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New Hampshire Estuaries Project

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2004

New Hampshire Estuaries Project



Progress Report

Prepared by:

The New Hampshire Estuaries Project

May 2004



The New Hampshire Estuaries Project (NHEP) is part of the U.S. Environmental Protection Agency's National Estuary Program which is a joint local/state/federal program established under the Clean Water Act with the goal of protecting and enhancing nationally significant estuarine resources.

The NHEP's *Comprehensive Conservation and Management Plan* for New Hampshire's estuaries was completed in 2000 and implementation has been ongoing. The *Management Plan* outlines key issues related to management of New Hampshire's estuaries and proposes strategies (Action Plans) that are expected to preserve, protect, and enhance the State's estuarine resources. The NHEP's priorities were established by local stakeholders and include water quality improvements, shellfish resource enhancements, land protection, and habitat restoration. Projects addressing these priorities are undertaken throughout New Hampshire's coastal watershed, which includes 42 communities.

The NHEP strives to:

- Improve the water quality and overall health of New Hampshire's estuaries
- Support regional development patterns that protect water quality, maintain open space and important habitat, and preserve estuarine resources
- Track environmental trends through the implementation of a long-term monitoring program to assess indicators of estuarine health
- Develop broad-based support for the *Management Plan* by encouraging involvement of the public, local government, and other interested parties in its implementation



TABLE OF CONTENTS

Report Overview.....	4
----------------------	---

SECTION I

Environmental Indicators: Management Objectives and Status.....	5
---	---

Administrative Indicators: Management Objectives and Status.....	13
--	----

SECTION II

Action Plans

Overall Completion.....	18
-------------------------	----

Focus Areas

Water Quality Action Plans.....	22
---------------------------------	----

Land Use and Habitat Protection Action Plans.....	30
---	----

Shellfish Action Plans	42
------------------------------	----

Habitat Restoration Action Plans	48
--	----

Public Outreach and Education Action Plans.....	51
---	----

REPORT OVERVIEW

This report summarizes progress made toward implementing the New Hampshire Estuaries Project *Comprehensive Conservation and Management Plan* (CCMP) and evaluates the status of environmental and administrative indicators based upon management goals and objectives. The report is divided into two primary sections: (I) Status of Environmental and Administrative Indicators and (II) Action Plan Completion.

Section I of the report is a tabular summary of environmental and administrative indicators developed to track progress toward meeting the NHEP's management goals. Goals and corresponding indicators are arranged by focus area: Water Quality, Shellfish Resources, Land Use and Habitat Restoration. For each NHEP goal, there are several corresponding environmental and administrative indicators, which address specific management objectives.

The NHEP developed a suite of indicators to monitor CCMP effectiveness and measure the success of specific projects. Environmental indicators track environmental or ecological qualities over time, and are split into three types:

- Environmental Indicators (E) – Parameters for which quantitative data are evaluated based on specific management goals and objectives;
- Supporting Variables (S) – Parameters that provide important qualitative environmental information but for which measurable goals could not be set; and,
- Research Indicators (R) – Parameters that are potentially relevant but need greater development before they can be used for interpretation related to management objectives.

For some NHEP management objectives, environmental indicators could not be established because the objective is administrative in nature. “Administrative objectives” describe actions to be taken rather than environmental conditions to be achieved. In such cases, the NHEP's progress is tracked by administrative indicators that document the activities undertaken by the NHEP relative to the objective. This report provides qualitative information for all administrative indicators.

Section II of the report summarizes the completion status of individual CCMP Action Plans. Following a brief overall summary, completion status is reviewed for each Action Plan by focus area: Water Quality, Land Use/Habitat Protection, Shellfish Resources, Habitat Restoration, and Public Education and Outreach. Completion rankings were assigned based on activities undertaken by the NHEP and its partners since 2000 to address the steps identified in each Action Plan. The NHEP maintains a list of projects and activities that support CCMP implementation. Because of its length this detailed list of projects was not included in this report. It can be obtained by contacting the NHEP or downloaded from the NHEP website at <http://www.nh.gov/nhep/publications/pdf/nhepprogressreport-app-nhep-04.pdf>.

ENVIRONMENTAL INDICATORS: MANAGEMENT OBJECTIVES AND STATUS

Definitions

E=Environmental, S=Supporting, R=Research, NA=Not Applicable, TBD=To Be Determined

Water Quality Goal #1: Ensure that NH's estuarine waters and tributaries meet standards for pathogenic bacteria including fecal coliform, *E. coli*, and enterococci.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
WQ1-1: Achieve water quality in Great Bay and Hampton Harbor that meets shellfish harvest standards by 2010.	Do NH tidal waters meet fecal coliform standards of the National Shellfish Sanitation Program for 'approved' shellfish areas?	Acre-days of shellfish harvesting opportunities in estuarine waters	E	100% of possible acre-days	97.4% in Great Bay. 33.1% in Hampton Harbor. 97.4% in Upper Little Bay. 97.4% in Lower Little Bay.	Data current through 2002.
	Have fecal coliform, enterococci, and <i>E. coli</i> levels changed significantly over time?	Trends in dry weather bacterial indicators concentrations	E	Significantly decreasing trends at tributary stations	Decreasing fecal coliforms and <i>E. coli</i> observed in both tributaries containing trend stations.	Data current through 2001.
	Has dry weather bacterial contamination changed significantly over time?					
	Has wet weather bacterial contamination changed significantly over time?	Trends in wet weather bacterial indicators concentrations	E	Significantly decreasing trends at tributary stations	Insufficient data to evaluate this indicator.	
WQ1-2: Minimize beach closures due to failure to meet water quality standards for tidal waters.	Do NH tidal waters, including swimming beaches, meet the state enterococci standards?	Tidal bathing beach postings	E	0 postings per year	0 postings issued at tidal beaches in 2002.	Data current through 2002.
		Trends in bacteria concentrations at tidal bathing beaches	E	No increasing trends at any beaches	5 of 8 beaches with increasing trends.	Data current through 2002.
		Violations of water quality standard for swimming in ambient tidal waters	E	0 violations per year	4 assessment units in the estuary were listed as impaired for primary contact recreation.	Information from DES 2002 305b report.
WQ1-3: Increase water bodies in the NH coastal watershed designated 'swimmable' by achieving state water quality standards.	Do NH designated freshwater beaches in the coastal watershed meet the state <i>E. coli</i> standards?	Freshwater bathing beach postings	E	0 postings per year	2 postings issued at freshwater beaches in 2002.	Data current through 2002.
	Do NH surface freshwaters meet the state <i>E. coli</i> standards?	None. The Technical Advisory Committee determined that the monitoring needed to accurately answer this question was not cost-effective.	NA	NA	NA	NA

