

NARRAGANSETT BAY JOURNAL

News and Information on the Bay and Its Watershed

Cleaner Waters in the Pipeline \$550 Million Project Launched

Jamie Samons

Two hundred and fifty feet below the streets of Providence, crews are blasting through bedrock to build a tunnel three miles long. No cars, trucks, or trains will traverse this tunnel—rather, its sole purpose is to store 62 million gallons of wastewater until it can be treated.

The project is expected to take 20 years and cost \$550 million, but it will cure one of the most intractable problems facing Narragansett Bay: 2.2 billion gallons of untreated wastewater—including raw sewage—that flow into the Bay each year from combined sewer overflows, or CSOs. The CSO problem has prompted the permanent closure of 27,000 acres of shellfish beds and a number of upper Bay beaches.

The tunnel is the centerpiece of a project to bring upper Narragansett Bay into compliance with the federal Clean Water Act of 1972. Begun in January, it is

the first stage of a massive three-phase cleanup by the Narragansett Bay Commission (NBC), which provides sewer services to urban areas around the upper Bay. When complete, the system will consist of 5.5 miles of underground storage tunnels and another 5.5 miles of large near-surface collector sewers—like an interstate highway system, collecting wastewater from “local roads,” the smaller lateral sewers. In addition, two disinfection facilities and an artificial wetland will be built; combined sewers will be replaced in 12 areas by systems that separate sanitary wastewater from stormwater. Financed primarily by businesses and residences whose wastewater is treated by NBC, with additional funding from the state and federal governments, the project will ultimately eliminate CSOs—discharge points where excess stormwater and untreated sewage

—*Cleaner Waters page 4*



Six miles of concrete pipes will be required for Phase II of the combined sewer overflow abatement project. Photo: Narragansett Bay Commission

Watershed Issue

- Page 3
Hidden Assets of Sailing
Luther Blount Profile
- Page 8
Herring Migrate by Truck
- Page 9
Visitors on the Bay
Warming Bay Affects Fisheries
- Page 10
Blackstone River Revival

Testing the Water: Scientists Survey Swimming Areas, Improve Alerts

Margherita Pryor

Each summer, millions of people visit the beaches of Rhode Island, confident that the water is safe for swimming. Generally, it is, but clean water is nothing to take for granted. As water quality has improved in Narragansett Bay, scientists and health officials have become more aware of potential threats to public health caused by water pollution. To better protect swimmers, the water at Bay beaches will be tested more frequently this summer than in past years. And at a number of locations, a new flagging system will warn beachgoers when it's best to stay out of the water.

The issue is far from trivial. An estimated 67 percent of Rhode Islanders visit the beaches of Narragansett Bay, as do many

—*Swimming page 5*



Students from Community Preparatory School in Providence clean Conimicut Point Beach in Warwick, Rhode Island, one of the upper Bay beaches monitored for contaminants in the summer. Photo: NBJ

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The *Narragansett Bay Journal* welcomes letters, articles, photographs, story ideas, drawings, and cartoons. The *Bay Journal* is free. Bundles are available for distribution.

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The Partnership for Narragansett Bay is a public/private partnership created to promote watershed-based planning for Narragansett Bay and coastal Rhode Island; coordinate actions to protect and restore coastal ecosystems; engage the public in articulating a vision for the future of Narragansett Bay; support informed, science-based decisionmaking; and foster sustainable economic development for Narragansett Bay and coastal Rhode Island. (www.ci.uri.edu/projects/pnb)

The Narragansett Bay Estuary Program is one of 28 National Estuary Programs established by Congress under the Clean Water Act. Its purpose is to protect and restore Narragansett Bay and its watershed through collaborative action and sound science. (www.nbep.org) Program contact: Richard Ribb, Director, (401) 874-6233, rribb@gso.uri.edu.

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from the EDITOR

Voices on the Bay

What is Narragansett Bay? The question seems simple enough. But if you asked a dozen people, you'd probably get as many answers.

