

**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
FY2000 WORK PLAN - Narragansett Bay National Estuarine Research Reserve**

Program Description:

The Reserve was created in 1980 from parcels of the Bay Islands Park and wildlife management areas. Management of the Reserve is a cooperative effort between DEM and the National Oceanic and Atmospheric Administration to provide stewardship for the sensitive habitats on and around Prudence Island, Patience Island, and Hope Island. The Reserve is one of 24 sites in the National Estuarine Research Reserve System (NERRS) protecting one million acres of the nation's estuaries.

Mission of Program:

The NBNERR has two complimentary missions. One focuses on the State of Rhode Island's interest in managing a valuable natural resource and the second focuses on the National Oceanic and Atmospheric Administration's goals for the National Estuarine Research Reserve System.

The first mission seeks to protect and improve the quality of the Reserve for wildlife management and low intensity recreation, including hiking, biking, swimming, hunting, boating, fishing, and wildlife observation. In this regard, the Reserve is considered to be a prime destination for eco-tourism. Prudence Island depends on this resource for a significant portion of its economic activity.

The second mission is to protect and improve the quality of estuaries nationally through research, monitoring, education, and stewardship of the land and waters within the borders of the Reserves which, in Rhode Island, is a representative area of the Virginian - southern New England - biogeographic region.

Program Highlights:

Conditions, Trends, Opportunities and Challenges

The Reserve is in the center of the Bay and encompasses 2,353 acres of land and 1,591 acres adjoining the islands to a depth of 18 feet. DEM owns 60% of Prudence and all of Patience and Hope Island.

Upland -- The Reserve includes extensive acreage of what was once farmland but has since grown into dense shrubs and early successional trees.

This section relates to:

DEM Goal # 3 -- Environmental Protection and Restoration
DEM Goal # 5 – Natural Resource Stewardship
DEM Strategic Priority # 5 –Ecosystem and Watershed Management

- The Reserve has worked with other DEM divisions to restore areas of Prudence Island to a succession stage that is more productive for wildlife and increases biodiversity. Firebreaks at both the north and south end of Prudence Island have grown into brush, which threatens the safety of nearby homes. The Reserve is working with the Prudence Island Volunteer Fire Department, the DEM Divisions of Forest Environment and Fish and Wildlife to restore these firebreaks.
- The upland area of Hope Island is a major rookery for large colonial nesting wading birds. This rookery is managed in close cooperation with the DEM Division of Fish and Wildlife to maintain a habitat that is suitable for these species. The abundance of these birds is declining across the eastern seaboard as habitat is degraded or disappears.
- The vegetation of Prudence Island and the fact that it is an island has resulted in a large deer herd living on the Island. As a result of this, Prudence Island is considered one of the best destinations for bow hunting in the Eastern United States. However, large deer herds support large deer tick populations and, in turn, have resulted in an elevated incidence of Lyme disease on Prudence Island. The Reserve is working cooperatively with the Harvard School of Public Health, Prudence Conservancy, and the University of RI to test Prudence Island residents for Lyme disease and experiment in tick control. A balance must be achieved between managing the herd for archery hunting and for public health.
- The Reserve has an extensive trail system, some of which is maintained by the Reserve, but volunteers from the Prudence Conservancy maintain much of it. The trails access both the natural areas and historic sites on Prudence Island.

Salt Marshes -- The Reserve includes extensive salt marshes. For example, Coggeshall Cove (Prudence) is a reference site used by researchers who then compare it to other, more impacted salt marshes around the Bay and the nation where changes may be occurring as a result of human impacts. The upland areas bordering this salt marsh salt marsh are completely protected from such impacts.

