



ANNUAL REPORT | 1999



RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

The **mission** of The Rhode Island Department of Environmental Management is to: Enhance the high quality of **life** for this and future generations by protecting, managing, and protecting the natural **resources** of the state; enhancing outdoor recreation opportunities; protecting public health; and preventing environmental **degradation**. Guide the use of the state's natural resources to provide for **sustainable** economic opportunity while sustaining our natural environment. Motivate the **citizens** of the state to practice an environmental **ethic** based upon an understanding of their environment, their **dependence** on it, and the ways in which their actions **affect** it.

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Message from the Director

DEAR GOVERNOR ALMOND,
MEMBERS OF THE GENERAL ASSEMBLY,
CONSTITUENTS AND OTHER INTERESTED READERS:

It is my pleasure to present to you, on behalf of the staff of the Department of Environmental Management, our Annual Report for 1999. It has a new look and presents information in accordance with the promise we made last year to focus more clearly on priorities and on environmental results. One of our most important goals was to reenergize the Department's performance and to become more accountable to you about that performance. This is our progress report.

The following sections track the Department's Work Plan for the years 2000-2001. The development of that Work Plan last summer was itself a major achievement, as it translated department-wide goals and priorities into specific work plans. The goals include clean air, clean and plentiful water, livable communities, healthy ecosystems, viable natural resource-based industries, abundant open space and recreational opportunities, as well as open and effective government. The Department also developed work plans for two pilot watershed regions to guide contributions by all offices to local efforts to restore water quality, protect water supplies, preserve open space and promote sustainable economic activity.

The Department also began quarterly evaluations to make sure we make appropriate progress towards meeting our Work Plan goals. By the end of 1999, 94% of DEM projects were on track. Among the highlights are the following.

Openness and Responsiveness. The Department appointed Tom Getz to the new, senior level position of Ombudsman. He has authority to conduct independent investigations of external or internal complaints about how the Department handles certain matters. Since such investigations may indicate a need for the Department to change its ways, Tom also plays a major role in efforts to retool the Department's performance, from permit streamlining to personnel matters and vehicle use policies. The Department also began quarterly meetings of a business roundtable and an environmental roundtable to give constituents a regular opportunity to raise concerns and provide feedback. They are well attended and productive meetings.

One area in which the Department needed to be particularly responsive is compliance and enforcement. Many complaints were heard about our field inspections and the effectiveness of our enforcement. We made this a top priority and developed draft Inspection Guidelines which balance the need to conduct regulatory inspections with the need to respect private property. After public review the guidelines will be finalized as part of a comprehensive new enforcement policy. Other elements of the

policy are earlier notice to responsible parties that the Department has evidence of violations, so that they can be stopped and remedied more quickly, as well as more consistency in procedures, from timelines to penalty calculations. The hazardous waste program that has been criticized so severely increased formal enforcement actions from two in Federal Fiscal Year (FFY) 1998 (October 1997 to September 1998) to twenty in FFY 1999, resolved over 80 percent of outstanding enforcement cases dating back to the 1980s, and received praise from the Environmental Protection Agency.

Permit Streamlining. We completed design of computer infrastructure that will enable the Department to process and track permit applications more efficiently and that will allow for ultimate inclusion of the compliance assistance and enforcement programs. We will begin to use the system this year. In addition, the Department is on a schedule to evaluate all permitting programs, identify inefficiencies and develop administrative, regulatory or statutory solutions. The first, very active taskforce is on track to finalize recommendations for the wetlands program before the Summer.

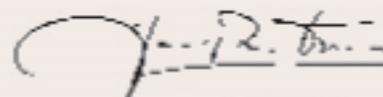
Pollution Prevention. Together with the Department of Health, the Davies Vocational School and industry representatives, we launched an ambitious initiative to reduce impacts to workers and the environment from toxic materials in the auto-body repair industry. The focus is on reducing the toxic content of products such as body fillers and paints, as well as use of better technologies and housekeeping practices to recycle materials and prevent discharges to the environment. We are working with industry to develop standards and operating procedures, education and technical assistance, and a program that, instead of requiring permits, allows businesses to certify compliance with these standards. The Department intends to expand this self-certification approach to other industry sectors (for example, dry cleaning).

Watershed Restoration. Many initiatives fit under this heading. First, as the work plans for two pilot watersheds indicate, the Department is reorienting many of its programs to a watershed focus. This means we take a more holistic look at environmental challenges. We use better science to address water quality and water supply issues. (See details in this report on our new schedules for issuing wastewater discharge permits, and for determin-

ing Total Maximum Daily Loads (TMDLs) that take into account both point and nonpoint sources in an entire watershed; our septic system and stormwater management programs; and our work with many watershed partners to develop a water "budget" that reconciles competing demands on a limited source of water.) We partner with cities and towns, businesses and nonprofit groups to develop more effective and equitable, regulatory and nonregulatory solutions. We listen to the needs of the watershed and the watershed communities first, instead of presuming that we, as state regulators, know best. We make the connection between water and land protection. We recognize farmers, foresters and fishers as stewards of our resources and try to help them stay in business by helping farmers through last year's drought and being better prepared this year; helping farmers and foresters develop business plans; and improving fishing port facilities. We develop incentives (such as the planning grants in the proposed open space bond issue) to plan for economic growth and resource protection at the local level. And we work with the Coastal Resources Management Council and others on passage of legislation to establish a collaborative habitat restoration program.

We still have a long way to go and I hope that this report demonstrates the Department is making good progress. I would like to thank, first of all, DEM staff for responding so well to new leadership, taking so much initiative themselves, and working extremely hard to meet goals and deadlines. I thank in particular the Governor for the strong support he is giving me and the Department, and for his leadership on issues like open space protection and restoration of water quality (including his all-important proposals for new bond funding). Similarly, I thank the leadership in the General Assembly for their support and accessibility. And last but not least, the Department thanks the many advisory groups members, stakeholders, customers who write or call in with feedback, and partners, for volunteering your time and helping us do our job.

Sincerely,



Jan H. Reitsma,
Director

NEW APPROACHES BRING BETTER SERVICE, GREATER ACCOUNTABILITY

ABOUT THIS REPORT

This section on open and effective government discusses key changes in 1999 to open the workings of the Department and to invite feedback on our efforts to continuously improve our performance. The Environmental Results section that follows includes chapters on Department results in improving air and water quality, creating livable communities, managing natural resources to keep ecosystems healthy, building natural resources based industries, providing accessible open space and recreation and working side by side with community residents to improve conditions throughout watershed regions. The report concludes with acknowledgements of the many people and organizations who are making our mutual goal for a clean, green and prospering Rhode Island a reality.

Accountability

The foundation of DEM's reform is our Work Plan 2000 /2001 and the 4th Performance Partnership Agreement with USEPA. The Work Plan was developed to respond to concerns about the Department's performance, to become more results-oriented, and to prioritize Department activities and use of limited resources. Meetings were held around the state to solicit input. The PPA was the first to cover a two-year period and the first to consolidate thirteen EPA-funded programs into one grant for flexibility in targeting priority issues.

It was also the first time EPA prepared a companion work plan of commitments for the work toward state goals. Work Plan 2000-2001 is organized around the seven broad goals in this report and reflects national and regional trends, such as pollution prevention, watershed management, and critical resource protection. Most importantly, the Department now conducts quarterly evaluations of progress toward meeting the environmental indicators and performance measures, in Work Plan 2000-2001.

While DEM programs are still adjusting to the new approach, a review of the first two quarters showed that 94% of Department activities were either on track or were at too early a stage to assess. Only 6% were listed as needing modifications. The majority of those were related to vacancies or other unforeseen circumstances. The Department will strengthen the work plan process in 2000 through a Professional Development Review to help managers monitor staff progress and improve staff capacity in meeting work plan goals and objectives.

Goal: Open and Effective Government

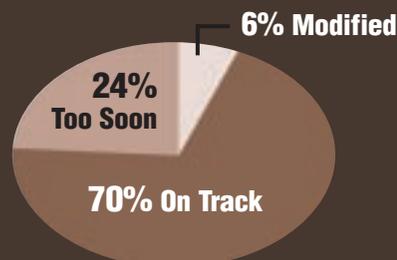
The Department will carry out its mission and achieve its goals with involvement and support of citizens and stakeholders, and to that end will improve its accountability, responsiveness, and service delivery.

The Department took many steps in 1999 to refocus on high priority issues and environmental results and to bring them to the public in clear and accessible formats. The reform initiative stresses accountability - for how tax dollars are spent, for specific improvements in Department performance, for ambitious but achievable environmental quality goals, and for providing the public with a means to evaluate the Department's performance. With new leadership, increased staffing, and a commitment to improved performance, DEM is making strides to improve its work in the following critical areas.

MEASURING DEM'S PERFORMANCE

Status of Work Plan Tasks

(Fiscal Year 2000 1st & 2nd qtr)





Central to the Department's progress was the appointment of an ombudsman Thomas D. Getz (left) - the only position of its kind in state government -- to resolve customer problems promptly and to conduct independent investigations.

Access and Responsiveness

In 1999, the Department established new lines of communication with stakeholders and citizens, provided better access to information and services, and responded more effectively to customer needs and concerns. Central to the Department's progress was the appointment of an ombudsman - the only position of its kind in state government - to resolve customer problems promptly and to conduct independent investigations. The Ombudsman was on the job for the last month covered by this report. In that time he worked with the Director to produce the Department's Ombudsman Policy, which can be seen on the DEM website <http://www.state.ri.us/dem/org/ombuds.html>. He also helped plan the third quarter Environmental Roundtable and the Business Roundtable meetings. The ombudsman also analyzes organizational weaknesses, develops recommendations for improvement, and works with staff to develop ways to streamline permitting processes, evaluate and track performance, and improve customer assistance.

The Department began quarterly roundtable meetings with members of the business and environmental communities to solicit feedback on Department plans and performance. The Department also participated in a number of groups to solve environmental problems. New groups and committees in 1999 included: the Central Landfill Management Action Committee to address odor and erosion problems at the landfill in Johnston; and stakeholder committees on port operations in Galilee and in Newport.

Among other steps to improve customer service, the Department gave boat-owners the chance to renew registrations early at the February 1999 boat show in Providence. DEM registered 402 boats at the 1999 show. The Department's improved website now includes downloadable forms to reserve campsites and cabins at

state parks as well as the complete Department Work Plan and PPA.

Regulatory Streamlining

The Department designed computer specifications and benchmarked DEM's proposed system against other large computerization projects. The Department will obtain equipment and phase the regulatory programs into the system by early 2001. The system will allow precise tracking and faster processing of permit applications. Customers will be able to download application forms from the web.

Simpler Methods Cut Permit Process Time

DEM continued to simplify permit processes. For example, the Department issued a general permit to speed remediation of sites contaminated with No. 2 home heating oil. Last year a similar procedure for gasoline-contaminated sites cut processing time by more than 30 days. The Department also reduced the time to process air pollution control permits for minor generators from six months to three or four months, and the time for boat registrations from six weeks in 1995 to one in 1999. The wetlands permitting program reduced the backlog of preliminary determination applications from 37 to 16, and reduced the average processing time from 54 to 40 days.