To the geologist, it's the footprint of three ancient valleys, drowned when the Wisconsin ice sheet melted more than 10,000 years ago. To the fisherman, it's a harvest ground, largely unseen but intimately understood, its bounty mobile and elusive. To the sailor, it's an ever-changing chessboard, the interface of two unpredictable elements. To the tanker captain, it's a highway and refuge. To the child, it's just "the ocean," an endless mass of water as far as the eye can see.

The answer would differ, too, if you asked the question at different times or locations. In August, from the summit of the Newport Bridge, the Bay is a glittering jewel. From the ice-sheathed wheelhouse of a pitching lobster boat, it's a life-threatening force, powerful and malevolent.

Salt water from the Arctic ice edge carried south along the coast of Canada with the Greenland Current. Piles of snow from Smithfield, melting, flowing through maple swamps and down the Woonasquatucket River. Wastewater from Worcester, Providence, and dozens of other cities and towns, treated and discharged into every major river on the Bay. Runoff from Bristol; groundwater from North Kingstown. All meet and mix and become the Bay, residing there for only a month or so before being swept out to sea, replaced by fresh and salt water from equally far-flung sources, coursing down the rivers, surging in on the flood tide.

So perhaps the question isn't so simple, after all. Maybe the answer is as complex as the Bay itself—currents and tides, rocks and shoals, fish and invertebrates, plankton, seaweed, mammals, and birds. Maybe it's as multifaceted as the millions of us who go down to the Bay in all weather, to walk its shores, sail its waters, take its fish, cross its bridges, and the myriad other reasons that bring us there. Perhaps the only way we can begin to answer the question is by looking at the Bay from many angles, reporting on it from a variety of perspectives. That is the purpose of the *Narragansett Bay Journal (NBJ)*.

This is the first issue of *NBJ*, which will be published quarterly by the Narragansett Bay Estuary Program (NBEP). It is not to be a newsletter of NBEP or any other organization or program. Rather, *NBJ* will cover many aspects of the Bay—ecology, commerce, history, science, and culture. It will describe the Bay's waters and watershed, from Worcester to Point Judith. *NBJ* will serve, and report on, people who study Narragansett Bay, work on it, play on it, and those who simply care about its future.

NBJ will solicit articles from all quarters and welcome unpaid submissions from authors. We will not shy away from controversial topics but, where there is controversy, will earnestly try to reflect all views.

NBJ is your paper, and will be as good and as useful as you help us to make it—by sending us articles, calling us with story tips, letting us know what you like or don't like about it. And slowly at first, issue by issue, story by story, the answer to our question will begin to emerge—complex, multifaceted, a work in progress, like the Bay itself.

So what, then, is Narragansett Bay? As long as people continue to use and see the Bay in new ways, the answer can never be complete. Just as Roger Williams couldn't have envisioned our perception of the Bay, we can't imagine its meaning to generations hence. It is our hope, however, that this new publication can contribute to our collective understanding of this remarkable body of water, and will improve our understanding of one another as well.

—TA

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Sailing Industry Provides Economic Lift

Townsend Goddard

Narragansett Bay, with its steady southwest breezes, deep channels, and scenic shorelines, is a sailor's Mecca. So naturally, the Bay is a setting for a variety of marine-related events, from boat shows and tall ships' parades to sailboat races of all kinds. Not only do these events add to the richness and interest of life in Rhode Island, they add a tangible but often overlooked result—economic benefits for southern New England's tourism and marine trades industries.

The region's marine trades depend on sailing and other marine-related events for their growth and international competitiveness. Demand for America's Cup boats, for example, stimulated the development of the Herreshoff Manufacturing Company in the late 1800s in Bristol, Rhode Island. The legacy of the Herreshoff Company can still be felt in Bristol, home to some of this generation's finest boatbuilders—Goetz Custom Sailboats, Carroll Marine, and TPI Composites—and the America's Cup Hall of Fame.