WQ1-4: Reduce the number of known illicit connections in the NH coastal watershed by 50% by 2010. (See Administrative Indicators, p. 13-17)						
WQ1-5: Achieve 50% reduction of known illegal discharges into Great Bay, Hampton Harbor, and the tributaries by 2010. (See Administrative Indicators, p. 13-17)						
No management objectives but useful for interpreting other indicators for this goal.	None.	Bacteria loading from municipal waste water treatment plants	S	NA	NA	NA
		Microbial source tracking	S	NA	NA	NA
	Do NH tidal waters contain disease causing and biotoxic organisms (pathogenic bacteria, viruses, harmful algal blooms)?	Concentrations of microbial pathogens and harmful algae	R	NA	NA	NA

Water Quality Goal #2: Ensure that New Hampshire's estuarine waters, tributaries, sediments, and edible portions of fish, shellfish, other aquatic life, and wildlife will meet standards for priority contaminants such as metals, PCBs, PAHs, and oil and grease.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments	
WQ2-1A: Develop baseline of toxic impacts on ecological and human health by tracking toxic contaminants in water, sediment, and indicator species: blue mussels, tomcod, lobsters, and winter flounder. <u>Long-term</u> Reduce toxic contaminants levels in indicator species so that no levels persist or accumulate according to FDA guideline levels.	Are shellfish, lobsters, finfish, and other seafood species from NH coastal waters fit for human consumption?	Shellfish tissue concentrations relative to FDA standards	E	0% of stations with concentrations greater than FDA standards	0% of stations	Data current through 2000.	
		Public health risks from toxic contaminants in shellfish tissue	E	0% of stations with unacceptable risks as determined by NHBHRA	Insufficient data	Mussel tissue results not evaluated by NHBHRA.	
		Finfish and lobster edible tissue concentrations relative to FDA standards	R	TBD	NA	NA	
		Public health risks from toxic contaminants in finfish and lobster edible tissue	R	TBD	NA	NA	
	Have the concentrations of toxic contaminants in estuarine biota significantly changed over time?	Trends in shellfish tissue contaminant concentrations	S	NA	NA	NA	NA
		Trends in finfish and lobster tissue contaminant concentrations	S	NA	NA	NA	NA
WQ2-1B: Develop baseline of toxic impacts on ecological and human health by tracking toxic contaminants in water, sediment, and indicator species: blue mussels, tomcod, lobsters, and winter flounder. <u>Long-term</u> Reduce toxic contaminants levels in water so that no levels persist or accumulate according to State Water Quality Standards.	Do NH tidal waters contain heavy metals, PCBs, PAHs, chlorinated pesticides, and other toxic contaminants that are harmful to humans, animals, plant, and other aquatic life?	Toxic contaminants in stormwater runoff and receiving waters	R	NA	NA	NA	
WQ2-1C: Develop baseline of toxic impacts on ecological and human health by tracking toxic contaminants in water, sediment, and indicator species: blue mussels, tomcod, lobsters, and	Do NH tidal sediments contain heavy metals, PCBs, PAHs, chlorinated pesticides, and other toxic contaminants that are harmful to humans, animals, plant, and other aquatic life?	Sediment contaminant concentrations relative to NOAA guidelines	E	0% of the estuaries with sediment concentrations greater than NOAA ERL values (see footnote 1)	Insufficient data.	This indicator will be evaluated using data from the National Coastal Assessment when it is released in late 2003.	

winter flounder. <u>Long-term</u> Reduce toxic contaminants levels in sediment so that no levels persist or accumulate according to NOAA ERM values (see footnote 1).	Have the concentrations of toxic contaminants in sediment significantly changed over time?	Trends in sediment contaminant concentrations	S	NA	NA	NA
	Is there evidence of toxic effects of contaminants in estuarine biota?	Demonstrated biological impact using sediment toxicity and benthic community Index of Biotic Integrity.	R	NA	NA	NA