Since 1998, the Department has licensed private designers to produce septic system designs and witness installations subject to DEM oversight. To avoid disruption, DEM extended permits issued under the old system until the end of September 2001. In 1999 the Department offered the first licensing exam for soil evaluators. DEM worked with the University of Rhode Island to make soil courses available and to develop a special course on applying soil science to siting and designing septic systems. Proposed regulations set standards and procedures for soil evaluation as the basis for designing septic systems. This will allow site suitability determinations to



Letter From Stakeholder:

"I would like to take this opportunity to comment on the current state of the Department of Environmental Management, specifically regarding the caliber of its employees in the ISDS/Wastewater Management Division. In 35 years as a general building contractor in the State of Rhode Island, I have dealt with a myriad of state, local, and federal agencies and have never before written a letter of this nature. In short, it is my opinion that the ISDS/Wastewater Management Division at DEM is an exemplary model of state bureaucracy which reflects the best aspects of current administration's policy of fostering positive and productive relationships between state regulatory agencies and private business." Letter dated 5/26/99

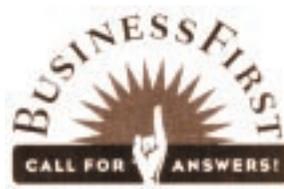
be made throughout the year on most sites. Beginning in January 2001, licensed soil evaluators must evaluate soil to identify conditions that affect ISDS design. A new ISDS permit tracking system has been aligned with the Wetlands and Compliance systems, allowing quicker responses. The Department will continue to streamline all major permitting programs.

The Department also joined with the Economic Development Corporation and many other state agencies in BusinessFirst, a voluntary partnership to simplify state procedures for businesses. Immediate aims of the partnership are to establish a data base, provide timely responses to inquiries and to set up a single website to provide information for businesses.

Fair and Effective Enforcement

In 1999 The Department took measures to address complaints about field inspections and to increase the effectiveness of enforcement. Draft Inspection Guidelines balancing the need for regulatory inspections with the need to respect private property, will be finalized as part of a comprehensive enforcement policy. Other elements of the policy are earlier notice to responsible parties when the Department has evidence of violations, so that they can be remedied more quickly; and more consistency in procedures, from timelines to penalty calculations.

The Department also prepared to reinstitute mediation this spring to resolve enforcement disputes more quickly and at lower cost. The Department will continue to enhance enforcement in 2000 with the development of standard operating procedures and customer service training to ensure that enforcement actions are carried out consistently.



The hazardous waste program increased formal enforcement actions from two in Federal Fiscal Year (FFY) 1998 (October 1997 to September 1998) to twenty in FFY 1999, resolved over 80 percent of outstanding enforcement cases, and received praise from the Environmental Protection Agency.

The Department received 4,846 complaints in 1999. Most (2,640) related to air compliance and 87% of the air complaints relate to odors. DEM also responded to 735 emergency calls. The third largest area of complaints encompasses freshwater wetlands (695), septic systems (ISDS) (392), water pollution (198), solid waste (170), and hazardous waste (16). The office carried out 2,795 complaint investigations and 4,028 inspections. Complaints received outnumber complaint investigations because multiple complaints are often received for the same incident. The office issued 441 informal enforcement actions, most of which were resolved without resorting to formal enforcement.

Watershed Approach to Environmental Protection

The Department is also moving toward more efficient use of resources and more effective environmental protection by organizing environmental protection efforts around watersheds. Focusing efforts at the watershed level rather than isolated water bodies or stream segments not only encourages creative, comprehensive solutions tailored to local needs and conditions, but leverages scarce resources through partnerships among governments, non-profits and businesses. For more information on the results for the South County watersheds and the Woonasquatucket watershed, see the watershed chapter of this report.



Business Roundtable participants taking notes at the DEM briefing portion of the meeting. This meeting helps to communicate mutual concerns to the respective parties.

ENVIRONMENTAL RESULTS

The chapters that follow discuss the Department's progress in meeting its goals for clean air, clean water, livable communities, healthy ecosystems, viable natural resources industries, abundant open space and recreational opportunities and for pilot watershed projects in South County and the Woonasquatucket.

Goal: Clean Air

The air throughout the state will be healthy to breathe and air pollutants will not damage our forests, land and water bodies.

Rhode Island's air meets federal clean air standards almost all year. However, despite improvements in the long-term trend, the state's air regularly exceeds the eight-hour standard for ground level ozone (smog) during warmer weather. During the 1999 ozone season, Rhode Island exceeded the eight-hour standard 18 times on 11 days. High ozone levels can cause coughing, chest pain and throat irritation in healthy people and can trigger asthma in sensitive individuals.

In 1997 EPA issued stricter standards for ozone and fine particles. The new eight-hour ozone standard is based on studies showing health impacts from lower levels of ozone over longer periods of time. The new fine particle standard applies to particles 2.5 microns or smaller (a human hair is about 70 microns in diameter) that lodge deeper in the lungs than larger particles and cause illness or even death. Court challenges to the new standards are pending. However, since adverse health effects can occur if the new standards are exceeded, DEM has committed to meeting the new ozone and fine particulate standards by 2007.

Improving Air Quality: Reducing Ozone

DEM's long range plan to meet the standard for ozone targets the largest contributors to the ozone problem

and addresses every significant source inside and outside Rhode Island.

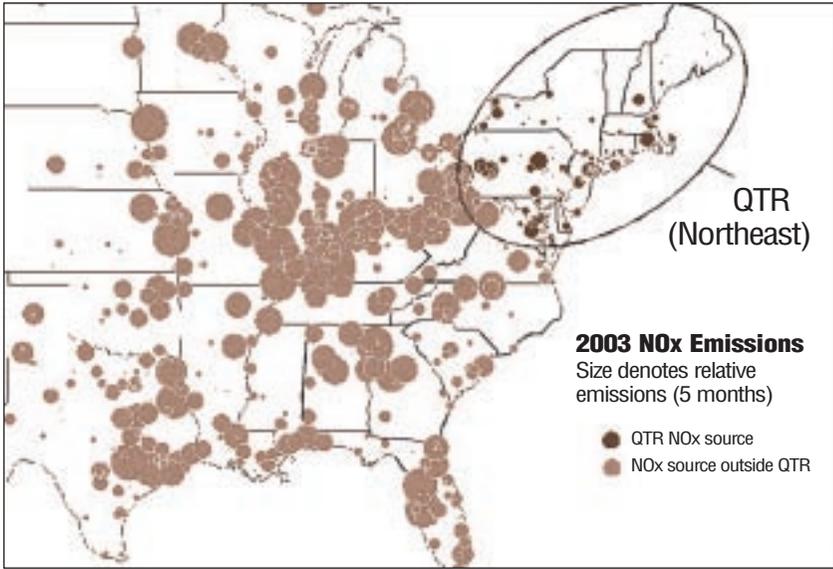
Air pollution controls have reduced emissions from Rhode Island industry and utilities to the point where further improvements in this sector would come at high cost for a relatively small amount of improvement. According to EPA studies, fueling and tailpipe emissions from gasoline-powered vehicles are the largest single contributor of NOx, VOCs and air toxics.

Further air quality improvements will depend heavily on measures such as controlling emissions from vehicles and their fuels. Clean air in Rhode Island will also require reducing high VOC and NOx emissions transported to Rhode Island from upwind emissions.

Reducing In-State Ozone Vehicle Inspection and Maintenance Program

The enhanced vehicle inspection and maintenance (I/M) program and Phase II reformulated gasoline will reduce NOx emissions from on-road vehicles. The strategy of the I/M program is simple: identify the vehicles that are the heavy polluters and have them fixed. In 1999, DEM and the Registry of Motor Vehicles geared up to establish 250 new inspection stations.

Under the program that began operation on January 3, 2000, all gasoline-powered light-duty vehicles less than 25 years old are tested every other year using a dynamometer, a treadmill device that assesses emissions simulating actual driving conditions. Under the old inspection system, cars were tested in idle, which is not an adequate indication of performance for today's computer-controlled cars. In the first two months of operation, 55,367 vehicles were tested on a dynamometer, and 3,370 vehicles, or 6 percent of those inspected, failed emissions tests. Owners must make repairs and retest.



High Power Plant Emissions from outside the Northeast affect our air quality.

When final standards take effect in two years, allowable emissions from late model cars will be reduced by an additional 18 percent for hydrocarbons, 30 percent for carbon monoxide, and 25 percent for nitrous oxides. Up to 20 percent of vehicles could fail emissions tests at that point. When the I/M program is fully implemented, it is expected to bring a greater reduction in air pollution than any other action taken by the State.

In 1999 the Department drafted legislation to reduce NO_x from heavy-duty trucks and buses. The program will begin with roadside smoke testing of diesel vehicles, and will require that heavy smoke producers be fixed. Other northeast states are implementing similar requirements.

Cleaner Gasoline

Beginning in January 2000, only phase II reformulated gasoline was available in Rhode Island and most of

the northeast. This reformulated gasoline reduces VOCs by 25 percent, NO_x by 6 percent and toxic emissions by 32 percent.

Phasing Out MTBE

With public concern mounting over water pollution and health threats from methyl tertiary butyl ether (MTBE), a widely used fuel additive, government officials are seeking to fix the problem while maintaining the air quality benefits of the nation's reformulated gasoline program.

In 1999 the Department gave technical support to the Northeast States for Coordinated Air Use Management (NESCAUM) study of MTBE. The Department also took part in a task force that developed principles for legislation to use substitutes for MTBE in reformulated gas.

Gas Station Emissions

The Department monitors gas stations to control emissions during



Toxic, carcinogenic organic chemicals that cause headaches, dizziness, nausea and cancer. They also contribute to the formation of smog.

NO_x

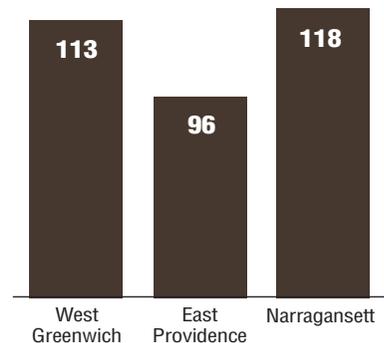
Oxides of nitrogen, that contribute to smog

SOURCES OF NO_x EMISSIONS

Less than one fifth of NO_x emissions in Rhode Island come from stationary sources such as facilities and power plants. Most emissions come from mobile sources—on-road sources such as cars, trucks and buses, and non-road sources such as lawn and garden equipment, boats, and construction equipment.