"The direct economic impact [of marine events] is important," says Justin Smith of Sparcraft Hardware, a Portsmouth-based marine manufacturing company, "but major sailing events also provide many indirect



The J24 World Championship, hosted by Sail Newport and Ida Lewis Yacht Club, is considered to be one of sailing's elite one-design championship races. Photo: Onne van der Wal

benefits, such as adding credibility to the local marine trades industry and keeping the industry in close contact with actual and potential customers."

Major sailing events also bring worldwide recognition to Rhode Island as a tourist destination.

"To have the Around Alone Race (see page 11) back in Rhode Island is like having a series of advertisements taken out in the European press, where single-handed sailing holds attention as baseball does

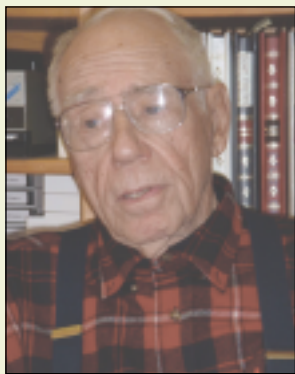
here," says Smith. The relationship is symbiotic, with the industry benefiting from the events, and vice versa, he said.

"Great sailing and great atmosphere attract events to Rhode Island," says Robin Wallace of the State Yachting Committee, "but the local cluster of world-class marine industries provides the backbone for such events."

—Sailing Industry page 11

Luther Blount

Andy Burkhardt



Luther Blount
Photo: Andy Burkhardt

When it comes to Narragansett Bay, Luther Blount has been around the block, so to speak.

Blount, 85, still reports to work every day at his family's cluster of businesses on Water Street in Warren, where 52 years ago he started building ships.

At one end of the street is Blount Seafood, which Luther's brother Nelson started in 1946. Nelson was killed 35 years ago in a plane crash, but the family still owns the company, which supplies Campbell Soup with clams for its chowder.

In the middle of the block is the shipbuilding business Luther started, which has built 309 ships, from tugboats to ferries to small cruise ships. That would be 310 vessels, if you count the five-foot-long craft Blount built recently as a "walking boat" to enable him to walk his way to where the fish are.

And at the southern end of the street is the American Canadian Caribbean Line, another Blount company, which uses Blount ships to take tourists to destinations like Quebec City, Trinidad, and many places in between. One recent spring morning, Blount began his day by greeting one of his returning ships, *Grande Caribe*. He played the "Star Spangled Banner," "Anchors Aweigh," and other tunes on his trombone for the returning tourists. About 6,000 people a year begin or end their cruises at Blount's dock on the Warren River.

Blount lives in a house ("bachelor's quarters," he calls it) that he has fashioned at the southern end of the compound. He pedals about the compound on his bicycle with a front basket, reminiscent of Miss Gulch's bicycle in *The Wizard of Oz*.

Blount is something of a wizard himself. On one level, he is simply a businessman, talking about how to shave costs without losing quality. But his absorption with his businesses goes well beyond money. There is something of the engineer in this 1937 graduate of the Wentworth Institute of Technology when he talks about improving the mechanical efficiencies of systems. And there is definitely something of the inventor in his repeated phrases, such as "I discovered," "I learned," and "I was curious."

Blount, who holds patents on 21 inventions, recalls building his first invention when he was in seventh grade. It was a crude sort of steam engine that he made from a tin can, an alcohol burner, and a paddle wheel. When he proudly showed it

to his father, Willis E. Blount, his father replied that he was too late, someone had already invented the steam engine.

Young Blount did not have a lot of time for dreaming in his Depression-era youth. He would get up at 5 a.m. every day to work in his father's icehouse in Barrington and again after school. Luther remembers standing in the icehouse, watching the multitude of dials, being told that he couldn't let the ammonia pressure, for example, drop below the danger point and being terrified by the complexity of the dials and the weight of responsibility. As an adult, he vowed that his inventions would always try to simplify processes.