DEM Goal # 3 -- Environmental Protection and Restoration
DEM Goal # 4 – Narragansett Bay and the Coastal Environment
DEM Goal # 5 – Natural Resource Stewardship
DEM Strategic Priority # 5 –Ecosystem and Watershed Management

Subtidal and Littoral Habitats

This section relates to:

- DEM Goal # 3 -- Environmental Protection and Restoration
- DEM Goal # 4 – Narragansett Bay and the Coastal Environment
- DEM Goal # 5 – Natural Resource Stewardship
- DEM Strategic Priority # 5 –Ecosystem and Watershed Management

- Eelgrass beds in the Reserve represent some of the last remaining native assemblages in Narragansett Bay. The eelgrass beds at the north end of Prudence Island are the most northerly in the Bay. Some of the eel grass beds at the south end of the island were planted as part of an experimental restoration project.
- There are extensive shellfish resources around the islands. Some of the oysters may be a result of early aquaculture efforts at Jenny Creek (Prudence).

Recreation Facilities – The Reserve maintains facilities to support research, monitoring, education, and natural resource stewardship.

This section relates to:

- DEM Goal # 2 – Environmental Ethic and Awareness
- DEM Strategic Priority # 6 – Promote Partnerships
- DEM Strategic Priority # 10 – Improve Communication

- An education center at the main building has museum quality exhibits and a small interpretive building at the T-wharf that has large display tanks and touch tanks
- Boating and swimming are popular activities for both Prudence Island residents and visitors. The Reserve provides short-term docking and moorings at Potters Cove and at the south end of the island. Fishing from the T-wharf at the south end of Prudence Island is a popular year-round activity.
- Bow hunting is permitted throughout the Reserve, in season, and is so popular that reservations are required for the most desirable dates. In addition, Prudence Island provides one of the few sites where paraplegics can deer hunt due to the extensive network of roads through the south end of the Island

Recent Reserve Achievements

DRAFT- Last revised 10/07/99

Management

The national reserve system allows for the incorporation of non-government owned property within a reserve's boundary. The Prudence Conservancy incorporated the historic Baker Farm and the adjacent natural area into the Reserve. (DEM Goal # 5 – Natural Resource Stewardship, DEM Strategic Priority # 6 – Promote Partnerships)

A volunteer crew created three new trails within the Reserve. The crew also cleared the historic Baker farm site, making it easier for visitors see the foundations of the farm buildings and to visualize the farm fields as they would have appeared when the site was an operating farm. The crew donated approximately 2,500 hours of work on these projects. (DEM Goal # 6 – Outdoor Recreation, DEM Strategic Priority # 6 – Promote Partnerships.)

Monitoring

The Reserve is a participant in the National system-wide water quality and meteorological monitoring program. This provides long-term scientific data on the status and trends of environmental indices at all 24 reserves, nation-wide. This data is collected and stored electronically every 15 minutes. All reserves report their data to the national Central Data Management Office. This monitoring is one of the central requirements of the NOAA grant. (DEM Goal # 4 – Narragansett Bay and the Coastal Environment, DEM Strategic Priority # 3 – Proactive Planning to Protect and Restore Critical and Threatened Resources)

Scientific monitoring during the past year included: water quality monitoring, meteorological conditions (precipitation, pH, temperature), terrestrial plants, shorebirds, sea mammal sightings, estuarine invertebrates, mosquito control, shallow-water fish, waterfowl, nesting colonial wading bird, deer populations, and groundwater use. (DEM Goal # 4 – Narragansett Bay and the Coastal Environment, DEM Strategic Priority # 3 – Proactive Planning to Protect and Restore Critical and Threatened Resources, and DEM Strategic Priority # 6 – Promote Partnerships.)

Research

Research was conducted in the following area: the role of nutrient loading on marsh plant community structure (Brown University); tick-borne diseases affecting humans and transmitted by several species of ticks (Harvard University, School of Public Health); density-dependant effects of grazing on the success of eelgrass plants (**URI Graduate School of Oceanography**); biogeographic influence on zonation in marsh plants driven by interspecific competition (**Brown University**, funded by the National Institute of Global Climate Change); biological control of deer ticks (**URI**); ecology of cobble beaches (**Brown University**); sediment dynamics in tidal marshes (**University of Maryland**); and eelgrass health and eutrophication (**University of New Hampshire**, Cooperative Institute for Coastal and Estuarine Environmental Technology); tick ecology (**University of Connecticut**) (DEM Goal # 4 – Narragansett Bay and the Coastal Environment and DEM Strategic Priority # 6 – Promote Partnerships.)