Maximum Ozone Concentration in 1999 (8-hr average)

Standard is 85 ppb



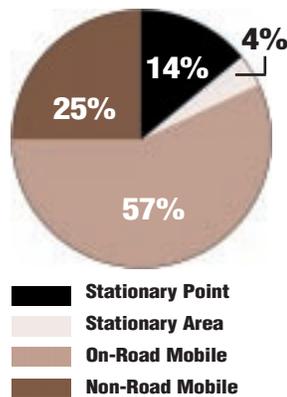


DEM Air Resources shares EPA Environmental Merit Award with Connecticut and Massachusetts

The offices responsible for air quality in these three states voluntarily submitted regulations to EPA to reduce air pollution regarding the interstate transport of nitrogen oxides, a precursor of smog. The states submitted these regulations despite a court ruling that said the states did not yet have to meet these federal requirements. The regulations from these three state will result in nitrogen oxide reductions of more than 5,500 tons each ozone season beginning in 2003. These three states were the only states in the country to make such submissions to date. All three developed innovative regulations, based on EPA's model regulations, that cap emissions from industrial boilers and electricity generating units. Given out since 1970, EPA's Environmental Merit awards are presented to individuals and groups who have shown particular ingenuity and commitment in their efforts to preserve the environment. The award was presented on April 19, 2000 for RI regulations submitted in September of 1999.

fueling of vehicles. During 1999, the Department inspected 263 Stage II recovery systems at gas stations to control emissions of VOCs including benzene, a human carcinogen. DEM also observed 53 compliance tests of newly installed Stage II recovery systems.

SOURCES OF NO_x EMISSIONS



Most NO_x comes from on-road vehicles.

Reducing Ozone From Outside Rhode Island

The Department works with 12 other jurisdictions in the northeast to produce cleaner new cars and cleaner power plants throughout the region. In 1999, to address major sources of NO_x and VOCs outside the region, many states including Rhode Island petitioned EPA to control power plant emissions in the Midwest. Cases concerning EPA action in response to the petitions are still pending in the courts.

Finding Out About Fine Particulates

In 1999, the Department installed and began operating a new monitoring system to detect particles 2.5

microns or smaller at seven sites throughout the state. Over the next two years, the Department will collect data to determine whether fine particle air pollution exceeds the health-based air quality standard. If so, Rhode Island will need to plan to reduce those levels.

Reducing Air Toxics

Air toxics emissions, which can cause a variety of adverse health effects, are a pervasive problem throughout the state as well as at local "hot spots." The Department's objectives include reducing air toxics by finding and alleviating hot spots and by reducing mercury emissions to zero by 2003. The Toxics Release Inventory (TRI) shows a decline for chlorinated solvents and degreasing agents as a result of air regulations requiring additional controls on solvent use.

Zeroing Out Mercury

In 1999, the Department began efforts to reduce mercury emissions to zero by 2003. In Rhode Island, significant sources of mercury are emissions from waste incineration at medical facilities. The Department participates in regional and international efforts to reduce mercury emissions. In 1999, the Department's outreach efforts to Rhode Island Hospital and Miriam Hospital led to their enrollment in the EPA's voluntary challenge to reduce mercury emissions. The Department extended outreach efforts to Zambarano Hospital and audited mercury



Narragansett Bay from the air.

sources in preparation for the hospital's entrance into the EPA's voluntary mercury challenge.

DEM plans to seek similar agreements for the remaining medical waste and sewage sludge incinerators and will revise Air Pollution Control Regulations in the summer of 2000 to include stricter limits on mercury emissions.

Reducing Greenhouse Gases

In 1999 DEM commissioned a greenhouse gas inventory from Brown University as part of its plan to reduce the emissions that lead to the

"Greenhouse Effect," the warming of the earth through the buildup of heat-trapping gases in the atmosphere.

Greenhouse gas emissions from burning fuel in sources ranging from power plants to vehicles to lawn mower engines contribute to global warming and other forms of global climate change. Carbon dioxide comprises over 82 percent of the state's greenhouse gas emissions, although methane is also a significant contributor. The DEM/Brown University study indicates that cars, trucks and buses are Rhode Island's largest source of greenhouse gas emissions. The next largest sources are electric utility

plants and residential sources, primarily home heating. More detailed information is posted on the greenhouse gas website, www.brown.edu/departments/environmental_studies/ghg.

In 2000 the Department will convene a stakeholders group to develop strategies to reduce greenhouse gases. The group will explore opportunities to use existing air quality regulations to reduce traditional air pollutants while also achieving significant greenhouse gas reductions and to promote voluntary energy conservation and use of renewable energy sources.

Rhode Island's rivers, lakes and coastal waters will be fishable, swimmable, and support healthy ecosystems. Surface and groundwater will be clean sources of water. Every person in Rhode Island will have safe drinking water. Adequate quantities of surface and groundwater will be available for all uses.

Goal: Clean Water

Water Quality is Better But....

Despite improved water quality due to control of obvious pollution sources, the state's rivers, lakes, coastal waters and groundwater still suffer from past mistakes and from nonpoint sources of pollution such as road runoff and septic system pollution.

What Are the Problems?

The main water quality problems in waters that have been assessed include bacterial contamination, excess nutrient enrichment, and toxic contamination. Nearly half the rivers and lakes and nearly a third of coastal waters are threatened, meaning that they may in time no longer meet their designated uses. Shellfish bed restrictions due to pollution apply to 41,832 acres of the state's waters, including about 43 percent of Narragansett Bay, the Rhode Island portion of Mount Hope Bay, and the Sakonnet River.

Bacterial contamination leads to closings of shellfishing areas and impairs recreational uses such as swimming. Excess nutrient enrichment from wastewater treatment plants, fertilizers, wastes from septic systems, and stormwater lead to growth of algae and loss of oxygen from the water that may kill fish. Toxic contamination from spills of hazardous materials, leaking underground storage tanks, and toxic pollution from scattered industrial sites have been the leading cause of groundwater contamination. While industry has greatly reduced the discharge of toxic pollutants in surface waters through pretreatment, there are still problems with lingering toxic contamination in sediments, particularly in urban rivers and the Upper Bay. Moreover, we don't even know what the quality is for

about 46 percent of river miles and 25 percent of lake acres. Additional monitoring is needed to assess water conditions and prioritize work to restore water quality.

Nonpoint Source Pollution

Widely scattered nonpoint pollution, that causes most of the water quality problems in most streams and lakes that need improvement, cannot be solved by one state agency on its own. Nonpoint sources are far more dispersed, than point sources, which come from a few sources such as discharge pipes from wastewater treatment facilities or industrial plants. Nonpoint sources include substandard septic systems and stormwater runoff. Failing septic systems leach waste water laden with bacteria and excess nutrients into the surface and groundwater. Stormwater runoff carries fertilizer and pesticides from farms and gardens, along with other chemicals from industry, commerce, and road traffic into aquifers, streams, lakes and bays. Many of these problems come from daily activities at home, work or school — how we care for lawns or maintain septic systems. The solutions will come from many of us making small changes in daily routines and from joining with others to tackle larger issues such as planning and implementing improvements to stormwater management systems.

Improving Water Quality Monitoring Systems

The Department is starting to close the gaps in knowledge of surface water conditions. In 1999, DEM entered a partnership with the URI Watershed Watch volunteer monitoring program that resulted in more lakes being assessed. DEM also collected macroinvertebrate data to assess water quality at seven river sites and provided technical oversight and assistance to Roger Williams University for biological monitoring at 45 stations. The Department began to address data gaps on dissolved oxygen in Narragansett Bay. DEM also improved the water quality data system, and updated the water quality map.

Restoring Water Quality:

TMDLs Address All Sources of Water Pollution

Rhode Island and other states are developing Total

Maximum Daily Loads (TMDLs) for surface water bodies that do not meet water quality standards. Environmental scientists and engineers, with help from watershed groups and other agencies, determine pollution sources and identify reductions needed to meet water quality standards (See Stafford Pond story below.) The TMDL serves as a plan for restoring uses of water, such as opening shellfish areas. The schedule calls for completing TMDLs for 29 additional priority waterbodies by 2002, and for developing TMDLs for all 99 impaired rivers, lakes and coastal waters in 15 years.

GROUP 1 IMPAIRED WATERS
(TMDL List)



Dark Lines - Freshwater
Lighter shading - Saltwater

To restore water quality a combination of strategies is needed: improve the effectiveness of wastewater treatment facilities, and abate stormwater runoff and other non-point source pollution such as septic systems which contribute bacteria and excess nutrients to our waters.

The Department is pursuing all of these strategies.

In 1999 the Department completed TMDL sampling in target areas, awarded funds to abate nonpoint pollution, and conducted outreach to restore impaired waters. TMDL sampling

included 35.7 miles in the Hunt and Runnins Rivers and tributaries; 2.6 square miles of tidal estuary in the Barrington, Palmer and Narrow Rivers plus 2.26 miles of tributaries to the Narrow River; and 15 acres in Robin Hollow Pond plus nearly a mile and a half of tributaries. The Department held public meetings to explain the monitoring, receive input and build support for reducing bacteria and other pathogens in the watersheds.

To promote watershed restoration, DEM awarded \$668,000 in federal funds for nonpoint pollution abatement. These included projects to abate stormwater pollution in Greenwich Cove in East Greenwich, Wickford Harbor in North Kingstown, Stillhouse Cove in Cranston, Brushneck Cove and Greenwich Bay in Warwick, and sites in Glocester and Johnston as well as projects to restore wetlands at the Lincoln Lace and Braid



Working Together to Clean up Our Waterbodies: Stafford Pond TMDL

Algae blooms in Stafford Pond, an important drinking water supply reservoir in Tiverton, drove up water treatment costs and led to several violations of state water quality standards. The Department formed a committee of stakeholders to help set priorities for the TMDL and implement its recommendations, and used state Nonpoint Source Pollution Bonds to pay for an assessment of the pond and its watershed.

In 1999 EPA approved the Department's TMDL plan for the Pond. A dairy farmer began to restore wetlands on his farm, and DEM helped him use practices to ensure that cow manure does not leach into the pond. The steering committee will recruit more volunteers to continue monitoring that the Watershed Watch began in 1999. DEM and DOT planned improvements to reduce runoff from the storm drains. The Town began developing a public education program to promote practices such as reduced fertilizer use and better septic system maintenance. The Department awarded funds to the Town to develop a wastewater management plan that will make Tiverton residents eligible for loan assistance to improve septic systems. Additionally, the water supplier has acquired about 150 acres as part of a long-range program to protect land in the pond's watershed.

brownfields site in Providence; and to restore Cass Pond in Woonsocket.

The Department also began developing an outreach plan to restore urban rivers, including the Blackstone, Woonasquatucket, Ten Mile, Moshassuck, Providence, Seekonk, and Pawtuxet.

Abating Bacterial Contamination , CSO Abatement

The sewer systems in Providence, Pawtucket and Central Falls have combined sewers and storm drains that carry raw sewage into surface waters during heavy rainfalls. Such combined sewer overflows (CSOs) are the largest source of bacteria to the upper Bay and urban rivers. The Narragansett Bay Commission (NBC) plans to build underground storage tunnels, a wetland treatment system, and sewer separation to reduce CSO pollution.

Completion of Phase I is expected to cut acre-days of shellfish closure by 38% in the Northern half of Upper Narragansett Bay and 53% in the Southern half of Upper Narragansett Bay. The Department completed reviews, conducted a public hearing, issued a response summary, and approved the Concept Design Report Amendment for the Combined Sewer Overflow and Abatement Project for the NBC.