In his office hangs a color photograph that Blount took of one of his ships landing on the beach in San Salvador, in front of the monument marking the spot where Columbus made landfall in the New World. The photo, with its brilliant azure hues, is instructive in several ways. In the center is a shallow-draft cruise ship, invented by Blount, that could run up on a beach, like a World War II landing craft, and disgorge tourists instead of soldiers through a bow section that flipped forward onto the beach.

With this invention, first tried in Narragansett Bay, Blount opened new worlds in the cruise business, enabling him to eschew some deepwater ports for more off-the-beaten-track islands. Blount the inventor feeding Blount the entrepreneur.

At an age 20 years past when most people retire, Blount says he has throttled back some. Last year, he "rented" (as he puts it) the shipbuilding business to James Barker, a 37-year-old shipbuilder from Ohio. Two months later, he turned over operation of his cruise line to his daughter Nancy. He complains occasionally of the infirmities of age, but he can still make the table shake when he slaps his hand down to emphasize a point.

And his vision is still forward-looking. He has an itch to resume an aquaculture project—growing oysters—that he tried several years ago on some land he bought on Prudence Island. Though he says he's too old to do it, he seems irritated enough that someone else hasn't that he may jump back in. (Last year he gave the University of Rhode Island \$300,000 to help build an aquaculture research lab.) And then there's that personal foot-powered fishing boat. He used aluminum for the frame, foam for the inside and fiberglass for the shell, a technique he has thought for years would work for larger vessels. Oh, yes. He'd like to build a paddlewheel cruise boat, of the type that used to ply the Mississippi and Ohio Rivers, which he thinks he can build with a power plant 30 to 40 percent more efficient... And so on. Luther Blount goes on.

— Andy Burkhardt recently retired as City Editor from The Providence Journal, where he worked for 37 years.

NARRAGANSETT BAY PROFILE

Cleaner Waters

flow directly into the tributaries of Narragansett Bay including the Woonasquatucket, Mossashuck, Blackstone, West, Providence, and Seekonk Rivers.

For the past 100 years, CSO's have discharged a mix of stormwater and untreated human waste into Narragansett Bay. This primitive system was, a century ago, the cutting edge of clean-water technology. Prompted by a cholera epidemic in Providence, the Field's Point Wastewater Treatment Plant was built in 1901. It was one of the country's first and largest sewage treatment facilities, a design borrowed from the most advanced facilities in Europe. Although the plant itself has been continually updated, the piping system that feeds it is obsolete, and therein lies the problem.

The pipes were designed to carry both stormwater and wastewater. During heavy rainfall, the stormwater overwhelms the capacity of the pipes. To handle this volume, nineteenth-century engineers designed discharge points: CSOs. Rhode Island has more than 80; all but two are clustered in the Providence-Pawtucket-Central Falls-East Providence area.

Discharges from CSOs violate the Clean Water Act, which mandates that waters of the United States meet "fishable and swimmable" standards. CSOs discharge floating waste, which sullies the aesthetic quality of urban rivers and upper Narragansett Bay. Because of bacterial contamination in CSO discharges, the Rhode Island Department of Environmental Management closes more than 14,000 acres of the Bay to shellfishing whenever more than half an inch of rain falls during a 24-hour period.

Phase I of the tunnel project will capture and store about 40 percent of annual CSO discharges to Narragansett Bay. The wastewater will be held until it can be transported to the Field's Point Plant for full treatment, substantially reducing bacterial contamination to the upper Bay. When the first phase of the project is complete, at a cost of \$299 million, shellfish closures should be reduced by 50 percent to 75 percent in the upper Bay. Once the 20-year project is complete, shellfishing closures should decrease by as much as 95 percent and floating waste from CSOs will be eliminated.

