations in southeastern New England with practical tools for checking uncontrolled development. The CRWA-led initiative is providing training and computer equipment for assessing open space priorities and the impacts of development on water resources to help communities form state-required Community Development Plans.

science-based management

Data collection and computer modeling are key elements in two innovative research projects in the Upper Charles. CRWA, in partnership with U.S. Geological Survey, is wrapping up the data collection phase and initiating modeling in order to recommend strategies for reducing harmful nitrogen and phosphorous loads, increasing river flows, and improving regional water management in the upper watershed.

laboratory certification

CRWA's in-house lab received certification from the Massachusetts Department of Environmental Protection for testing total suspended solids, pH and biochemical oxygen demand. Certification for microbiology is pending. This year the lab performed 2250 water quality tests in support of our river monitoring program and for other watersheds.

mobilizing activists

In cooperation with Massachusetts Community Water Watch, CRWA organized a massive Earth Day Charles River Cleanup that mobilized over 800 volunteers. The unprecedented event involved over a dozen cleanup sites along 67 river miles from Boston to Bellingham.

water quality monitoring

Over 80 dedicated volunteers helped us complete our fourth full year of monthly water quality monitoring along the entire length of the Charles. U.S. Environmental Protection Agency uses the data for its annual Charles River "report card." The data also guide the decisions of organizations and environmental agencies related to control of illicit connections, stormwater, and combined sewer overflows.

environmental zoning

CRWA completed an environmental assessment for a zoning plan in the Town of Holliston that could link future growth to sustainable water supplies. The assessment used the Geographic Information System to map areas of developable land that are critical for recharging (replenishing) aquifers. We also calculated a "water budget" for the town showing the impact of various levels of development on water resources. The project was featured in "Developing for the Future: Hometown USA," published by U.S. Environmental Protection Agency's Office of Business and Community Innovation.

education and outreach

CRWA sponsored a major conference at Brandeis University on compliance with the second phase of federal stormwater regulations, and co-sponsored with U.S. Environmental Protection Agency a conference on pathogen risks in recreational waters. Our two public forums on environmental zoning in Holliston focused attention on the need for land use planning for water resource protection. We also continued outreach to schools and community groups, educating them on watershed issues and tools.

constant vigilance

In many cases, CRWA is the only protective voice for the river in the state's environmental review process of building plans in the watershed. This year we reviewed and critiqued nearly 30 building plans with potential impacts on the river. Project proponents' plans were changed in many cases to reflect our recommendations to minimize pollution and to recharge aquifers connected to the Charles.

color-coded flags

Boaters in the Charles River Basin benefited from CRWA's third season of signaling water quality conditions with color-coded flags. Red flags warn boaters of dangerous bacteria levels during warm weather months while blue flags signal suitable conditions. Flags were hoisted at nine boathouses and reported regularly on WBZ-4 newscasts, CRWA and boston.com websites, and CRWA's hotline publicized on the Boston Globe's weather page.

Run of the Charles Canoe and Kayak Race

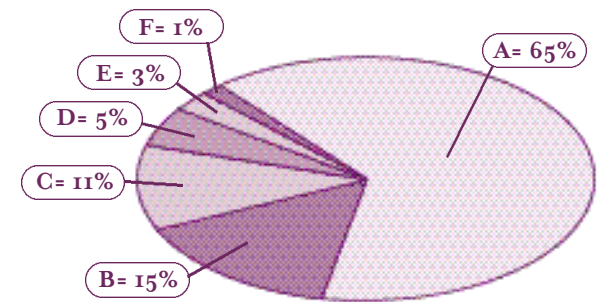
Over 1500 competitors paddled in the 18th annual Run of the Charles Canoe and Kayak Race on April 30th. This popular event enhances public appreciation of the river as a recreational resource.

Canoe and Kayak Guide

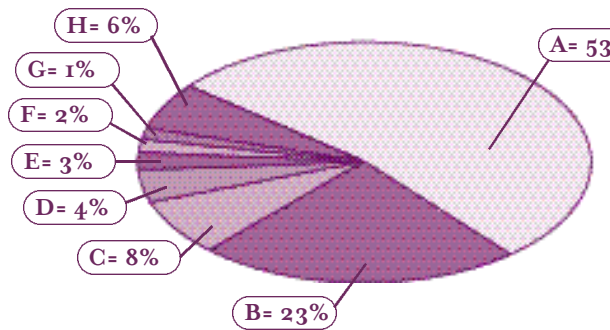
To encourage recreational use of the improving Charles, CRWA published a new Charles River Canoe and Kayak Guide with state-of-the-art maps and access information. Printed on waterproof paper, the pocket-sized guide was distributed free to members, and as a fund-raiser through area retail outlets.

Financial Highlights for Fiscal Year 2000

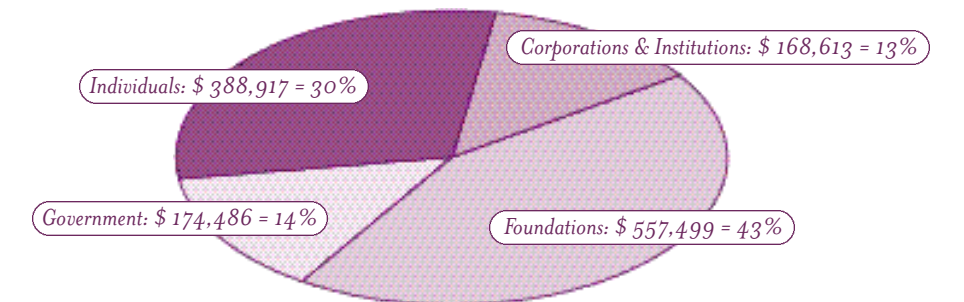
Revenue	
A Restricted Grants	792,525
B Donations	183,152
C Membership	135,484
D Programs and Events	66,139
E Unrestricted Grants	32,519
F All Other	18,337
Total Revenue	\$ 1,228,155



Expenses	
A Payroll Expenses	641,788
B Contract Services	281,264
C Printing & Supplies	93,386
D Occupancy & Depreciation	52,470
E Utilities & Telephone	31,914
F Postage & Delivery	20,004
G Equipment & Repairs	15,751
H All Other	78,006
Total Expenses:	\$ 1,214,583
Net of Revenue and Expenses	\$ 13,572



Major Sources of Operating Funds



Government:

Boston Water and Sewer Commission
 City of Cambridge Water Department
 MA Dept. of Environmental Protection
 Massachusetts Environmental Trust
 Metropolitan Area Planning Council
 Metropolitan District Commission
 Natural Resource Conservation Service
 US Environmental Protection Agency

Corporations & Institutions:

American National Power
 Boston Duck Tours
 Boston University
 Hitachi Computer Products
 e-memories.com
 Nantucket Nectars
 Northeastern University
 Pacific Gas & Electric
 River Network
 Ski Market
 The Stop & Shop Supermarket Co.
 Triumvirate Environmental

Foundations:

Anonymous
 Island Foundation
 Henry P. Kendall Foundation
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 Richard Saltonstall Charitable Foundation
 The Silver Tie Fund
 Surdna Foundation