The \$42 million Clean Water 2000 bond proposed by Governor Almond will provide \$30 million for CSO's. The state funds are needed to leverage federal funds which, combined with rate increases will enable NBC to begin the \$165 million dollar first phase of the project.

Curtailing Septic System Pollution

DEM works with the 27 communities that rely on septic systems to develop wastewater management programs that help homeowners to upgrade cesspools and promote proper operation and maintenance of septic systems. In 1999 DEM awarded \$217,000 in state grants to Glocester, Jamestown, Johnston, North Kingstown, Portsmouth, Scituate/Foster, and Tiverton to develop wastewater management programs, making them eligible for Clean Water

Finance Agency's Community Septic System loans. The Department also approved five innovative and alternative septic system technologies, including a second option for reducing nitrogen in coastal areas. The new technologies allow residents who live in sensitive areas that could be polluted by leachate from conventional septic systems to make full use of their property.

Dealing with Excess Nutrients

Excess nutrient enrichment is the second largest cause of water quality problems in Rhode Island. Excess nutrients fuel algal blooms that settle, decay and use up oxygen needed by fish and other marinelife. In 1999, the Department organized a nutrient workshop at the National Conference for Wastewater Treatment Operators; worked with stakeholders to reduce nutrient loading to Stafford Pond; continued to develop nutrient reduction targets for the Providence and Seekonk Rivers; and began a dissolved oxygen monitoring program in Narragansett Bay and two tributaries.

The Department continued developing a computer model refined by URI research, to determine the reduction in nutrient loadings needed to increase dissolved oxygen. The model is based on DEM field surveys showing that the wastewater treatment plants discharging to the Blackstone, Pawtuxet, Seekonk and Providence Rivers, are the largest sources of nitrogen to the area. The Department organized the first comprehensive dissolved oxygen monitoring surveys on Narragansett Bay, a volunteer effort by more than 10 organizations; and coordinated two surveys last summer.

Implementing the No-Discharge Zone

The Department took further steps to promote the Bay as a no-discharge area where boaters are not allowed to discharge chemical toilets into the water. DEM awarded \$30,000 in federal sportfish restoration grants toward a pumpout station in Westerly, and to help the town and Connecticut to buy a pumpout boat for Little Narragansett Bay. Connecticut is expected to declare Little Narragansett Bay a no-discharge zone. The Department also gave Warren a grant to obtain a pumpout boat.

Bristol bought a pumpout boat with help from DEM in 1998, and in 1999 began the first Clean Water Act pennant system in the nation. Boaters fly a bright, orange pennant provided by the U.S. Fish and Wildlife Service to have their boats pumped out while moored. In 1999 DEM added pumpout stations to a standard Bay chart making the information easily available to boaters.

Preventing Groundwater Contamination

DEM's 1999 Wellhead Protection Biennial Report shows significant progress. Localities have inventoried potential pollution sources in 95 percent of community water systems; 52 percent of community systems, and 25% of non community systems have adopted DEM-approved wellhead protection plans that identify strategies to protect the areas contributing water to public wells. In 1997, the percentages were six percent and four percent. Such plans now cover about 14 percent of the state. An additional 903 acres were

designated as wellhead protection areas on an updated statewide map.

To support Wellhead Protection, DEM awarded \$60,000 in federal funds to the Towns of Block Island, Charlestown, East Greenwich, North Kingstown, and West Greenwich, and to the Kent County Water Authority and the Scituate Commons Housing Complex. The funds supported groundwater education, teacher training, removal of pollution sources (underground storage tanks)

and pollution prevention.

Clean Water 2000

Clean Water 2000, a \$42 million bond issue proposed by Governor Almond now being considered by the General Assembly, will enable Rhode Island to continue safeguarding our water resources. The bond will provide \$30 million for controlling discharge of combined sewer overflows and \$12 million in funds for water quality and water restoration projects, primarily for local restoration action.



Pumpout boat at work on The Bay.



DEM Worker Recognized by EPA for No-Discharge Zone

In 1999, the EPA presented an Environmental Merit Award to DEM's Joseph Migliore for his work leading to the state's no-discharge designation. Migliore worked for 10 years with boaters, shellfishermen, marine businesses and organizations, harbormasters, and town, state and federal officials. The 1998 EPA approval of the no-discharge designation for all state waters was the first such statewide designation. Migliore helped develop a boat sewage pumpout system, and played a pivotal role in helping to turn the once unpopular notion of pumping out boat sewage into a widely accepted practice. He was also instrumental in the 1993 designation of Block Island's Great Salt Pond as a no-discharge area. Shellfish beds in the pond, which had been closed during the summer boating season for years, are now open year round.

Rhode Island's communities will be free from unacceptable human health and ecological risks from exposure to hazardous substances and other potentially harmful agents. Natural resources will be managed to protect the public from floods, fires and other risks. Communities will increase their capacity to plan for growth in a way that minimizes negative impacts on the environment and community character and that contributes to a sustainable economy.

Goal: Livable Communities

The Department's Livability agenda includes a wide variety of programs to reduce sprawl and revitalize communities. The agenda builds on local priorities for environmentally sound communities and patterns of living that safeguard human health. It includes strategies such as empowering individuals and communities, encouraging Smart Growth, enhancing water resources, preserving open space and cultural heritage, promoting transportation choices, reclaiming Brownfields, securing public health and safety, and strengthening local economies.

This report covers many such topics under other goals such as healthy ecosystems, open space and watersheds. The Livability chapter focuses on reducing sprawl and encouraging compact development by revitalization in developed areas, as well as protection of public health (reduced risk of animal borne disease) and safety from physical risks such as tire piles and dilapidated dams.

Planning For Sustainability

One of Rhode Island's greatest challenges is coping with the effects of sprawl - wasteful land development patterns that lead to many problems. These include loss of farm, forest and open space; fragmented habitats; non-point source water pollution; small source air pollution; and fiscal strain on communities to maintain abandoned infrastructure in developed areas and to build new facilities in rural communities.

Department strategies for urban reinvestment include brownfields restoration, urban forestry open space initiatives, and urban rivers restoration. DEM helps rural communities cope with sprawl by using innovative ways to guide growth to areas that minimize impacts to the environment and community character, and preserve open space.

Brownfields Redevelopment

In 1999 DEM entered into 14 agreements with prospective purchasers of contaminated property who agreed to clean up the sites for reuse. In return, they will not be held liable for past environmental practices. These settlements cover 167.9 acres worth \$17,295,000, with \$619,320 in taxes generated. The Department prepared draft settlement agreements for 10 sites and completed six remedial investigation reports to evaluate and market abandoned and contaminated properties. One site is the new home of the Button Hole Golf Course for urban youth. The City of Providence will use two other sites.

Urban Environment

The Department promotes community tree planting and trains stewards for tree planting programs. Since 1992 the Department has awarded nearly \$1,090,000 in grants, matched by nearly \$1,400,000 from communities. In 1999 the Department awarded \$90,000 in Urban Forest Grants matched by over \$90,000 from communities. Residents of Rhode Island's cities have few chances to enjoy a leafy walk in a wildlife management area, to ride a horse or play a round of golf. In 1999 DEM continued efforts to provide outdoor recreation for city people, especially children. These include award of 50 percent of greenways grants for open space in urban areas, making 27 acres in Providence available for a 9 hole youth golf training center; designs to rebuild The Goddard State Park horse barn; and designs for rebuilding facilities serving the sandy beach pond in World War II State Park in downtown Woonsocket.

The Department also works in the Urban Rivers Team (see watershed chapter for more information).



Thames Street Landing. The initial segment in the redevelopment of Bristol's waterfront.

Planning For Growth

In 1999, The Department worked with the South County Watershed partners to explore ways to guide growth to minimize environmental harm, maintain community character and preserve open space. Stakeholders selected sites to create scenarios to show how land developed with sustainable methods compares to buildouts using conventional zoning and subdivision regulations. The Department also conducted workshops and began training programs for local boards. DEM worked with the Governor's Office and other state agencies to lay the groundwork for the Governor's Growth Planning Council that will examine development patterns; evaluate effects of programs and policies on development; recommend ways to encourage economically and environmentally sound growth; and build local capacity to promote sustainable growth.

Pesticide Hazard Reduction

In 1999, the Department awarded \$138,408 for integrated pest management (IPM) to reduce or eliminate reliance on chemical pesticides. Projects include the Southside Community Land Trust for urban community gardens, URI Department of Plant Sciences for pesticide applicator training, and URI's Center for Vector-Borne Disease for mosquito testing equipment.



Bristol J.T. O'Connell property

Dan Wightman's description of a project at the former J.T. O'Connell property in Bristol sums up the Brownfields program. "We would like to build something where there is currently nothing but rotting buildings, leaking roofs, weed growth, contaminated soil, occasional vandalism ranging from petty to serious, and overall decay. We think that the project we have planned will once again return the site to a productive and thriving area that the Town of Bristol and the DEM can be proud of."

Miles Avenue Property Co., LLC, where Wightman is a principal, was interested in a project to restore offices and a storage building if liability and regulatory issues in cleaning lead and hydrocarbons in the soil could be resolved up-front. Miles Avenue Property agreed to cover contaminated areas with a protective material and to set restrictions on property use to eliminate exposure to the toxic materials. Wightman said of the DEM staff who worked out the agreement, "The words firm, fair and fast come to mind when I think of our experiences with you both." The project, now underway, will turn the property into a retail facility similar to Newport's Bowen's Wharf area, which will complement Bristol's waterfront and downtown, helping to attract trade.

Preventing, Abating and Remediating hazardous materials and other contaminants - Lead

Childhood lead poisoning is still the leading children's health problem in Rhode Island, despite the drop in poisoning rates from 20% in 1995 to 10% in 1999. Given the lifelong damage that victims may suffer, every effort must be made to reduce lead exposure.

In 1999 the Department monitored and ensured cleanup of 57 residential sites with exterior lead paint removal violations. The Department developed a streamlined process to notify paint removal workers of violations directly at the work site and issue immediate cease and desist orders for failure to comply. The Department will use the new process this year. DEM is also partnering with the Department of Health to provide intense compliance monitoring of lead paint hot spots.

Dioxins and Volatile Organic Compound Contamination in the Woonasquatucket River

In 1999 the Department and EPA addressed health hazards from dioxins and volatile organic compounds (VOC's) at Centredale Manor. These included analyzing soil and sediments samples, fencing contaminated areas, posting no fishing signs, and installing temporary soil caps to avoid disturbing

contamination. The Department, EPA and others are investigating sources and extent of contaminants and potential risk to human health or the environment. Plans are underway to address contaminated soils along the Woonasquatucket down to Allendale Pond and Lymansville Pond.

Pollution Prevention in AutoBody Shops

DEM-led investigators found that repair technicians are exposed to high levels of lead, arsenic, cadmium and chromium in autobody sanding dust. In 1999 DEM, the Department of Health, the URI Center for Pollution Prevention, and the William Davies Career and Technical High School started an Autobody Self-Certification Program to prevent these hazards.