"Rhode Island shellfishermen have been waiting for this project for a long time," said Phil Holmes, former president of the Rhode Island Shellfishermen's Association and member of an advisory group on the project. "When it's done, we'll be in a place where shellfishermen won't have their livelihoods held hostage by a half-inch of rain, and the fishermen will be able to reduce the fishing pressure on the traditionally 'open' areas."

"The construction of the CSO project is an historic achievement for the Narragansett Bay Commission," said Curt Spalding, executive director of Save The Bay, an environmental advocacy group. "Our *State of the Bay Report* rated the Bay's health a mere 4.5 on a scale of 1 to 10. We expect the CSO project will help move that number higher, and a healthier Bay means more fish, fewer beach closures and a better quality of life—something everyone can support."

This project is far from a complete solution for pollution problems in Narragansett Bay. Runoff from roads and lawns that carries dirt, grime, oil, and fertilizers will continue to drain into the Bay. From an engineering standpoint, these sources of contamination pose a greater challenge to eliminate than CSOs. Nonetheless, the CSO tunnel and a similar, but smaller, one in Fall River, Massachusetts will go a long way toward making Narragansett Bay cleaner and safer. ■

— Jamie Samons is Public Affairs Manager for the Narragansett Bay Commission.



Untreated sewage flows from a CSO outfall directly into the Blackstone River. A 20-year project is underway to eliminate such discharges. Photo: Narragansett Bay Commission

A Big Fix for a Difficult Problem

The Problem: With combined sewer overflows (CSOs), stormwater and sanitary waste travel through the same pipes. During heavy rainfall, the pipes are overwhelmed, and a mix of stormwater and untreated sewage flows from a discharge pipe into a river, which carries the waste into Narragansett Bay. **How Much:** 2.2 billion gallons of untreated wastewater are discharged annually into Narragansett Bay by CSOs.

The Result: CSO discharges cause high bacterial levels in the Bay, forcing closures of shellfish beds and beaches. Pollution in the water is visible.

The Solution: A 20-year project to build a massive underground tunnel system, at a cost of \$550 million, that holds untreated wastewater until it can be treated.

Who Pays: Funding for Phase I (\$299 million) will be paid through increased sewer-use fees for ratepayers (88 percent), state bonds (10 percent), and federal grants (2 percent).

—JS

Water Quality Restoration in R.I.

Elizabeth Scott

Congress passed the Clean Water Act in 1972, regulating discharges and requiring states to assess progress toward cleaner waters. In Rhode Island, the Department of Environmental Management (RIDEM) publishes these results annually in the *State of the State's Waters Report*.

The state identifies surface waters that do not meet water quality standards. In 2000, 116 waterbodies made the state's List of Impaired Waters. Most often this results from excessive nutrients and bacteria, although toxic chemicals and metals are of concern in some areas. Only West Greenwich, Foster, and Little Compton had no waters included in the 2000 list.

The Clean Water Act requires states to develop water quality restoration plans that bring non-compliant waterbodies up to standards. To date, the U.S. Environmental Protection Agency has approved seven such plans in Rhode Island; RIDEM has drafted another six and begun work on 27 more. Each plan takes up to two years to complete.

Pollution control strategies range from simple prevention measures, such as local dog waste ordinances, to construction of structures that treat urban runoff, manage farm waste, or treat industrial or municipal wastewater. (www.state.ri.us/dem)

—Elizabeth Scott is Deputy Chief of Water Quality and Standards at RIDEM's Office of Water Resources.

Is It Worth the Cost?

While nearly everyone agrees that combined sewer overflows (CSOs) are bad for the Bay, many have questioned whether this particular fix is the best strategy for improving water quality. To address this question while still moving forward, stakeholders involved in the CSO planning process have agreed to continually re-assess the project. After each phase is completed, construction will be halted for two years while the Narragansett Bay Commission evaluates the tunnel, determines if it is doing what it is designed to do, and explores technological advances that might offer a better, more cost-effective solution.