DRAFT- Last revised 10/07/99

The Reserve supported and participated in the Narragansett Bay synoptic dissolved-oxygen monitoring project organized by the **Narragansett Bay Estuary Program**. (DEM Goal # 4 – Narragansett Bay and the Coastal Environment and DEM Strategic Priority # 6 – Promote Partnerships.)

During the past year, renovations to the visiting researchers' quarters on Prudence Island were completed making it convenient for researchers to undertake scientific research at the Reserve when such work requires that they stay on the island for more than one day or when their scientific work must occur in the evenings or early mornings. Improvements to the Reserve research laboratory were undertaken to enhance the use by on-site and visiting research staff. The lab and housing are currently being used by researchers from URI, Brown, Roger Williams, Harvard, NOAA, EPA, and the University of New Hampshire (DEM Goal # 4 – Narragansett Bay and the Coastal Environment and DEM Strategic Priority # 6 – Promote Partnerships.)

Education

A cooperative agreement with the Audubon Society of Rhode Island has resulted in completion of a learning center with educational exhibits on estuarine ecology of Prudence Island habitats. Educational programs were conducted on-site, in schools, and at ASRI facilities statewide. (DEM Goal # 2 – Environmental Ethic and Awareness and DEM Strategic Priority # 6 – Promote Partnerships)

Strategic Priorities and Targets

Consolidation / Coordination

- Collaborate with the Narragansett Bay Estuary Program to share the expertise of that programs scientist to serve jointly as the Reserve's Research Coordinator (target – immediate)
 - DEM Goal # 4 – Narragansett Bay and the Coastal Environment
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 5 –Ecosystem and Watershed Management
- Conduct, cooperatively with the Narragansett Bay Estuary Program, 2 major workshop for coastal zone decision-makers. (target – June 2000)
 - DEM Goal # 2 – Environmental Ethic and Awareness
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 6 –Promote Partnerships
 - DEM Strategic Priority # 10 – Improve Communication

DRAFT- Last revised 10/07/99

Ecosystem Integrity

- Develop a Reserve zoning map and listing of permitted activities in each zone (target – June 2000)
 - DEM Goal # 4 – Narragansett Bay and the Coastal Environment
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 5 –Ecosystem and Watershed Management
- Collaborate with the Prudence Conservancy to develop an interim stewardship plan for the farm on the Prudence Conservancy Unit of the Reserve (target – March 2000)
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 6 –Promote Partnerships
- Evaluate boundary expansion onto Dyer Island and Dutch Island (target – February 2000)
 - DEM Goal # 4 – Narragansett Bay and the Coastal Environment
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 5 –Ecosystem and Watershed Management
- Conduct biological survey to rank the most important habitats within the Reserve. Determine and rank the most important ecological units essential to maintain the integrity of the area and its resources. Prepare a map for each of the units identifying core areas of the Reserve (target – June 2000)
 - DEM Goal # 4 – Narragansett Bay and the Coastal Environment
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 5 –Ecosystem and Watershed Management
- Human activities or natural processes occurring outside the core areas could pose a risk to the integrity of core areas. Prepare a map for each of the units identifying buffer areas of the Reserve (target -- June 2000)
 - DEM Goal # 4 – Narragansett Bay and the Coastal Environment
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 5 –Ecosystem and Watershed Management
- Establish a long-term program for assessing habitat and biological community trends (target – March 2000)
 - DEM Goal # 4 – Narragansett Bay and the Coastal Environment
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 5 –Ecosystem and Watershed Management
- Continue operation of the GIS mapping project to provide mapping capabilities for individual units of the Reserve, critical habitats, and Reserve overlays. Hire a full-time post-doctoral researcher who has GIS mapping skills. (target – immediate)