The certification program requires minor effort compared to conventional permitting and enforcement programs, and is expected to achieve higher compliance rates. The program also includes training on cost-saving autobody technology as well as blood lead testing for autobody repair technicians, sampling of surfaces for lead, and worker education.

Environmental Hazards Animal Borne Diseases

The Department monitors the most serious diseases transmitted from animals to humans: rabies and encephalitis. In 1999, DEM found a

rise in rabies with 35% of 66 animals testing positive by March of 1999, up from 13.7% of 283 animals tested in 1998. Monitoring helps alert communities at risk to take precautions such as avoiding wild animals and keeping pets vaccinated.

Eastern equine encephalitis (EEE), is a rare disease transmitted by mosquitoes that causes an average of five cases per year in the US with a mortality rate of 50%. The Department traps mosquitoes each summer to monitor the virus. If the virus is found in mosquitoes the Department takes measures to kill mosquitoes in the area and warns residents to avoid exposure. The trapping program also tests for other types of viral encephalitis.

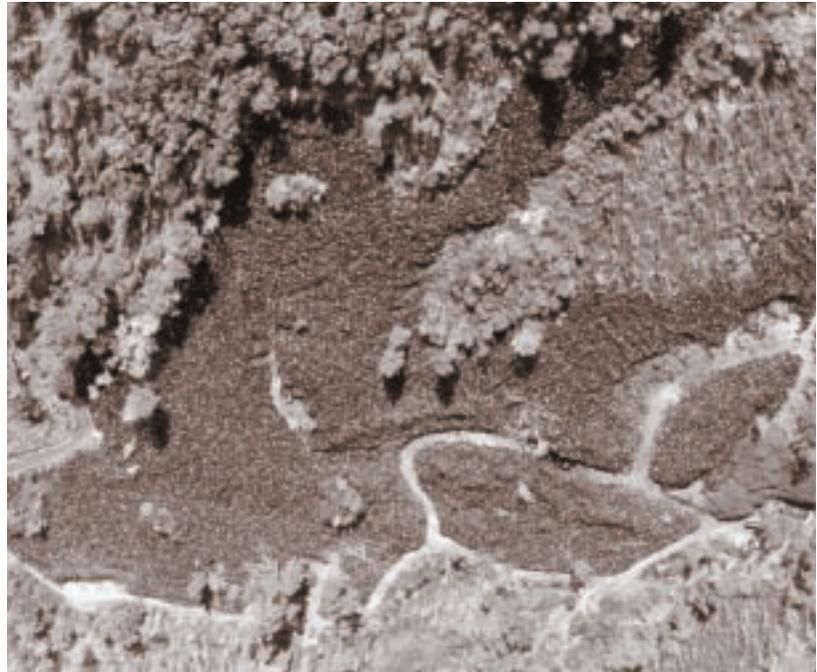
West Nile Virus

The WNV, commonly found in Africa, West Asia, and the Middle East, can cause West Nile Encephalitis. The first incidence in the Western Hemisphere was recorded in New York last summer with 62 cases of WNV and 7 deaths. While the mortality rate, under 12%, is less than that of EEE, the number of cases may be greater for WNV, making it equally serious. DEM, in conjunction with the Department of Health, began planning in 1999 for the WNV. DEM acquired larvicide for municipalities to use during breeding season. The larvicide does not require spraying and is not toxic to humans or the environment generally.

**Physical Hazards:
Dam Failure and Fire**

The 510 registered dams in Rhode Island are rated high, significant, or low hazard, based on anticipated loss of life or property damage should the dam fail. In 1999 the Department inspected 32 of the 41 significant hazard dams in the state and inspected seven low hazard dams on the Woonasquatucket as a result of concerns over dioxin in sediment behind the dams. DEM inspected six other low hazard dams and finalized reports on the 14 high hazard dams. Of 32 significant hazard dams, 21 had at least one component rated poor, requiring an engineering evaluation and extensive work. DEM mailed results to owners responsible for maintenance and repair and moved forward with engineering evaluation, design and/or reconstruction at state owned dams. These include completing repairs at Dam No. 102 at Olney Pond, in Lincoln Woods State Park, a high hazard dam, award of a contract to complete design of repairs to Dam No. 566 at Bowdish Reservoir, and a contract award for engineering evaluation of Dam No. 108 at Stillwater Reservoir, a high hazard dam.

The Davis tire pile in Smithfield represents the largest single environmental threat in Rhode Island. If the tires were to ignite, they would release large quantities of liquid oil into the water and oily soot into the air. In 1999 DEM removed 1.85 million



Davis Tire plant (top) before any tires were removed and after DEM removed millions of tires from the pile(bottom).

tires from the pile. About four million tires have been removed since 1997. In 1999, when the dedicated tire fund was depleted, DEM petitioned the Superior Court, who ruled that the

Department was correct in its interpretation that the OSPAR statute allowed tire removal from the Davis site as a preventive measure. Removal of tires continues.

The health, diversity, and integrity of Rhode Island's ecosystems will be restored, protected, enhanced and sustained.

Goal: Healthy Ecosystems

Preserving Rhode Island's natural habitats within their component ecosystems is central to the Department's strategy to maintain the state's unique quality of life. Activities from outdoor recreation to commercial fishing depend on healthy ecosystems that can sustain our fish and wildlife resources. Our forests contribute to erosion control and clean air. Wetlands and coastal dunes protect upland properties from storm damage and erosion. Wetlands also store and spread out stormwater during heavy rains, preventing flood damage while filtering pollutants from storm water.

The Department, works with many partners to manage, preserve, and restore plant, animal, and aquatic species. Protecting and restoring terrestrial and aquatic habitat, protecting open space to establish corridors for wildlife, better watershed management, and growth planning preserve a variety of natural areas and wildlife for commercial and recreational use.

Rhode Island habitats are particularly vulnerable due to the state's small size and advanced stage of urbanization. Fresh and salt water systems and wetlands have been degraded by industrial pollution, bacterial contamination, and excess nutrients. About 23% of the 1300 known native plant species in Rhode Island are becoming rare or are threatened or endangered. Similarly, 28% of the state's native vertebrate species, including mammals, fish, and birds,

are rare or endangered. Eelgrass beds, valuable nursery and feeding grounds for commercial and recreational fish species, have been reduced to about one hundred acres. Approximately 4,000 acres of Narragansett Bay have been filled over the past 300 years. Restoring critical habitats, including wetlands, is vital to restoring native plant and wildlife species.

Forest Ecosystems

The Department works with landowners, communities, and non-profits to manage forested areas, and protect critical habitat. The Department preserves forest land either through acquisition of key parcels or through the purchase of development rights. For more information, see The Abundant Open Space and Recreational Opportunities chapter in this report. In 1999, the DEM continued to monitor species of concern. The Department surveyed 63 osprey nests with 109 fledglings produced; 90 active beaver colonies; banded 500 geese, and attached radio tags to 14 ruffed grouse.

Coastal and Freshwater Ecosystems and Habitat Restoration

In 1999, DEM, collaborated with URI to identify freshwater wetland restoration opportunities. Along the coast, DEM, US Fish and Wildlife Service, URI and other partners, continued to map and prioritize opportunities to restore salt marsh and eel grass habitat. The state's habitat restoration program over the next two years will be an effort of the Interagency Coastal Habitat Team run jointly by DEM and CRMC. DEM and CRMC mapped all completed, ongoing, and potential restoration projects, and listed priorities with estimated costs and draft operating principles for administration. This work helped build support for habitat restora-



Eelgrass beds in Narragansett Bay

tion legislation that would enable Rhode Island to receive substantial new federal funding.

A bill introduced by the late Sen. John Chafee would authorize over \$300 million for restoration projects over three years. Under the Chafee bill the federal money will go only to states that have adopted restoration program legislation and matching state funds to pay for 35 percent of each project. The Department also pooled resources with twenty-one partners to match \$3 million in North American Wetlands Conservation Act (NAWCA) funds from the North Cape oil spill settlement, generating \$13,454,515 to protect 2,370 acres of critical wetland and upland habitat in Rhode Island.

Other activities in 1999 include enforcement actions that led to restoration of 40,000 square feet of pond, 200,375 square feet of swamp, and 335,412 square feet of regulated perimeter wetland. DEM also started the South Shore Habitat Inventory and completed the Narragansett Bay Habitat Inventory in cooperation with Save the Bay and the City of Warwick. On a larger scale, the Department began the Narragansett Coastal Wetland Restoration Analysis Inventory with the U.S. Fish and Wildlife Service, UMass and URI. DEM also continued to participate in the Narragansett Bay Cooperative Study with the National Marine Fisheries Service, U.S. Environmental Protection



Ed Reiner of USEPA reviews the results of work he and other members of the Galilee Salt Marsh restoration team did on the marsh off Escape Rd. The team received a national award.

Agency, URI, Roger Williams University, and the Narragansett Bay Estuarine Research Reserve.

Fisheries Management

There have been dramatic changes in the dominant species in Narragansett Bay since DEM began trawl surveys 20 years ago. Although the overall abundance has remained the same, formerly abundant species that had great value to the commercial and recreational fishery have declined. Such species as winter flounder, windowpane flounder, sea robins and tautog have declined while lower value herring, butterfish, bay anchovies and squid have increased. Similar trends have been seen with shellfish and other bottom dwelling species such as crabs and lobsters. Quahogs, the dominant shellfish in the Bay, has declined while lobster and crab have increased. The total number of lobsters belies the fact that this species, too is threatened since lobsters are being caught as soon as they reach legal size.

The Department, the Atlantic States Marine Fisheries Commission (AMFSC) and the Mid-Atlantic and New England Fisheries Councils, manage fisheries by setting catch limits during a given season, restricting length of seasons, and prohibiting harvest until fish have gone through a reproductive cycle. There are divergent views as to the need for an overhaul of federal laws governing fisheries management. DEM and the MFSC are developing management plans for American eel and horseshoe crab populations, as well as working with the lobster industry on an interstate management plan for the American lobster. The Department continued eleven research projects worth \$1.76 million to provide data to comply with Fishery Management Plans under the Sustainable Fisheries Act. This includes construction of a 61-foot research vessel. DEM marine staff supported stakeholders through the Rhode Island Marine Fisheries Council.

Agriculture, commercial and recreational fisheries, forestry and tourism will be affordable and sustainable activities, will employ best management practices to protect common resources, and will be supported as resource stewards and key sectors of the state economy.

Goal: Viable Natural Resource-Based Industries

Rhode Island's economy benefits greatly from industries that are based on proper management of natural resources. Marine fisheries produce more than \$75 million in fin and shellfish caught and \$700 million in related seafood industries. The state's farms provide locally-grown agricultural products, contributing over \$82 million to the state's economy; and upland forests provide wood products worth more than \$18 million. Agricultural and forest businesses enhance quality of life by maintaining open space, providing access to locally grown products, and preserving a rural way of life. Tourism, based in large part on the attractiveness of the state's natural resources, is one of the state's largest industries, generating an estimated \$2.1 billion a year. Recreational fishing and hunting are two of the largest recreational activities in the state. Two hundred thousand Rhode Islanders and tourists take part in recreational fishing, generating 21,160 jobs and millions of dollars. Recreational hunting participants spend \$162 million annually.