Water Quality Goal #3: Ensure that NH's estuarine waters and tributaries will meet standards for organic and inorganic nutrients, especially nitrogen, phosphorous, chlorophyll-a, dissolved oxygen, and biological oxygen demand.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
WQ3-1: Maintain inorganic nutrients, nitrogen, phosphorous, and chlorophyll-a in Great Bay, Hampton Harbor, and their tributaries at 1998-2000 baseline levels. WQ3-2: Maintain organic nutrients in Great Bay, Hampton Harbor, and their tributaries at 1994-1996 baseline levels.	Have levels of dissolved and particulate nitrogen and phosphorous significantly changed over time?	Annual load of nitrogen to Great Bay from WWTF and watershed tributaries	E	Less than or equal to 1996 loading estimates (641 tons/yr)	Insufficient data	This indicator will be updated in 2003.
		Trends in estuarine nutrient concentrations	S	NA	NA	NA
		Eelgrass Nutrient Pollution Index	R	NA	NA	NA
	Have levels of phytoplankton (chlorophyll-a) in NH waters changed significantly over time?	Frequency and duration of phytoplankton blooms in Great Bay	R	NA	NA	NA
	Do any surface freshwaters exhibit chlorophyll-a levels that do not support swimming standards (partially support: 20-30 ug/l; does not support: >30 ug/l)	None. There are no swimming standards for chlorophyll-a	NA	NA	NA	NA
	Have surface tidal or freshwaters shown a significant change in turbidity (total suspended solids or nephelometric turbidity units) over time?	Trends in estuarine particulate concentrations	S	NA	NA	NA
WQ3-3: Maintain dissolved oxygen levels at: >4 mg/L for tidal rivers; >6 mg/L for embayments (Great Bay and Little Bay); >7 mg/L for oceanic areas (Hampton Harbor and Atlantic Coast).	Do any surface tidal or freshwaters show less than 75% saturation of dissolved oxygen? For what period of time?	Violations of the instantaneous dissolved oxygen standard in tidal waters	E	0 days/year with violations of standard	16 days in Lamprey River, 5 days in Squamscott River	Data current through 2001.
		Violations of the daily average dissolved oxygen standard in tidal waters	E	0 days/year with violations of standard	6 days in Lamprey River	Data current through 2001.
	Is there evidence of proliferation of nuisance species associated with elevated nutrient loading?	Prevalence of nuisance macroalgae	R	NA	NA	NA
WQ3-4: Maintain NPDES permit levels for BOD at wastewater facilities in the NH coastal watershed.	Do any surface tidal or freshwaters show a significant change in biological oxygen demand?	Trends in BOD loading to Great Bay	E	No significantly increasing trends in BOD loads from WWTF or tributaries	1 of the 16 WWTFs had significantly increasing BOD loads	Data current through 2001.

Shellfish Goal #1: Achieve sustainable shellfish resources by tripling the area of shellfish beds that are classified open for harvesting to 75% of all beds, and tripling the quantity of harvestable clams and oysters in NH's estuaries.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
SHL1-1: Maintain an approved National Shellfish Sanitation Program supported by the State. (See Administrative Indicators, p.13-17)						
SHL1-2: Increase soft shell clam beds in Great Bay, Little Bay, and Hampton Harbor that are open for harvest to 2500 acres by 2010.	Are 75% of all shellfish (oyster, soft-shell clam) beds open for harvesting?	Open shellfish beds in estuarine waters (percent by area)	R	TBD	NA	NA
SHL1-3: No net decrease in acreage of oyster beds from 1997 amounts for Nannie Island, Woodman Point, Piscataqua River, Adams Point, Oyster River, Squamscott River, and Bellamy River.	NA	Area of oyster beds in Great Bay	E	All 6 major beds have greater than or equal to 1997 acreage	Four of the beds were measured in 2001. The areas of these beds were equal to the 1997 areas, using +/-10% confidence intervals around the 2001 estimates to determine statistical differences. The two other beds will be measured in 2003.	Data current through 2001. The areas of the Nannie Island and Woodman Point beds were combined for this comparison since the boundary between the beds may have been different in the 1997 study.
SHL1-4A: No net decrease in oysters (>80 mm) per square meter from 1997 amounts at Nannie Island, Woodman Point, Piscataqua River, Adams Point, and Oyster River.	NA	Density of harvestable oysters at Great Bay beds	E	All 6 major beds have harvestable oyster densities greater than or equal to 1997 density	1 of the 6 oyster beds have harvestable oyster densities greater than or equal to 1997 levels.	Data current through 2002.
SHL1-4B: No net decrease in adult clams (>50 mm) per square meter from the 1989-1999 10-year average at Common Island, Hampton River, and Middle Ground.	NA	Density of harvestable clams at Hampton Harbor flats	E	All 3 major flats have harvestable clam densities greater than or equal to 1990-1999 10-year average density	None of the 3 clam flats have adult densities greater than or equal to their 10 year averages	Data current through 2001.
SHL1-5: Survey each major oyster and soft-shell clam bed at a minimum of every 3 years for dimensions, density, and population structure. (See Administrative Indicators, p.13-17)						
No objectives but useful for interpreting other indicators or relevant to the goal.	NA	Area of clam flats in Hampton Harbor	S	NA	NA	NA
	Has the number of harvestable clams and oysters in NH estuaries tripled from 1999 levels?	Standing stock of harvestable oysters in Great Bay	E	50,000 bushels	3,579 bushels (7% of goal)	Data current from 2002.
		Standing stock of harvestable clams in Hampton Harbor	E	35,268 bushels	5,539 bushels (16% of goal)	Data from 2001.
	Are NH shellfish healthy, growing, and reproducing at sustainable levels?	Abundance of shellfish predators	S	NA	NA	NA
		Clam and oyster spatfall	S	NA	NA	NA
	Are NH shellfish being harvested at sustainable levels?	Recreational harvest of oysters	S	NA	NA	NA
		Recreational harvest of clams	S	NA	NA	NA
	Has the incidence of shellfish diseases significantly changed over time?	Prevalence of oyster diseases	S	NA	NA	NA
Prevalence of clam disease		S	NA	NA	NA	

Shellfish Goal #2: Assure that shellfish are fit for human consumption and support a healthy marine ecosystem.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
SHL2-1: Achieve water quality in Great Bay and Hampton Harbor that will meet shellfish harvest standards by 2010.	NA-Duplicate	None. This objective is the same as WQ1-1 under Water Quality Goal #1.	NA-Duplicate	NA	NA	NA

Shellfish Goal #3: Provide opportunities and strategies for restoration of shellfish communities and habitat.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
SHL3-1: Restore 20 acres of oyster habitat in Great Bay and its tidal tributaries.	NA-Duplicate	None. This objective is the same as RST1-1C under Habitat Restoration Goal #1.	NA-Duplicate	NA	NA	NA

Shellfish Goal #4: Support coordination to achieve environmentally sound shellfish aquaculture activities.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
SHL4-1: Ensure that aquaculture practices do not adversely impact water quality or ecological health of NH's estuaries. (See Administrative Indicators, p.13-17).						