Despite this compromise, opposition to the project remains. The activist group Ecology Action of Rhode

Island objects to the CSO project on the basis that it does not go far enough in stopping stormwater from reaching sewer lines in the first place. The group has proposed several options for reducing paved areas, which contribute to runoff that carries pollutants such as petroleum into nearby water bodies. The group suggests replacing sidewalks with grassy areas and paved driveways with clamshells or pebbles. Ecology Action also supports levying penalties or fines on property owners with large expanses of paving, on the premise that they contribute a disproportionate share of storm runoff and, therefore, should assume a larger share of the financial burden to fix the problem.

Other opposition remains based on how the project's costs will be distributed. The bulk of the financial burden (88 percent) will fall on residences and businesses in the greater Providence area whose wastewater is treated by the Narragansett Bay Commission (NBC). Federal grants will cover 2 percent of the project's cost, with state bonds covering the remaining 10 percent.

NBC will increase user fees based on how much wastewater is treated. Businesses that use large amounts of water will pay a higher proportion of the project's cost than will private homes. Questions also have been raised about the fairness of having NBC ratepayers foot the bill for an expensive fix that ultimately will benefit everyone who uses Narragansett Bay.

—JS

Swimming

others from surrounding states. Together, Bay beaches receive more than 1.5 million visitors during the summer season. Bay beaches generate millions in revenues for state and local governments, and their indirect contribution to Rhode Island's \$2.7 billion tourism industry is also important. Beaches are a cornerstone of summer tourism, and the perception of clean water is crucial. If potential visitors believe the state's waters are unsafe for swimming, many would surely go elsewhere.

As the licensing agency for Rhode Island's beaches, the Rhode Island Department of Health (RIDOH) oversees water quality testing and closes beaches when conditions warrant. RIDOH works closely with the communities that operate local beaches and the Rhode Island Department of Environmental Management (RIDEM), which manages state beaches and parks. To understand and handle potential threats to public health posed by contaminated water, RIDOH received funding from the U.S. Environmental Protection Agency (EPA) to collect real-time water quality information during the summer.

From mid-May to mid-September in 1999 and 2000, 23 sites throughout upper Narragansett Bay were tested, including licensed, or state-approved, beaches and unlicensed swimming areas. Not surprisingly, the results confirmed that many sites in the upper Bay, where most of the state's combined sewer overflows, or CSOs, are located, remain unsuitable for swimming (see page 1). Sampling also showed high bacterial counts even at some licensed beaches with minimal rainfall, suggesting that these beaches rely on dry weather for their water quality and highlighting the need for increased and frequent monitoring. Every licensed beach examined was found to exceed the state's alert levels repeatedly over the course of the sampling season.

The study concluded that more frequent testing was necessary during dry and wet weather, leading RIDOH to step up beach-monitoring efforts statewide. In 1994, for example, the state had taken only 165 water quality samples during the entire season, and few beaches had posted closures or warnings due to high bacterial levels. In 2001, by contrast, 82 of Rhode Island's 117 licensed beaches were monitored at least twice a year—in some cases, weekly or biweekly. In 2002, the number of licensed beaches has increased to 126, and every licensed beach will be sampled.

Beaches near waters that are closed or restricted for shellfishing require the greatest vigilance, as they are within areas known to have high levels of bacteria. 27,000 acres of the Bay are permanently closed to shellfishing, while another 14,000 are deemed "conditional," meaning they are closed to shellfishing for seven days following rainfall of half an inch or more. Fourteen licensed beaches are located within these closed or conditional areas. To ensure safe swimming, the water at these beaches is now tested three times per week during the summer.

CSOs are a principal source of bacterial contamination to Narragansett Bay, discharging up to 2.2 billion gallons of untreated or partially treated sewage annually into the Bay. Stormwater is another major source of pollution to the Bay. As rainfall travels over the land, it picks up oil and grease, chemicals, nutrients, metals, and bacteria from paved surfaces, failing septic systems, pet waste, and wildlife. Thousands of stormwater pipes dump these contaminants into the Bay each time it rains.