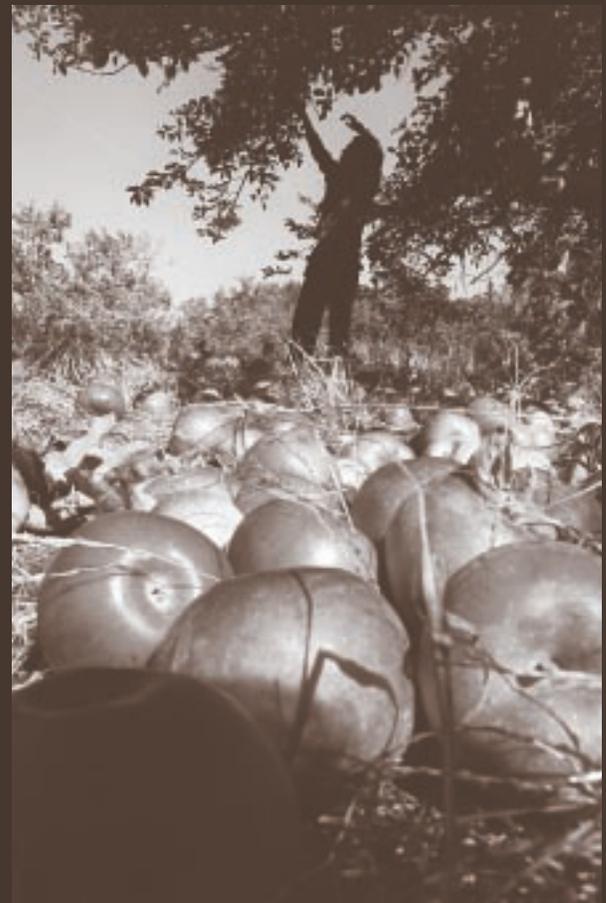
In addition to ecosystem protection efforts, the Department took steps to sustain natural resource-based industries in 1999 through aid to farmers, woodland property owners and commercial anglers as well as improvement of hunting and fishing opportunities.

Aid to Farmers

There are over 700 farms in Rhode Island on over 55,000 acres, with cash receipts of nearly \$82 million. The Department helps farmers through animal

health, farm ecology, plant industry, farmland preservation, marketing and promotion, and other programs. DEM worked with the US Department of Agriculture, the Water Resources Board, the Emergency Management Agency, and others to coordinate a state response to the drought emergency last summer. The DEM provided technical assistance and emergency permits for expanding or constructing irrigation ponds or wells as needed to dozens of farms.

There is more to be done to help the state's farmers stay in business, and in 2000 DEM will focus on developing a drought preparedness plan and a farm viability program plan. The efforts taken in 1999 to help farmers get through the drought will be codified, refined and expanded so that in the event of a future



Michael Clifton, of Woonsocket, reaches for an apple at Barden Orchards, in Glocester, one of many in the area.



Michael Small, left, and Jason Goguen, both of Charlestown, split a cord of wood, which can sell for \$115.

drought DEM will be ready to respond in the most effective way possible. The department will also develop a holistic plan to help keep the state's farm industry viable through such efforts as marketing and promotion, watershed protection, and help with best agricultural management practices to protect the environment while sustaining the economic health of the farms.

Helping Woodland Owners

In 1999, DEM promoted woodland preservation through traditional ways to generate income such as sawtimber or fuelwood as well as innovative ways such as alternative products and services. The department provided workshops and printed materials on innovative ways to generate revenue including raising or obtaining edible, medicinal, floral, and

specialty wood products. Promoting fee-based and passive recreation on woodland properties was also included. Such uses can make it possible for owners of small parcels to generate revenue to pay taxes and even make a profit while they preserve green spaces. As a result of these efforts, one landowner began harvesting hemlock to make planters.

Managing Fisheries for Sustainable Yield

The Department manages commercial fisheries to sustain healthy populations of commercial species. DEM sets harvest limits each season for different species in coordination with the Atlantic States Marine Fisheries Commission and seeks to protect and restore coastal habitats that are critical to many commercial species. The Healthy Ecosystems chapter of this

report provides more information on the Department's efforts to protect fisheries.

Improving the Commercial Fishing Infrastructure

To support the state's commercial fishing industry in 1999, the department began work on a five-year plan to improve state port facilities in Galilee and Newport. In Galilee, DEM rebuilt a pier, bringing the number of new piers in this port to four. The Department retained an engineering firm to draft replacement plans for a section of dilapidated bulkhead in the dragger section of the Port of Galilee. Construction will begin early in 2000, and plans have been drawn up to replace three more piers in spring 2000. DEM also built a floating dock at the port of Newport to be installed by the end of 2000, allowing ten more commercial skiffs to berth at the port. The Department also retained an engineering firm to design a bulkhead and other site improvements at Pier 9.

Dredging

Marine commerce requires channels, harbors, ports, marinas and other facilities with deep enough water to allow easy, safe movement of boats. Unfortunately, maintenance dredging of most harbors and channels has come to a standstill in Rhode Island since 1971, due to environmental concerns and the lack of acceptable disposal sites. DEM will continue



Port Edgewood Marina employee Leo Allard, of Woonsocket, takes advantage of the mild weather to shrink-wrap a boat.

work with CRMC and the ACOE to develop and implement a statewide dredging plan, with particular focus on an expedited strategy for addressing the needs of marinas.

Improving Recreational Opportunities for Hunting and Fishing

In addition to the Department raising 135,000 trout and stocking them at public fishing areas, the Department included two new areas in 1999: Willett Pond in East Providence and J.L. Curran Reservoir in Cranston. DEM began an initiative to improve the largemouth bass fishery with the stocking of 5,000 largemouth bass into five ponds for study.

This is part of Department outreach to citizens unfamiliar with such laws. The Department distributed a fishing law brochure writ-

ten in seven languages: English, Spanish, Portuguese, Cambodian, Laotian, Hmong and Vietnamese.

The Department also stocked 3,000 ring-neck pheasants for hunting on 10 different wildlife management areas; and collected harvest information on 2,000 deer and 147 wild turkeys for use in

setting regulations to maintain adequate stocks. DEM offered over 40 courses in safe hunting and bowhunting to more than 900 students and a special seminar accommodating 200 wild turkey hunters. In partnership with the Wild Turkey Federation, the Department planted two orchards of crabapple trees to provide forage for wildlife.



Mike Goozey, Walter Campbell, and Mike Sliney return from a successful pheasant hunt at Addieville East Farm.



Natural and scenic landscapes will be preserved and all citizens will have easy access to well-maintained parks, forests, wildlife areas and historic sites. Open space and recreational opportunities will be improved in both rural and urban settings.

Goal: Abundant Open Space and Recreational Opportunities

Rhode Island's 420 miles of coast, 330,000 acres of forests and 60,000 acres of farmland, are vital to healthy ecosystems that sustain a high quality lifestyle for people and habitat for wildlife. Most Rhode Islanders are within a five-minute drive to an open space where they can take part in activities such as hiking, hunting, biking, fishing, swimming, and camping. Tourists who visit Rhode Island to take advantage of natural and historic resources generate approximately 2.1 billion dollars each year.



Monica Gorham Darcy says hello to an old friend, one of about a dozen thoroughbreds at the Gorham Farm.

The environmental impact due to loss of open space is apparent. During this century, more than 44 species of plants and at least 9 species of animals no longer thrive due to conversion of natural habitats to developed land. Over the last decades, 50 percent of coastal wetlands were lost. 75 percent of the state's water comes from surface water reservoirs that are threatened by development.

Open space is decreasing rapidly as residential and commercial populations shift southward and shoreward onto larger plots of land and into larger buildings. Since 1970, Rhode Island's population has increased by only five percent, but an additional 55,000 acres have been developed for residential and commercial purposes. Rhode Island is number six in the nation in terms of the rate at which land is being developed. In 1999, the Department significantly increased acquisition efforts, planned and completed major overhauls, renovations and expansions of recreational facilities, built new infrastructure to increase public access to recreational areas, published materials about recreational resources and hosted numerous special events at recreational areas.

In 1999, the Department helped protect approximately 1,600 acres, compared to 575 acres in 1998. Governor Almond is calling for protecting at least 35,000 more acres by 2010. The passage of a \$50 million bond issue in November 2000 is crucial to protect open space. It is anticipated that over 22 million dollars will be awarded to communities for land acquisition and development such as trail ways, beach facilities, mountain biking areas and recreational fields and courts. The balance will be used to protect environmentally sensitive land, agricultural land, and land for additional state park and recreational facilities.



ALMOND LAUNCHES DRIVE FOR \$50 MILLION OPEN SPACE BOND

"Today I am continuing my push for a \$50 million open space bond issue for the November Ballot. Five years ago, I was proud to support the state Greenspace and Greenway Plan, which identified the need to safeguard an additional 35 thousand acres of parkland, forests and open space by the year 2020. That has given us a blueprint to meet the challenges before us. The bond issue I'm proposing will enable us to achieve this goal by 2010. That means we'll be putting this issue on the fast track and we'll be getting the job done a decade ahead of time."

The state cannot buy enough land or development rights on its own to accommodate the need for open space. The state has more than doubled its dollars by matching them with federal, nonprofit and private contributions from The Nature Conservancy, Audubon Society of Rhode Island, land trusts and communities.

Major Renovations, and Expansions of Recreational Facilities Bike Paths

Biking is an increasingly popular sport in Rhode Island. An estimated 800 to 1000 bikers use the Blackstone Valley Bikeway each day during biking season. The Department completed design for four more miles of the Blackstone Valley Bikeway in 1999. It will ultimately connect with bikeways in Massachusetts and link with the East Coast Greenway, a pedestrian and bike path that will run from Maine to Florida.



A Greenway grant will fund a Bristol Project to acquire and enhance 20 acres.

Greenways and Trailways

Last year, the Department awarded 25 grants worth \$2.433 million for communities and nonprofits to acquire open space, develop land for recreation and promote continuity of open space by acquiring land adjoining protected areas.

The Department awarded Greenway Grants for projects in Providence, Westerly, South Kingstown, Cumberland, Cranston, Central Falls, Block Island, Bristol, Barrington, Aquidneck Island, Middletown and Burrillville. In Portsmouth the grant will be used to preserve thirty acres of old-growth American beech forest, with some trees that are 200-300 years old. In Bristol the grant will be used to acquire and enhance twenty acres of marshland, woodland and open meadow with nature trails, boardwalks and scenic overviews.

In 1999, the Department approved seven of the 11 trail grants for projects in 1999 in: Foster, Barrington, Bristol, West Warwick, Providence, South Kingstown, Jamestown and Aquidneck Island. The City of Providence grant will be used to build the Woonasquatucket River Greenway, a 4.4-mile linear park that will include a bikeway and pedestrian path and other recreational improvements.