DRAFT- Last revised 10/07/99

DEM Goal # 4 – Narragansett Bay and the Coastal Environment
 DEM Goal # 5 – Natural Resource Stewardship
 DEM Strategic Priority # 5 –Ecosystem and Watershed Management

Improve Communication

- Collaborate with the Audubon Society of Rhode Island to construct an off-island interpretive display (target – ongoing with completion date based on the completion of the Audubon facility)
 - DEM Goal # 2 – Environmental Ethic and Awareness
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 6 –Promote Partnerships
 - DEM Strategic Priority # 10 – Improve Communication
- Continue to encourage collaboration with Save the Bay and other environmental, governmental, land stewardship, and scientific groups to utilize Reserve facilities educational programs (target – immediate)
 - DEM Goal # 2 – Environmental Ethic and Awareness
 - DEM Goal # 5 – Natural Resource Stewardship
 - DEM Strategic Priority # 6 –Promote Partnerships
 - DEM Strategic Priority # 10 – Improve Communication

<p>OBJECTIVE 1: STEWARDSHIP To provide Reserve stewardship of estuarine ecosystem types of the Virginian – southern New England - biogeographic region, for long-term scientific and educational use.</p>	<p>Environmental Indicators Habitat preservation</p>	
<p>STRATEGIES</p>	<p>ACTIVITIES</p>	<p>Performance Measures</p>
<p>Maintain, improve, and develop the trail system.</p>	<p>Maintain and improve 10 miles of trails.</p>	<p>10 miles of trails will be improved or maintained</p>

Develop a Reserve zoning map and listing of permitted activities in each zone		
Ensure that DEM Conservation Officers enforce all applicable fish and game laws governing wildlife and fisheries within the Reserve		
Determine the maximum size of the white-tailed deer herd that is consistent with protection human health, maintains the health of the herd individuals, prevents deer grazing damage to desirable flora, and considers the cultural carrying capacity of the island community.	Remove 150 deer from Prudence Island through a regulated bow hunting season. Reduce the threat of Lyme Disease to walkers. Reduce the damage to trees and shrubs due to over-browsing by deer.	Reduce the deer herd by 150.
STRATEGIES	ACTIVITIES	Performance Measures
Inventory the flora and fauna of the Reserve upland areas.		

Develop and implement an integrated forest-wildlife management plan for each unit of the Reserve.	Increase the diversity of plants and animals by creating 10 acres of forest edge environment.	Create 10 acres of forest edge environment.
Continue the historic wood-cutting program as one of the overall forest-wildlife management practices.	Supervise the cutting of 30 cord of wood through this wood cutting program.	5 acres of the Reserve will be managed through the wood cutting program to improve quality and quantity of forest trees and shrubs.
Develop a stewardship plan for the archeological resources within the Reserve.	Develop an interim stewardship plan for the farm on the Heritage Unit of the Reserve.	The farm on the Heritage Unit will be maintained according to the interim stewardship plan.
STRATEGIES	ACTIVITIES	Performance Measures
Provide protection for all archeological sites by preventing or minimizing public awareness of the undeveloped sites and prohibiting trespassing or any disturbance except for approved scientific investigations.		

Continue to use the north Prudence farm site for educational purposes	Develop new signs for the north Prudence farm.	
Preserve the critical habitats on Hope Island to encourage nesting of colonial wading birds.	Patrol Hope Island by boat on a weekly basis to enforce access regulations.	
Develop a strategy to control cormorant nesting on Hope Island.		Minimize any health threat associated with the nesting of cormorants on Hope Island.