Such polluted water may contain pathogens and viruses that can cause disease. In 2000, two children were hospitalized after contracting a serious strain of *E. coli* by swimming in a stream on Aquidneck Island. The source of the contamination was never identified, but it may have been livestock or wildlife. This year, RIDOH is initiating a project that will use DNA "fingerprinting" to track the origin of dangerous microbes that appear in the water.

Testing the water to ensure that it's safe for swimming is only half the battle; the other half is notifying the public of potential hazards. The RIDOH/EPA beach-monitoring project established a system of color-coded flags at some Bay beaches, which now fly red flags to warn of unsafe conditions. Both RIDOH and RIDEM have websites with beach closure information (see box). The agencies make use of press releases and good old-fashioned "No Swimming" signs, as well.

These efforts put Rhode Island in a good position to comply with federal legislation passed in 2000, requiring states to adopt enforceable standards for water quality, regularly test coastal waters for health-threatening pollution, and notify the public of unsafe conditions. The legislation includes \$150 million in federal funding to states over the next five years. Last year, Rhode Island received about \$70,000. This year, it will receive \$214,000 to continue beach monitoring efforts. Equally important, the Narragansett Bay Commission's CSO abatement project will store storm-generated overflows so they can be treated before being discharged into Narragansett Bay. Together these programs will help to ensure that beachgoers can count on clean water. ■

— Margherita Pryor, U.S. EPA, Boston, is the Regional Coordinator for the Narragansett Bay Estuary Program and the Rhode Island Nonpoint Source Program.



New signs and flags will warn swimmers of unsafe conditions at Bay beaches.

Alerting the Public

The Rhode Island Department of Health (RIDOH) faces two challenges in safeguarding public health at Bay beaches. Both involve timing. The first is rapidly determining whether the water is safe for swimming. The second is alerting the public quickly about unsafe swimming conditions. But there is a lag time between water quality sampling and test results. It takes no less than 24 hours between the time RIDOH takes a water sample from a suspect area until test results are available.

"Every coastal state in the nation is looking for a way to shorten the time between water quality testing and results," says David Burnett, Beach Quality Coordinator for the Rhode Island Department of Health. Rhode Island, like other coastal states, uses the fastest approved method of analyzing water quality samples.

University of Rhode Island oceanographers Alfred Hanson, David Smith, and graduate student Heather Saffert are working to develop a new water-

quality monitoring instrument, the BioAnalyzer, that will produce test results within an hour. If the BioAnalyzer proves successful, it will speed the process of determining whether conditions are safe for swimming, allowing greatly expedited public notification.

RIDOH informs the public of water conditions in several ways, including a new color-coded flag system at licensed beaches, notices on RIDOH's website, a beach-closure telephone hotline (401-222-2751) and conventional news outlets. At sites where bacterial levels are consistently high, "No Swimming" signs are posted.

RIDOH has found that news releases are the most effective way to notify the public about water quality conditions, but that the flags also work well. The flagging system is being expanded to include more state-licensed beaches, not only for its ability to alert beachgoers to swimming conditions, but also to stimulate public interest in Narragansett Bay's water quality.

—MP



Flags Flying

At a number of Narragansett Bay beaches, a new system of color-coded flags communicates water-quality conditions. Blue flags indicate safe swimming while red flags mean "stay out." The system will be in place this summer at seven beaches:

- Goddard Memorial State Park, Warwick
- Buttonwoods/City Park, Warwick
- Oakland Beach, Warwick
- Conimicut Point, Warwick
- Barrington Town Beach
- Warren Town Beach
- Bristol Town Beach

—MP



More information about Rhode Island's beach monitoring program can be found at the RIDOH website (www.healthri.org/topics/bathing.htm) or the RIDEM website (www.state.ri.us/dem/topics/water.htm).