Land Use Goal #1: NH coastal watershed has development patterns that ensure the protection of estuarine water quality and preserve the rural quality of the watershed.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
LND1-1A: Minimize the amount of impervious surfaces and assess the impacts of water quality by keeping the total impervious surface in each sub-watersheds below 10% of the total land area;	Has there been a significant change over time in the number of coastal NH watersheds (first or second order) that exceed 10% impervious cover?	Percent of each subwatershed covered by impervious surface in 1990, 2000, and 2005	E	0 first or second order subwatersheds with greater than 10% impervious surface cover.	6 second order watershed (HUC12) have greater than 10% impervious surface cover.	Data current through 2000.
	Has the rate of creation of new impervious surfaces in coastal NH watersheds significantly changed over time?					
LND1-1B: Reduce stormwater runoff from future development in all sub-watersheds, especially where impervious surfaces already exceed 10%. (See Administrative Indicators, p.13-17).						
LND1-2: Minimize the total rate of land consumption in the NH coastal watershed (as measured by acres of development per capita)	Has the rate of urban sprawl in coastal NH watersheds changed significantly over time?	Ratio of the acres of impervious surfaces to the total population for each town ("imperviousness per capita")	E	0 towns with increasing ratios over time	25 of the 42 towns had increasing ratios between 1990 and 2000	Data current through 2000.
		Ratio of the road miles to the total population for each town ("road miles per capita")	E	0 towns with increasing ratios over time	7 of the 42 towns had increasing ratios between 1990 and 2000.	Data current through 2000.
		Ratio of change in unfragmented land acres relative to change in population for each town	E	0 towns with increasing ratios between the periods of 2001-2005 and 2005-2010.	Insufficient data.	Data on unfragmented lands in 2005 and 2010 are needed to calculate this indicator.
LND1-3: Encourage 42 coastal watershed municipalities to actively participate in addressing sprawl. (See Administrative Indicators, p.13-17).						

Land Use Goal #2: Maximize the acreage and health of tidal wetlands in the NH coastal watershed.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
LND2-1: Allow no loss or degradation of 6200 acres of tidal wetlands in the NH coastal watershed and restore 300 acres of tidal wetlands degraded by tidal restrictions by 2010.	Has there been any significant net loss or degradation of tidal wetlands in NH?	Acres of salt marsh in coastal NH and acres of salt marsh degraded by tidal restrictions or phragmites.	E	6,200 acres total of salt marsh in coastal NH	Insufficient data.	Data for this indicator will be collected in 2003.
	Has the acreage of invasive species (phragmites, purple loosestrife) in NH salt marshes and wetlands significantly changed over time?					
	Have restoration efforts resulted in a significant increase in the acreage of tidal wetlands?	None. This question is covered by RST1-1A under Habitat Restoration Goal #1.	NA - Duplicate	NA	NA	NA

Land Use Goal #3: Protect freshwater and tidal shorelands to ensure estuarine water quality.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
LND3-1: Allow no new impervious surfaces or major disturbances of existing vegetation (except for water-dependent uses) in NH coastal watershed. In addition to state Shoreland Protection Act regulations, encourage additional reductions in shoreland impacts by 2010. (See Administrative Indicators, p.13-17).						
LND3-2: Allow no new establishment or expansion of existing contamination sources (such as salt storage, junk yards, solid waste, hazardous waste, etc.) within the shoreland protection area as tracked by the Department of Environmental Services. (See Administrative Indicators, p.13-17).						

Land Use Goal #4: Protect estuarine water quality by ensuring that groundwater impacts are minimized.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
LND4-1: Determine the extent of groundwater resources and their contaminant load to Great Bay and Hampton Harbor by 2005. (See Administrative Indicators, p.13-17).						
LND4-2: Reduce and eliminate groundwater contaminants based on the outcome of Objective 1 by 2010. (See Administrative Indicators, p.13-17).						

Land Use Goal #5: Allow no net loss of freshwater wetlands functions in the NH coastal watershed.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
LND5-1: Determine indicators for freshwater wetland functions.	None.	Indicators for freshwater wetland functions	R	NA	NA	NA
LND5-2: Establish a state and municipal regulatory framework necessary to prevent introduction of untreated stormwater into tidal and freshwater wetlands by 2010. (See Administrative Indicators, p.13-17).						
LND5-3: Increase use of buffers around wetlands in NH coastal watershed. (See Administrative Indicators, p.13-17).						
No objective but relevant to the goal: Allow no net loss of freshwater wetlands functions in the NH coastal watershed.	Has there been any significant net loss or degradation of freshwater wetlands in NH?	None. Tracking all freshwater wetlands in the coastal watershed would be a monumental task. The Technical Advisory Committee decided this would not be cost-effective. Conservation of wetlands with high habitat values will be a research indicator under Land Use Goal #6.	NA	NA	NA	NA
	Have restoration efforts resulted in a significant increase in the acreage of freshwater wetlands?	None. Without an assessment of baseline conditions, the effects of wetland restoration efforts cannot be made.	NA	NA	NA	NA