<p>Design and conduct a pilot study on the use and results of prescribed burns on Prudence Island units of the Reserve to promote biodiversity and to achieve other natural resource management</p>	<p>Clear 200 acres through controlled burning and clear cutting to restore habitat that has become overgrown by invasive species and, therefore, less valuable as wildlife habitat.</p>	<p>200 acres of the Reserve land on Prudence Island will be improved through controlled burning and clear cutting.</p> <p>Eliminate invasive species from this acreage.</p> <p>Reduce forest fire threat.</p> <p>Increase the diversity of wildlife.</p>
<p>Construct and maintain a system of firebreaks within the Prudence Island units of the Reserve to contain prescribed burns or wildland fires to selected areas. These firebreaks will also protect fires from spreading from the Reserve to private property.</p>	<p>Maintain 1 mile of fire breaks on Prudence Island.</p>	<p>Any wildland fires will be limited in size to no more than 40 acres by fire breaks.</p>
<p>Determine if other management actions are desirable relating to the expansion of prescribed burns at other units of the Reserve.</p>	<p>Prepare a prescribed burn plan for the Reserve.</p>	
<p>Develop an eelgrass restoration plan.</p>	<p>Request that CRCM implement protection measures around eelgrass beds.</p>	

STRATEGIES	ACTIVITIES	Performance Measures
Develop and implement management practices to protect existing eelgrass.		Preserve existing eelgrass beds.
Educate the public on the ecological benefits of eelgrass beds and the need to protect them.	Ensure that education about eelgrass beds is integrated into 20% of the on-site and off-site education programs.	
Establish baseline status of the salt marshes within the Reserve.	Use data from ongoing research and monitoring programs to determine the status of Reserve salt marshes.	
Design an Open Marsh Water Management project or marsh restoration project.	Submit 2 marsh restoration applications to the U.S. Fish and Wildlife Service for funding.	
STRATEGIES	ACTIVITIES	Performance Measures

Request that the Coastal Resources Management Council prepare a Special Area Management (SAM) Plan for Reserve waters.	Request that the Coastal Resources Management Council prepare a Special Area Management (SAM) Plan for Reserve waters.	
Monitor water quality in Potter Cove to assess the success of management strategies to improve the water quality in this embayment.	Conduct water quality monitoring and will obtain 50 data sets weekly.	
	Provide scientific data to assist environmental regulators in reducing dissolved oxygen water quality violations. (As requested.)	

OBJECTIVE 2: RESERVE BOUNDARY AND ACQUISITION To encompass key land and water areas (core areas) and a protective buffer zone to thus provide adequate control of the site, by the managing entity, over programs and activities occurring within the Reserve.	Environmental Indicators	
STRATEGIES:	ACTIVITIES	Performance Measures

Conduct a natural resource inventory of the proposed sites for Reserve expansion: Identify the land boundaries and water boundaries for these proposed sites.	Prepare 2 reports. One will address possible acquisition of Dyer Island and the other will focus on possible inclusion of Dutch Island.	
Identify core area: Determine and rank the most important ecological units essential to maintain the representativeness of the area and its resources.	A map will be prepared for each of the units identifying core areas of the Reserve.	
Identify buffer areas: Human activities or natural processes occurring outside the core areas could pose a risk to the integrity of core areas.	A map will be prepared for each of the units identifying buffer areas of the Reserve.	

OBJECTIVE 3: RESEARCH AND MONITORING To expand scientific knowledge of estuarine processes by addressing significant gaps in the understanding of dynamic changes within estuarine ecosystems; and to develop information for improved coastal zone decision making.	Environmental Indicators	
STRATEGIES	ACTIVITIES	Performance Measures
Support visiting scientist program to develop data and information for the National Estuarine Research Reserve System and for coastal zone decision makers.	Support 15 researchers from various colleges and universities who are working on estuary research at the Reserve.	