ATTENDANCE AT STATE PARKS AND BEACHES INCREASED BY 15% BETWEEN 1998 AND 1999

<u>STATE PARKS AND BEACHES</u>	<u>1998 Season</u>	<u>1999 Season</u>
Burlingame State Park	2,277	n/a
Charlestown Breachway	188,276	231,227
Colt State Park	1,061,043	1,244,337
East Beach	98,865	126,158
East Matunuck State Beach	243,928	249,382
Fort Adams State Park	622,228	656,474
Lincoln Woods State Park	1,027,961	1,200,621
Goddard State Park	640,784	738,590
Misquamicut State Beach	243,928	264,346
Roger Wheeler State Beach	294,178	363,387
Salty Brine State Beach	41,164	46,142
Scarborough Beach North	386,180	484,427
Scarborough Beach South	221,472	209,956
TOTAL	5,072,284	5,815,047
% CHANGE	--	15



Elise Staulo, 5, of Warwick plays atop a large rock after a picnic with her twin sister Sarah, and her mother, Mary, at Goddard Park in Warwick during spring-like weather.

State Parks and Beaches

The ten state parks, four camping areas, fourteen beaches and three major forestry sites in the park system operated by the Department attract more than five million people per year. In 1999, the Department completed designs and construction at state recreational facilities in Jamestown, Newport, Woonsocket, and Warwick and completed plans for restoring three abandoned buildings at Fort Wetherill State Park in Jamestown for the new Aquatic Resource Center. The Department completed plans for new beach facilities at World War II Memorial Park in Woonsocket to be built in summer of 2000, making quality recreational facilities available to the urban, multi-cultural population there. At Goddard State Park in Warwick the Department completed plans for an equestrian center. The projects are funded by the Champlin

Foundation, the Rhode Island Capital Fund, the U.S. Fish and Wildlife Service, state bonds and Federal Land & Water Conservation Funds.

The Department requested \$1 million to repair historic structures at Fort Adams State Park in Newport. It is anticipated that the Fort Adams Trust and Fort Adams Foundation will match the state funds. In 1999, the George Wein and Festival Productions, the producers of the annual jazz and folk festivals at the park, gave the first \$30,000 of their



'It's just become more and more clear that there's little time left in this little state to do this kind of work.'

**DOUGLAS PARKER,
Rhode Island Director,
The Nature Conservancy**

\$90,000 pledge to the Department for renovations.

The Department built a new pavilion at Misquamicut State beach in Westerly, marking the completion of the renovations of the three south shore state beaches — Scarborough, Roger Wheeler and Misquamicut. The Department will complete improvements to the parking lot at Misquamicut by Memorial Day 2000.

The continued viability of many state recreational facilities is in jeopardy due to inadequate funding for maintenance of these facilities. The Department is working to develop a Capital Management Plan to protect these assets.

Ensuring Public Safety through Patrol and Enforcement

DEM protects public safety and natural resources through enforcing regulations. Vehicle and safety violations rose sharply in early 1999, due to warm weather and resultant high attendance. The Director authorized changes to strengthen public safety without new hiring, including deputizing full time park supervisory and providing more environmental police details to major parks and South County facilities at peak times. Environmental Police Officers made 511 arrests, and issued 1,558 warnings in 1999. The Department collected \$66,478 in fines for illegally taken fish and game, and \$12,297 from seizure and sale of equipment used in illegal activities.

Location of DEM Accessible Boat Ramps



In response to many complaints from the public about jetskis, the Department held five public meetings to solicit public opinion about personal watercraft.

Interior Department Recognizes Improved Access

In 1999, the U.S. Department of the Interior awarded the Annual Department of Interior Civil Rights Award to the Department for outstanding accomplishments in providing handicap access. The Department enhanced access by

adding courtesy docks, concrete ramps, and parking areas at the boat launch facilities at Colt Park in Bristol and Bold Point in East Providence.

Improving Public Knowledge of Recreational Resources and the Environment

To help the public explore Rhode Island waterways in small non-motorized boats, the Department added to its roster of guides the Rhode Island Water Trails Guide, a forty-page booklet of maps and information on boating areas, access and safety. Funding was provided by the Champlin Foundation.

In partnership with the Audubon Society of Rhode Island the Department continued to promote environmental education through naturalist programs at Beavertail State Park in Jamestown, Roger Wheeler State Beach in Narragansett and Lincoln Woods and a new program at Colt State Park in Bristol, as well as Audubon Society summer camps at Colt State Park and Lincoln Woods.



The Department hosts many special events, including events that raise money for various causes. Major special events hosted by the Department in 1999 included:

- Earth Day at Goddard State Park - 2,000 people
- Governor's Bay Day - 33,000 attendees
- Governor's Commission on Highway Safety Bicycle Safety Day - 1,600 attendees
- State of Rhode Island Building at the Eastern States Exposition (the "Big E") in Springfield, MA with a total attendance of 750,000
- Historic Jazz Festival at Fort Adams - 20,000 attendees
- Ben and Jerry's Folk Festival at Fort Adams - 17,500 attendees
- Road races: Roger Williams University 5k, Brain Injury Association 5k walk/picnic, St. Brendan School Walk-A-Thon, East Bay Striders 10 Mile foot race
- Co-sponsored with the Audubon Society of Rhode Island on naturalist programs held at four different park locations
- Audubon Society summer camps at Colt State Park and Lincoln Woods.

To schedule events please call the DEM's Division of Parks and Recreation: (401)-222-2632



New Pavilion at Misquamicut State Beach

The preservation, protection, restoration, and sustainable use of Rhode Island's natural resources will be achieved through the involvement and collaboration of a broad spectrum of people who live, work, and play within a watershed area.

chance to take part in identifying watershed issues and planning and implementing solutions.

The watershed coordinators work with watershed constituents to build their capacity to protect, preserve, and restore the environment. The coordinators work with DEM staffers and other organizations, to bring expertise, resources, and projects into a holistic program for the watersheds by preparing annual work plans, watershed plans, and by coordinating implementation. A separate work plan for each pilot watershed makes DEM offices responsible for carrying out activities and creating timelines for meeting specific performance measures.

DEM also provided support to the Watershed Approach Coordinating Council of leaders from state and federal agencies, non-governmental organizations, private industry and other partners. The Coordinating Council addresses statewide watershed needs, such as volunteer training, organizational capacity, funding, scientific research and information management to help implement local watershed efforts. DEM also participates in the Partners in Resource Protection (PRP) which has broad representation from resource management organizations.

The PRP helped to develop the watershed approach and provides technical support to the Coordinating Council.

South County Watershed Region

The South County Watersheds are comprised of five watersheds: the Pettaquamscutt, Pawcatuck, Annaquatucket, Saugatucket, and the coastal ponds, (see map) and include the towns in Washington

Goal: Watersheds

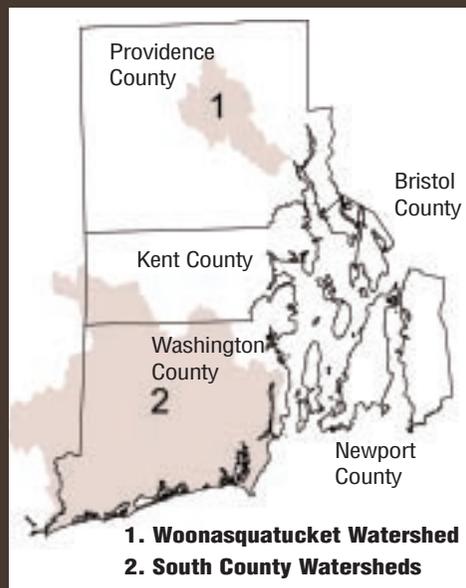
What is the Watershed Approach?

The watershed approach is a smarter way of managing our natural resources. It brings together government agencies, interest groups, businesses and citizens to work on environmental issues ranging from water quality protection to open space acquisition within a watershed. Watershed partners share ideas, pool resources and work together to meet common goals to protect the environment on a regional basis.

Coordinating Effective Management of Watershed Resources through Community-based Planning

In 1999, the Department appointed Scott Millar to coordinate implementation of the watershed approach and appointed a watershed coordinator for each priority watershed. The Department also helped establish teams for the RI Watershed Approach and the two pilot areas.

The Pilot Watershed Teams - the South County Watershed Partnership, and the Woonasquatucket River American Heritage River Steering Committee - are comprised of community organizations, local businesses, and government and non-governmental organizations. The watershed teams give local stakeholders the



County plus West Greenwich. These are North Kingstown, South Kingstown, Narragansett, Charlestown, Exeter, Hopkinton, Richmond, Westerly, and West Greenwich.

South County communities have experienced the greatest growth of any part of Rhode Island in the past decade. The Washington County Regional Planning Council was formed to address changes to community character and the environment from rapid and unplanned growth. This includes using up greenspace, the costs of extending roads, water, and sewer lines and threats to water supplies. The Department is working with the Council and many other partners on projects to deal with these issues.

Department assistance to watershed communities through The Rural Lands Coalition, Washington County Regional Planning Council, and the South County Watersheds Technical Planning Assistance Program included developing alternative land use ordinances for conservation development; determining the feasibility of using a transfer of development rights (TDR) system to protect farmland, forestland

and open space; and providing educational outreach to watershed communities.

DEM also began working with the Rural Lands Coalition and the Washington County Regional Planning Council on the South County Watersheds Greenspace Protection & Implementation Strategy. The Strategy sets priorities for acquisition and helps to guide growth to designated areas and away from environmental, recreational and cultural protection priorities identified by local constituents.

DEM works with stakeholders, including the state Water Resources Board, EPA, NRCS and the USGS, farmers, golf course operators, water suppliers, town planners, environmentalists and recreational users, to deal with issues of water supply and allocation. The stakeholders group began studies to determine whether the Wood Pawcatuck can continue to provide water to meet all needs without degrading habitat; and if not, what to do about it. The group is developing models of the Queens-Usquepaug sub-basin to determine the effects of water withdrawals on flow rates and on wildlife, as a basis for strategies that will maintain flow to support wildlife as well as sustain-



CONSERVATION DEVELOPMENT

The Pawcatuck Watershed is on the edge of escalating development coming from the Providence metropolitan area. This watershed is a focal point for tourism, one of Rhode Island's biggest industries. The rural and scenic character of the watershed and its beaches and coastal ponds draw tens of thousands of visitors each year. Many towns in the Pawcatuck Watershed rely exclusively on conventional zoning and subdivision ordinances to manage new growth. However, studies show that conventional development ordinances can encourage environmental degradation and promote sprawl in rural communities.



The Department is managing the Technical Assistance to Promote Sustainable Development in the Pawcatuck Watershed Project on behalf of the Rural Lands Coalition. The project helps communities develop alternative land use ordinances to manage growth, prevent sprawl, protect natural resources, and promote sustainable development. Ordinances developed for the Pawcatuck communities can be used as models throughout Rhode Island to encourage balanced growth. This project is coordinated with the Pawcatuck Watershed Partnership, the Washington County Regional Planning Council, and watershed communities.

able water supply needs. The stakeholders will use the study results to inform discussion on supply and allocation issues. The Department also began a Total Maximum Daily Load (TMDL) study to improve water quality for the Narrow River and Green Hill Pond that will be submitted to EPA in 2000.