Land Use Goal #6: Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
<p>LND6-1: By 2005, determine the existing acres of permanently protected land in the NH coastal watershed in the following categories: tidal shoreland, large contiguous forest blocks, wetlands with high habitat values, freshwater shorelands, rare and exemplary natural communities.</p> <p>LND6-2: Increase the acreage of protected land containing significant habitats in the NH coastal watershed through fee acquisition or conservation easements by 2010.</p> <p>LND6-4: Increase the use of buffers around wildlife areas and maintain contiguous habitat blocks in the NH coastal watershed by 2010.</p>	<p>Has the acreage of permanently protected important habitats (tidal shorelines, wetlands, rare and exemplary natural communities, large contiguous forest tracts, wetlands with high habitat value, freshwater shorelands) significantly changed over time?</p>	Acres of protected, undeveloped tidal and freshwater shoreland	S	NA	NA	This parameter was listed as an environmental indicator in the NHEP Monitoring Plan. In April 2003, the Land Use Team decided that a goal should not be set for this parameter, so it has been reclassified to a supporting variable.
		Acres of protected, large unfragmented forest blocks	S	NA	NA	This parameter was listed as an environmental indicator in the NHEP Monitoring Plan. In April 2003, the Land Use Team decided that a goal should not be set for this parameter, so it has been reclassified to a supporting variable.
		Acres of protected wetlands with high habitat values	R	TBD	NA	NA
		Percentage of rare and exemplary natural communities on protected lands	S	NA	NA	NA
	<p>Has the acreage of privately owned lands managed to benefit wildlife and natural communities significantly changed over time?</p>	Acres of conservation lands in the coastal watershed	E	Protect 15% of coastal watershed and, protect 15% of coastal (Zone A) communities by 2010.	7.0% of coastal watershed is protected, and 11.9% of Zone A communities are protected.	Data current through 2002.
LND 6-3: Support completion of state biomonitoring standards and increase the miles of rivers and streams meeting those standards by 2010. (See Administrative Indicators, p.13-17).						
LND 6-4: Increase the use of buffers around wildlife areas and maintaining contiguous habitat blocks in the NH coastal watershed by 2010. (See Administrative Indicators, p.13-17).						
<p>No objectives but relevant to the goal.</p>	<p>Has the relative abundance, biology, and species composition of resident finfish changed significantly over time?</p>	Abundance of juvenile finfish	S	NA	NA	NA
		Anadromous fish returns	S	NA	NA	NA
		Abundance of adult finfish	R	NA	NA	NA
	<p>Has the acreage of waters supporting designated uses (fishing, swimming, shellfishing, etc.) significantly changed over time?</p>	None. The methods for 305b assessments of designated use support change year-to-year. Therefore, this is not a stable indicator.	NA	NA	NA	NA
	<p>Do the following indicators show that water quality is suitable for aquatic life: aquatic</p>	Eelgrass Distribution	S	NA	NA	NA
Abundance of lobsters		S	NA	NA	NA	

	insects/invertebrates, wildlife, fish, diatoms/algae, large bivalves, eelgrass, marshes?*	Wintering waterfowl abundance	S	NA	NA	NA
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** Note: Many of the species listed in this monitoring question are being tracked in other environmental indicators: marshes (see LND2-1), large bivalves (see SHL4-1A/B), aquatic insects/invertebrates (see WQ2-1C), fish (see juvenile/anadromous finfish above).

Habitat Restoration Goal #1: Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

Management Objective	Monitoring Question	Environmental Indicator	Type	Goal	Status	Comments
RST1-1A: Increase acreage of restored estuarine habitats by 2010: (1) Restore 300 acres of salt marsh with tidal restrictions.	Have restoration efforts resulted in a significant increase in the acreage of tidal or freshwater wetlands?	Acres of restored salt marsh	E	300 acres by 2010	176.5 acres	Data current through 2002.
RST1-1B: Increase acreage of restored estuarine habitats by 2010: (2) Restore 50 acres of eelgrass in Portsmouth Harbor, Little Bay, and the Piscataqua, Bellamy, and Oyster rivers.	NA	Acres of restored eelgrass	E	50 acres by 2010	0 acres	Data current through 2002.
RST1-1C: Increase acreage of restored estuarine habitats by 2010: (3) Restore 20 acres of oyster habitat in Great Bay and the tidal tributaries.	Have restoration efforts resulted in a significant increase in the acreage and/or density of softshell clam and oyster beds?	Acres of restored oyster habitat	E	20 acres by 2010	0.12 acres	Data current through 2002.

Footnotes

1. The goal is for 0% of estuarine area with sediments containing one or more compounds higher than NOAA ERL values (NOAA 1999). The NOAA Effects Range Low (ERL) has been adopted for the evaluation threshold. This is different from the management objective which is to keep sediment concentrations less than NOAA Effects Range Median (ERM) values. The TAC recommended this change because very few of the estuaries' sediments exceed ERM values (only one contaminant at 1 out of 40 sites from 2000). Therefore, the percent of estuarine area greater than ERM values would not be a very sensitive indicator. The ERL values, which are lower than the ERM values, were adopted for the indicator instead. Because ERM values are always higher than ERL values, using ERL values for this indicator will ensure that the management objective is met.

ADMINISTRATIVE INDICATORS: MANAGEMENT OBJECTIVES AND STATUS

Water Quality Goal #1: Ensure that NH's estuarine waters and tributaries meet standards for pathogenic bacteria including fecal coliform, *E. coli*, and enterococci.

Management Objective	Status
WQ1-4: Reduce the number of known illicit connections in the NH coastal watershed by 50% by 2010.	<p>The number of known illicit connections and illegal discharges is constantly changing as new illicit connections and direct discharges are identified and others are removed. The NHEP tracks this objective by providing information that describes: number of illicit connections/direct discharges found, number connections/discharges eliminated, number estimated connections/discharges remaining or undiscovered. The NH DES Watershed Assistance Section staff provides this information.</p> <p>The most recent summary of illicit connection/direct discharge investigations in the coastal watershed from 1996 through 2002 is:</p> <ul style="list-style-type: none"> • Total # of illicit connections/direct discharges found: 80 • Total # of illicit connections/direct discharges eliminated: 49 • Total # of estimated discharges remaining (known and undiscovered): between 13 and 20 <p>Therefore, of the 80 known illicit connections and direct discharges, approximately 60% have been eliminated. The goal is to remove at least 50% of the sources by 2010 so the goal is currently being met. As stated previously, the number of known illicit connections and direct discharges is constantly changing as more are discovered.</p> <p>The NHEP provides grant funds to municipalities to identify and eliminate illicit connections/discharges into storm sewer systems.</p>
WQ1-5: Achieve 50% reduction of known illegal discharges into Great Bay, Hampton Harbor, and the tributaries by 2010.	