Provide on-site laboratory and over-night facilities to support scientist conducting research at the Reserve.	Provide on-site laboratory and over-night facilities to support 30 scientist conducting research at the Reserve.	
Administer fellowship program for specific research projects at the Reserve as part of the National Estuarine Research Reserve System fellowship program.	Support 2 graduate fellowships.	
Collaborate with the scientific research community to encourage development of research proposals.	Collaborate with 3 colleges or universities to encourage the development of research proposals.	
Actively recruit researchers from colleges and universities to undertake research within the Reserve.	Attempt to recruit researchers from 3 colleges or universities.	
Develop a site characterization and provide an electronic data base for the Reserve's natural resources.		

Continue the long-term program for assessing water quality.	Determine the status and trends of water quality and identify water quality violations. (As a method of correcting violations.)	Gather water quality data continuously (every 30 minutes).
Establish a long-term program for assessing habitat and biological community trends	Evaluate electronic chlorophyll sensor to characterize the status and trends of eutrophication.	
STRATEGIES	ACTIVITIES	Performance Measures
Continue operation of the GIS mapping project to provide mapping capabilities for individual units of the Reserve, critical habitats, and Reserve overlays.	Hire a full-time researcher who has GIS mapping skills.	
Continue operation of the Reserve weather station and provide computerized data to Reserve researchers.	Gather meteorological data on a daily basis and check the weather station equipment weekly.	52 reported checks
Encourage investigators of the Narragansett Bay estuary to use the Reserve as a reference site in determining sampling sites for bay-wide studies.		

Develop the data needed to provide a scientific basis for informed coastal zone decision-making and then make this information available to coastal zone decision-makers.	Conduct, cooperatively with the Narragansett Bay Estuary Program, 2 major state-wide workshop for coastal zone decision-makers.	Workshops conducted by xdate
STRATEGIES	ACTIVITIES	Performance Measures
Secure temporary and voluntary personnel to assist with inventory field work and sampling.	Work with volunteers involving 300 -hours of volunteer work associated with water quality monitoring and meteorological monitoring.	
Continue to develop and participate in National Estuarine Research Reserve system-wide monitoring programs.		
Collaborate with the Narragansett Bay Estuary Program, as well as other DEM programs, universities, and others in large scale Bay-wide projects.	<p>Participate in the Bay-wide synoptic dissolved oxygen monitoring cruise.</p> <p>Determine the health of the Bay relative to dissolved oxygen concentrations.</p>	
<p>OBJECTIVE 4: Education, Information, and Interpretation</p> <p>To increase awareness, understanding, and appreciation of estuarine systems and estuarine stewardship by developing and</p>	Environmental Indicators	

disseminating information about estuarine systems, and by providing opportunities for personal experience with them.		
STRATEGIES	ACTIVITIES	Performance Measures
Continue to work with the Audubon Society of Rhode Island in developing and conducting on-site and off-site education programs.	Conduct off-site interpretive programs for 1,000 children and adults.	# of programs offered # children adults attending
	Offer a summer naturalist program at the South Prudence Reserve site. Conduct on-site naturalist programs for 2,500 children and adults.	# of programs # of children & adults attending
	Continue to provide special Reserve tours, presentations, and programs on request.	Host 10 visiting groups.
Integrate research and monitoring results into educational programs to enhance the educational products.	Integrate research and monitoring results into 75% of the on-site and off-site educational programs.	
STRATEGIES:		Performance Measures

DRAFT- Last revised 10/07/99

<p>Create, maintain, and improve educational exhibits at the Reserve learning center at the Reserve's South Prudence Facility.</p>		<p>Maintain and improve 3 major exhibits.</p> <p>Design and install 1 new exhibit.</p>
<p>Collaborate with the Audubon Society of Rhode Island and save the Bay to utilize their facilities, teacher training and public education programs.</p>	<p>Conduct educational programs at 3 Audubon Society of Rhode Island sites.</p>	<p>Programs conducted by x date</p>
<p>Provide technical assistance to the Narragansett Bay Project, the General Assembly, and other DEM programs on request.</p>		