Controlling Pollution and Restoring Uses in The Woonasquatucket River Watershed

The Department continued to work in the Urban Rivers Team. The team focuses on the Woonasquatucket River until priority issues such as dioxins are controlled.

The Woonasquatucket River watershed encompasses most of the Town of Smithfield as well as parts of North Smithfield, Glocester, Johnston, and Providence. The 18 mile river arises in a rural area, flows into increasingly urbanized territory and ends at Waterplace Park in Providence. The River suffers from the cumulative impacts of industrial contaminants such as dioxins and PCBs in urban stretches. Other problems include excess nutrient loading, abandoned industrial sites, litter and illegal dumping of solid waste. While some stretches of the urban river bank are surprisingly healthy, others are degraded and provide poor habitat.

In 1999, the Department began work with the American Heritage River Steering Committee, the Urban Rivers Team, and the USEPA River Navigator to coordinate watershed efforts and to produce a State of the Watershed report. DEM also began a restoration plan for the Woonasquatucket River watershed. One element of the plan is the Department's effort with Smithfield to abate excess nutrient loading from the wastewater treatment facility that depletes dissolved oxygen in the Woonasquatucket. Another element is curtailing illegal discharges. After EPA's 1997 reconnaissance of the river identified pipes discharging into the river during dry weather, they have investigated illicit and inappropriate discharges. DEM will work with towns and environmen-



Canoeing on an urban river. Woonasquatucket River Greenway

talists to identify the sources of discharges and take enforcement or other remedial action.

DEM will use a \$67,000 Watershed and Clean Water Action grant received from USDA Forest Service in 1999 on behalf of the Woonasquatucket American Heritage River Steering Committee to improve the river and its banks. The river and its tributaries will be surveyed to determine sites for vegetated buffers; at least one site will be chosen for re-vegetation to serve as a model for future projects.

DEM and partners are creating recreational opportunities, such as the Woonasquatucket River Greenway to revitalize the area. The Greenway, 4.4 miles of bike path, will connect the center of Providence and the Providence Place Mall with Olneyville and Johnston, and to Smithfield through DOT's Northwest Bike Trail, increasing the park land accessible to low income populations in an area that does not meet national standards for the amount of recreational land. Partners include the City of Providence, the R.I. Department of Transportation, the Army Corps of Engineers, the U.S. E.P.A., and the Providence Plan.



RIVERSIDE MILLS—TURNING A BROWNFIELDS SITE INTO A PARK

In 1999, the Department awarded \$600,000 in grants to the Riverside Mills project in Olneyville, a major component of the Woonasquatucket River Greenway. The historic textile mill property in Olneyville is strewn with building debris, and illegally dumped bulky waste, abandoned tanks and contaminated soils that discourage investment, lower property values, and promote more illegal dumping.

Cleanup of the site will improve public and environmental health and abate toxic nonpoint pollution, making commercial and public recreational development feasible. Plans include 1,450 feet of riverside buffer re-vegetated with wetland plants to filter nonpoint pollution runoff, prevent erosion, and provide breeding grounds for desirable species such as songbirds, aquatic life, butterflies and small mammals.

The trails will be available for hiking, jogging, running, bicycling and rollerblading and river access for canoeing and kayaking. The trails will comply with the American Disability Association guidelines. The Riverside Mills site will be developed as a rest area with parking, benches, tables, signage and scenic overlooks of the river. The Riverside Mills office building may be rehabilitated for assisted living for veterans.

The Providence Plan, the developers of the Woonasquatucket Greenway Project, have been performing public outreach and soliciting the neighborhood for potential redevelopment ideas at the mill property.

U.S. Senator Jack Reed and the City of Providence secured \$1,000,000 in remediation money for HUD's "Neighborhood Initiative Grant Program."



Former Riverside Mill



Debris along The River at Riverside Mill

Protecting the environment is a big job, and even a big department can't do it all. The Department of Environmental Management would like to acknowledge and thank the many agencies and organizations that have collaborated with DEM to help make the Department's work possible. The Department offers heartfelt appreciation to the following partners for the environment:

thank you

DEM'S PARTNERS IN ENVIRONMENTAL ACTION

State of Rhode Island

Coastal Resources Management Council
Narragansett Bay Commission
Attorney-General's Office
Department of Health
Department of Transportation
Division of Motor Vehicles
Division of Public Utilities
Economic Development Corporation
Emergency Management Agency
General Assembly
Governor's Office
Greenways Council
Historical Preservation Commission
Lt. Governor's Office
National Guard
Public Transit Authority
Resource Recovery Corporation
State Emergency Response Commission
State Police
Statewide Planning Program
Water Resource Board
State Conservation Committee

United States Government

Blackstone River Valley National Heritage
Corridor Commission
Federal Bureau of Investigation
Federal Emergency Management Agency
Federal Highway Administration
National Marine Fisheries Service
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Attorney's Office
U.S. Department of Agriculture
Farm Service Agency
Forest Service
Natural Resource Conservation Service
U.S. Department of Commerce
Economic Development Administration
National Oceanic and Atmospheric Administration
U.S. Environmental Protection Agency
Region I
Lexington Laboratory
Narragansett Laboratory
U.S. Fish and Wildlife Service
Pittman-Robinson Program
Sportfish Restoration Program
U.S. Geological Survey
National Biological Service/Biological Resource Division
U.S. National Parks Service

Education

Brown University
Community College of Rhode Island
Davies Career and Technical High School
Johnson & Wales University
Providence College
Rhode Island College
Roger Williams University
Tufts University
University of Massachusetts
University of New Haven
University of Rhode Island

Private Organizations and Other Agencies

American Electroplaters and Surface Finishers Society
American Lung Association of R.I.
Arc of Northern R.I./Metech International
Association of State and Interstate Water Pollution
Control Administrators
Association of State and Territorial Solid Waste
Management Officials
Audubon Society of Rhode Island
Blackstone Valley Chapter, ARC
Blackstone Valley Tourism Council
Blackstone Watershed Council
Champlin Foundations
Cranston Arc
Environment Council of RI - Education Fund
Environment Council of the States
GrowSmart Rhode Island
Narrow River Preservation Association
National Association of State Boating Law Administrators
National Safe Boating Council
The Nature Conservancy
New England Interstate Water Pollution
Control Commission
Northeast Recycling Coalition
Northeast States for Coordinated Air Use Management
Northeast Waste Management Officials Association
Ozone Transport Commission
Partners in Resource Protection
Pawtuxet River Authority
Pokanoket Watershed Alliance
Providence Plan
Recycling for Rhode Island Education
R.I. Association of Wetland Scientists
R.I. Builders Association
R.I. Canoe and Kayak Association
R.I. Chapter, American Planning Association
R.I. Council of Electroplaters
R.I. Federated Sportsmen's Club

R.I. Pretreatment Coordinators Association
 R.I. Marine Trade Association
 R.I. Natural Heritage Survey
 R.I. Resource Conservation & Development Area
 R.I. Recycling Coalition
 R.I. Rivers Council
 R.I. Rural Lands Coalition
 R.I. Shellfishermen's Association
 R.I. Tree Council, Inc.
 R.I. Veterinary Medical Association
 R.I. Wild Plant Society
 Rhode Island's local animal control officers
 and numerous humane organizations
 Rhode Island's Conservation Commissions
 Rhode Island's Conservation Districts
 Rhode Island's local land trusts
 Rhode Island's municipalities
 Rhode Island's public and private schools and colleges
 Rhode Island's public and private water suppliers
 Rhode Island's wastewater treatment authorities
 The Runnins River Steering Committee
 Salt Pond Coalition
 Saugatucket River Heritage Corridor Commission
 Save The Bay
 Sierra Club
 Small Craft Access Trust (SCAT)
 South Providence Development Corporation
 Southern New England Forest Consortium, Inc.
 Stafford Pond Steering Committee
 State and Territorial Air Pollution Control Administrators
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 State of Massachusetts
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 Town of Seekonk
 Trout Unlimited
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 Woonasquatucket American Heritage River Steering
 Committee
 Woonasquatucket River Greenway Project

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Business Roundtable:

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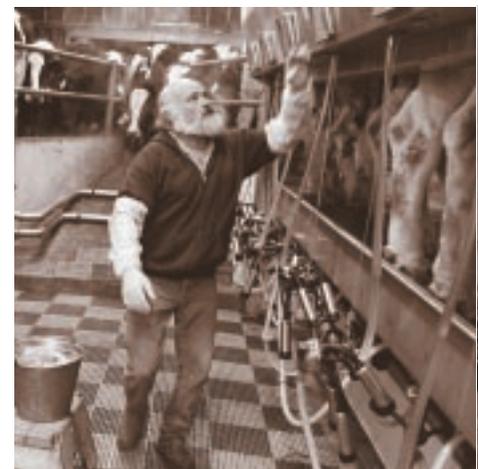
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Earth Day Advisory Group

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Environment Council of Rhode Island
Environmental Education Advisory Group
Open Space 2000 Steering Committee
Performance Partnership Advisory Group
Permit Streamlining Prioritization and Implementation
Advisory Committee

Agriculture Programs

Agricultural Land Preservation Commission
Agriculture Advisory Committee
Eastern Equine Encephalitis Advisory Committee
Mosquito Abatement Board
New England Dairy Compact—R.I. Delegation
Pesticide Relief Advisory Board
Rabies Control Board
R.I. Beekeepers Association
R.I. Chapter Northeast Organic Farmers Association
R.I. Farm Bureau
R.I. Nursery and Landscape Association
R.I. Organic Certification Committee

Air Resources Programs

Motor Vehicle Inspection/Maintenance
Advisory Committee
Operating Permits Advisory Commission
Risk Management Plans Stakeholders Work Group

Coastal Resource Programs

Galilee Management Advisory Committee
Galilee Lease Committee
RI Lobsterman's Association
Federation of Inshore Seafood Harvesters
RI Charter Boat Association
Newport Pier 9 Commercial Fishermen's Committee

Forest Programs

Forest Fire Advisory Committee
R.I. Trails Advisory Committee
Urban Tree Council
R.I. Forest Conservators Organization

Marine Fisheries Management

Striped Bass Advisory Panel
Scup Advisory Panel
Sea Bass Advisory Panel
Summer Flounder Advisory Panel
Tautog Advisory Panel
Winter Flounder Advisory Panel
Lobster Management Advisory Panel
Shellfish Management Advisory Panel

Waste Management Programs Stakeholder Advisory Group

Underground Storage Tank Program Technical
Steering Committee
Waste Facility Management Program Technical
Steering Committee
Site Remediation and Brownfields Program Technical
Steering Committee

Water Programs

CCMP Implementation Committees
Habitat Restoration Team
Pawcatuck Watershed Partnership
PWP Water Use Stakeholder Group
Septic System Maintenance Policy Forum
Technical Review Committee/On Site Wastewater
Technologies
Urban Rivers Team
Urban Strategy Advisory Group
Watershed Approach Writing Group
Well Drilling Board



DEM TABLE OF ORGANIZATION



*Working title



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