Shellfish Goal #1: Achieve sustainable shellfish resources by tripling the area of shellfish beds that are classified open for harvesting to 75% of all beds, and tripling the quantity of harvestable clams and oysters in NH's estuaries.

Management Objective	Status
SHL1-1: Maintain an approved National Shellfish Sanitation Program supported by the state.	<p>The DES Shellfish Program became an approved National Shellfish Sanitation Program. NHEP continues to support this program as shown by the NHEP contribution to the 2003 Shellfish Program Budget. 2003 funding sources for NH DES Shellfish Program and supporting laboratory analyses include:</p> <ul style="list-style-type: none"> • EPA Performance Partnership Funds (federal, CWA Section 106): \$100,000 • NHEP funds (federal, CWA Section 320): \$100,000 • DHHS Laboratory (State general funds, excluding salaries): \$33,898 • Great Bay Coast Watch volunteer activities to assist the DES Shellfish Program: \$10,000

Management Objective	Status																																								
SHL1-5: Survey each major oyster and soft-shell clam bed at a minimum of every 3 years for dimensions, density, and population structure.	<p>The NHEP reports the number of years that have passed since each major oyster bed and soft-shell clam flat have been surveyed. The current status of shellfish resource surveys is:</p> <table border="1" data-bbox="835 232 1667 638"> <thead> <tr> <th>Shellfish Bed</th> <th>Resource</th> <th>Last Surveyed for Density and Population</th> <th>Last Surveyed for Dimensions</th> </tr> </thead> <tbody> <tr> <td>Adams Point Bed</td> <td>Oyster</td> <td>2002</td> <td>2001</td> </tr> <tr> <td>Nannie Island Bed (South)</td> <td>Oyster</td> <td>2002</td> <td>2001</td> </tr> <tr> <td>Nannie Island Bed (Woodman Point)</td> <td>Oyster</td> <td>2002</td> <td>2001</td> </tr> <tr> <td>Oyster River Bed</td> <td>Oyster</td> <td>2002</td> <td>2001</td> </tr> <tr> <td>Piscataqua River Bed</td> <td>Oyster</td> <td>2002</td> <td>2003</td> </tr> <tr> <td>Squamscott River Bed</td> <td>Oyster</td> <td>2001</td> <td>2003</td> </tr> <tr> <td>Common Island</td> <td>Clam</td> <td>2002</td> <td>2002</td> </tr> <tr> <td>Hampton-Browns Confluence</td> <td>Clam</td> <td>2002</td> <td>2002</td> </tr> <tr> <td>Middle Ground</td> <td>Clam</td> <td>2002</td> <td>2002</td> </tr> </tbody> </table> <p>Shellfish bed surveys are on schedule, with all surveys having been completed within the last three years.</p>	Shellfish Bed	Resource	Last Surveyed for Density and Population	Last Surveyed for Dimensions	Adams Point Bed	Oyster	2002	2001	Nannie Island Bed (South)	Oyster	2002	2001	Nannie Island Bed (Woodman Point)	Oyster	2002	2001	Oyster River Bed	Oyster	2002	2001	Piscataqua River Bed	Oyster	2002	2003	Squamscott River Bed	Oyster	2001	2003	Common Island	Clam	2002	2002	Hampton-Browns Confluence	Clam	2002	2002	Middle Ground	Clam	2002	2002
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Shellfish Goal #4: Support coordination to achieve environmentally sound shellfish aquaculture activities.

Management Objective	Status
SHL4-1: Ensure that aquaculture practices do not adversely impact water quality or ecological health of NH's estuaries.	<p>NH F&G tracks open water, inland, and estuarine aquaculture through a permitting process that is based on enabling legislation RSA-211; 62-e and FIS 807. Aquaculture enterprises are required to submit an application to NH F&G, and permits are developed on a case-by-case basis where site, practice, and intent of the enterprise are considered. Public hearings are held to ensure public review and input on all aquaculture permits.</p> <p>Currently NH F&G oversees three aquaculture permits in the coastal watershed: 2 estuarine permits for commercial aquaculture, which include one permit for finfish (flounder, haddock, cod) and one for shellfish (oysters); and 1 open ocean permit which includes shellfish (mussels) for commercial harvest and finfish (misc. species) for scientific study. No additional aquaculture permits were distributed in 2002. No permit requirements have been violated; however, NH F&G reserves the right and authority to terminate permits if violations occur.</p>

Land Use Goal #1: NH coastal watershed has development patterns that ensure the protection of estuarine water quality and preserve the rural quality of the watershed.