<p>STRATEGIES</p>	<p>ACTIVITIES</p>	<p>PERFORMANCE MEASURES</p>
--------------------------	--------------------------	------------------------------------

Conduct jointly sponsored coastal decision-makers workshops.	Conduct, cooperatively with the Narragansett Bay Estuary Program, 1 major state-wide workshop for coastal zone decision-makers. (This performance measure is also listed under Research and Monitoring.)	
Disseminate educational products to coastal zone managers at local, state, and Federal levels.	Distribute educational materials at 2 state-wide workshops for coastal zone decision makers.	Workshops conducted by x date
Translate results of research and monitoring projects into products usable to coastal zone decision-makers.	Conduct, cooperatively with the Narragansett Bay Estuary Program, 2 major state-wide workshop for coastal zone decision-makers. (This performance measure is also listed under Research and Monitoring and above under joint workshop.)	Workshops conducted by x date

OBJECTIVE 6: PUBLIC INVOLVEMENT To create opportunities for members of the public to benefit from and contribute to the Narragansett Bay National Estuarine Research Reserve.	Environmental Indicators
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------

STRATEGIES	ACTIVITIES	PERFORMANCE MEASURES
Maintain, expand and improve the hiking trail network.		
Provide recreational facilities at the south Prudence unit of the Reserve, including a swimming beach, ballfield, and picnic area.	<p>Provide recreational opportunities for 1,000 people per year at the Reserve recreational facilities.</p> <p>Provide deer hunting (bow hunting) for 400 hunter-days (over a 60-day period) per year at the Reserve sites on Prudence and Patience Islands.</p> <p>Provide deer hunting for 12 hunters as part of a special hunting program for paraplegics and double amputees at the Reserve sites on Prudence and Patience Islands.</p>	
Expand existing programs involving the public and focus these activities at the new learning center.		

<p>Encourage and support (with training, equipment and supervision) volunteer involvement in Reserve research, monitoring, and trail development projects.</p>	<p>Support 300 -hours of water quality volunteer work performed by the Prudence Conservancy.</p> <p>Support 2,500 -hours of volunteer trail construction and maintenance work performed by the Prudence Conservancy.</p>	<p>Determine the status and trends of water quality and identify water quality violations. (As a method of correcting violations.)</p>
<p>STRATEGIES</p>	<p>ACTIVITIES</p>	<p>Performance Measures</p>
<p>Conduct long-term, air, land, and water quality monitoring with citizen volunteers.</p>	<p>Support 300 -hours of water quality volunteer work performed by the Prudence Conservancy.</p>	<p>Determine the status and trends of water quality and identify water quality violations. (As a method of correcting violations.)</p>
<p>Involve the local community in on-site educational activities.</p>	<p>Conduct 4 educational programs weekly during the summer at the Reserve.</p>	<p>Programs conducted # attendance</p>
<p>Provide ways for the public to use the resources of the Reserve in ways that help serve the needs of the community.</p>	<p>Involve 15 people in the Reserve's cord wood cutting program.</p>	
<p>OBJECTIVE 7: FACILITIES To provide accessible facilities necessary to fulfill the Reserve's mission as established in state and Federal law, administrative rules, and interagency agreements.</p>	<p>Environmental Indicators</p>	

STRATEGIES:	ACTIVITIES	Performance Measures
Expand the educational facility at the T-wharf to 400 square feet. Increase the capacity of the Marine life holding system.	Expand the educational facility at the T-wharf to 400 square feet. Increase the capacity of the Marine life holding system. (Depending on funding.)	
Construct a water quality and monitoring lab as a 500 square-foot addition to the field research facility.	Construct a water quality and monitoring lab as a 500 square-foot addition to the field research facility. (Depending on funding.)	
Provide a meeting room and two natural history laboratories at the field research station.	Provide a meeting room and two natural history laboratories at the field research station. (Depending on funding.)	
Demolish the existing mess hall that has become a safety hazard		