Management Objective	Status
<p>LND1-1B: Reduce stormwater runoff from future development in all sub-watersheds, especially where impervious surfaces already exceed 10%.</p>	<p>The NHEP supports a number of projects that seek to identify and address stormwater runoff from impervious surfaces, including, "Developing Impervious Surface Estimates for Coastal New Hampshire". Estimates of impervious surfaces in 1990 and 2000 were generated and analyzed by the UNH Complex Systems Research Center with NHEP funding. Overall, the study, which included the entire coastal watershed area, found an increase from 4.3% impervious cover in 1990 to 6.3% in 2000. Impervious surface cover exceeds 10% in 6 of 37 subwatersheds in the coastal watershed.</p> <p>Site Planning Roundtable— In 2003-2004, NHEP initiated activities to implement the Center for Watershed Protection's <i>Better Site Design</i> program. Regional planning commission staff, cooperative extension specialists, and state environmental professionals were trained in January 2004 to facilitate future Roundtables.</p> <p>Site Specific Regulation Review and Analysis – In 2003 NHEP staff, in conjunction with NH DES, initiated a comprehensive study of State regulations affecting stormwater runoff from construction activity and development. Current Site Specific Program regulations are being reviewed, alternatives considered, and recommendations being made for establishing a regulatory framework that reduces the introduction of untreated stormwater into aquatic ecosystems.</p>
<p>LND1-3: Encourage 43 coastal watershed municipalities to actively participate in addressing sprawl.</p>	<p>The NHEP and its partners support initiatives to promote smart growth and address sprawl. Some projects include:</p> <ul style="list-style-type: none"> • Coastal Watershed Smart Growth Roundtable – The NHEP convened a one-day Coastal watershed Smart Growth Roundtable in September 2002, which was attended by over 100 people. The Roundtable provided information on smart growth and resources for communities to use, including NHEP-supported initiatives such as the Natural Resources Outreach Coalition (NROC). • Achieving Smart Growth in New Hampshire – This publication, a toolkit for implementing smart growth principles in NH communities, was recently completed by the NH Office of Energy & Planning and available online as a PDF file. The document was distributed to towns throughout the coastal watershed in CD format. This collaborative project was funded in part by the NHEP. Regional workshops were conducted to introduce communities to the toolkit. • Chester Pilot Project – As part of a pilot program to develop innovative tools and approaches for minimizing sprawl, the Town of Chester participated in a planning process with the NH OEP to develop smart growth strategies in the community. • Regional and Community Planning for Sustainable Development – Between 2000–2002, the Rockingham and Strafford Regional Planning Commissions participated in an EPA Sustainable Development Challenge to develop a regional framework to protect the environment of seacoast NH by incorporating constructive alternatives to conventional zoning and planning practices that prevent sprawl. • NROC – Several projects address sprawl, natural resource protection, and smart growth. • Maps were digitized to produce tools for decision-making in natural resource and open space protection in the six Moose Mountain regional towns. • Open Space Plans were developed in Barrington and Newmarket. • The NROC approach is being incorporated into the NH Office of Energy & Planning's Grow Smart NH program. NH OEP staff are participating with NROC and have adapted the approach for a community outside of the coastal watershed (Lebanon). • Dover conducted Land Protection workshops, as part of its Growing Greener initiative developed through NROC in 2001 and 2002. • Three adjacent towns (Exeter, Newfields, Stratham) participated in the NROC process and implemented community projects in 2002. • Three communities are participating in 2003: Nottingham, Candia, and Somersworth. • Conservation Commission Circuit Rider Pilot Program – This pilot program addresses an identified need for increased resources and expertise for volunteer municipal conservation commissions in the coastal watershed. The program, implemented by the Rockingham Planning Commission with NHEP funding, aims to foster natural resource stewardship, improved communication with planning boards, and NHEP Management Plan project implementation. To date, circuit riders have provided assistance with issues such as land conservation, habitat protection, and revision of land use regulations. • Better Site Design Roundtable – In 2003-2004, NHEP initiated activities to implement the Center for Watershed Protection's <i>Better Site Design Roundtable</i> program. Regional planning commission staff, cooperative extension specialists, and state environmental professionals were trained in January 2004 to facilitate future Roundtables.

Land Use Goal #3: Protect freshwater and tidal shorelands to ensure estuarine water quality.

Management Objective	Status
<p>LND3-1: Allow no new impervious surfaces or major disturbances of existing vegetation (except for water-dependent uses) in NH coastal watershed. In addition to state Shoreland Protection Act regulations, encourage additional reductions in shoreland impacts by 2010.</p>	<ul style="list-style-type: none"> • Better Site Design Roundtable – In 2003-2004, NHEP initiated activities to implement the Center for Watershed Protection’s <i>Better Site Design Roundtable</i> program. Regional planning commission staff, cooperative extension specialists, and state environmental professionals were trained in January 2004 to facilitate future Roundtables. • Shoreland Habitat Protection – In late 2003 the NHEP solicited proposals to protect shoreland habitat in the coastal watershed. Five proposals were selected to receive funding. Grants include: a proposal by the Kensington Conservation Commission to protect a 26 acre parcel along the Exeter River; a proposal by the Hampton Conservation Commission to conduct a prime wetland assessment along the Taylor River; a proposal for the Rockingham Planning Commission to begin implementation of the Dearborn Brook Watershed Plan; and a proposal to continue the Center for Land Conservation Assistance’s Land Protection Transaction Assistance Fund. • Comprehensive Shoreland Protection Act Workshops – In 2002, NHEP conducted a series of workshops throughout the coastal watershed to educate local planners, code enforcement officers, building inspectors and conservation commissions about state and federal shoreland protection regulations.
<p>LND3-2: Allow no new establishment or expansion of existing contamination sources (such as salt storage, junk yards, solid waste, hazardous waste, etc.) within the shoreland protection area as tracked by NH DES.</p>	<ul style="list-style-type: none"> • New Hampshire’s Shoreland Protection Act sets Minimum Shoreland Protection Standards throughout shoreland protection area: “The establishment or expansion of salt storage yards, automobile junk yards, and solid or hazardous waste facilities shall be prohibited.” When combined with market forces that place a premium on shoreland properties, incentives to build ‘contamination’ facilities within shoreland areas have disappeared. NH DES reports violations to EPA on an annual basis. According to NH DES staff, no new contamination sources have been established in the coastal watershed for several years. • Comprehensive Shoreland Protection Act Workshops – In 2002, NHEP conducted a series of workshops throughout the coastal watershed to educate local planners, code enforcement officers, building inspectors and conservation commissions about state and federal shoreland protection regulations.

Land Use Goal #4: Protect estuarine water quality by ensuring that groundwater impacts are minimized.

Management Objective	Status
<p>LND4-1: Determine the extent of groundwater resources and their contaminant load to Great Bay and Hampton Harbor by 2005.</p>	<p>The NHEP has funded several projects related to this indicator:</p> <ul style="list-style-type: none"> • Characterization of Groundwater Discharge to Hampton Harbor – UNH researchers, using NHEP funds, used infrared imagery and field verification to assess groundwater discharges and nutrient contamination in Hampton Harbor. This project was completed in 2003. Results suggest that groundwater discharge in Hampton Harbor is extremely limited. • Sustainability of Groundwater Resources in the Piscataqua River and Coastal watersheds– This project, partially funded by NHEP, is a collaborative effort of the USGS, NH Geologic Survey, NH Coastal Program, and NH DES to estimate groundwater levels throughout the coastal watershed. The project was initiated in 2002 and is ongoing. • Assessing Groundwater Inflow and Loadings to Estuaries – The project was completed with CICEET funds. UNH researchers used infrared imagery, coupled with field verification, to assess groundwater discharges to Great Bay. Groundwater nutrient loading was calculated to be approximately 5% of the total non-point load to the Great Bay Estuary.
<p>LND4-2: Reduce and eliminate groundwater contaminants based on the outcome of Objective 1 by 2010.</p>	<p>Initially this was a research indicator based on the following question: Has the quality of groundwater entering NH estuaries significantly changed over time? Groundwater loads to the estuary will change very slowly. The Technical Advisory Committee decided that monitoring these slow changes would not be cost-effective. Instead, the NHEP will report on the results of stand-alone studies of groundwater loading to the estuaries.</p> <p>Related Project: Arsenic Contamination in Private Bedrock Wells in Southeastern NH – This USGS study, released in 2003, sampled wells throughout southeastern NH, including those within the coastal watershed. Approximately 19% of bedrock wells contain concentrations of arsenic that exceed EPA maximum contaminant levels for public water supplies. Fact sheets were distributed to the public in 2003. NHEP funds supported this project.</p>

Land Use Goal #5: Allow no net loss of freshwater wetlands functions in the NH coastal watershed.

Management Objective	Status
LND5-2: Establish a state and municipal regulatory framework necessary to prevent introduction of untreated stormwater into tidal and freshwater wetlands by 2010.	Site Specific Regulation Review and Analysis – In 2003 NHEP staff, in conjunction with NH DES, initiated a comprehensive study of State regulations affecting stormwater runoff from construction activity. Current Site Specific Program regulations were reviewed, alternatives considered, and recommendations made for establishing a regulatory framework that reduces the introduction of untreated stormwater into aquatic ecosystems.
LND5-3: Increase use of buffers around wetlands in NH coastal watershed.	<ul style="list-style-type: none"> • Wetland buffers are protected throughout tidal shoreline areas in New Hampshire. NH DES reports that the use of buffers around freshwater wetlands is commonly applied throughout the coastal watershed as part of remediation efforts for new development. Regulations that require freshwater wetland buffers are under consideration in several communities. • Freshwater Wetland Mitigation Inventory – The NHEP funded an inventory of freshwater wetland mitigation opportunities within Zone A of the coastal watershed by West Environmental, Inc. The inventory identified opportunities for wetland restoration and buffer protection around wetlands as possible application of mitigation requirements. • Prime Wetland Designations – NHEP funded Moose Mountain Regional Greenways to evaluate high value wetlands for potential protection through Prime Wetland designation and/or protection of land or buffers. Fieldwork was conducted in 2002 and 2003. Results were presented to community boards in 2003. • Protecting Shoreland Buffers in the Exeter River Watershed – In 2002, the Rockingham Planning Commission completed an outreach effort to Exeter River Watershed communities in which shoreland buffer protections were reviewed and recommendations made to increase effectiveness. Follow-up analysis indicates that the effort resulted in the adoption of expanded shoreland protection in two communities with ongoing proposals in other communities, as well as improved communication between enforcement officers, planning boards, and conservation commissions in the watershed. • Comprehensive Shoreland Protection Act Workshops – In 2002, NHEP conducted a series of workshops throughout the coastal watershed to educate local planners, code enforcement officers, building inspectors and conservation commissions about state and federal shoreland protection regulations.

Land Use Goal #6: Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

Management Objective	Status
LND6-3: Support completion of state biomonitoring standards and increase the miles of rivers and streams meeting those standards by 2010.	Biomonitoring criteria recently have been developed by the state and are used in stream/river assessments for the state's 305(b) reports. However, biomonitoring standards have not been promulgated by the state.
LND 6-4: Increase the use of buffers around wildlife areas and maintaining contiguous habitat blocks in the NH coastal watershed by 2010.	<p>Conservation Commission Circuit Rider Pilot Program – This pilot program addressed an identified need for increased resources and expertise for volunteer municipal conservation commissions in the coastal watershed. The program, implemented by the Rockingham Planning Commission through NHEP funding, fostered natural resource stewardship, improved communication with planning boards, and enabled NHEP Management Plan project implementation. Circuit riders provided assistance with issues such as land conservation, habitat protection, and revision of land use regulations.</p> <p>Statewide Comprehensive Wildlife Plan – NH Fish & Game is currently developing a statewide Wildlife Plan which will include information on the distribution, abundance, and location of "at risk" species and key habitats; descriptions of conservation actions for key species and habitats; plans for monitoring species; and plans for coordinating the implementation and updating the plan with other state and federal agencies and conservation organizations. The plan will be completed by 2005.</p> <p>NH Fish & Game Wildlife Manual Workshops - In 2001-2002 NH Fish & Game, with NHEP funding support, hosted workshops to introduce and familiarize municipal officials with the NH Fish and Game Wildlife Manual. Coastal watershed communities trained in the use of the Manual include: Candia, Chester, East Kingston, Exeter, New Durham, Nottingham, and Sandown. Fish & Game conducted follow-up surveys in 2002 to evaluate how towns are using the Manual. Efforts to work with towns to actively use recommendations from the manual are underway.</p> <ul style="list-style-type: none"> • The Exeter River Local Advisory Committee is working with towns in the Exeter River Watershed to incorporate recommendations from the Manual into land use regulations and procedures. • NH Fish & Game is working with communities in the Piscassic and Lamprey River watersheds to utilize recommendations from the habitat manual for towns.

ACTION PLANS: OVERALL STATUS

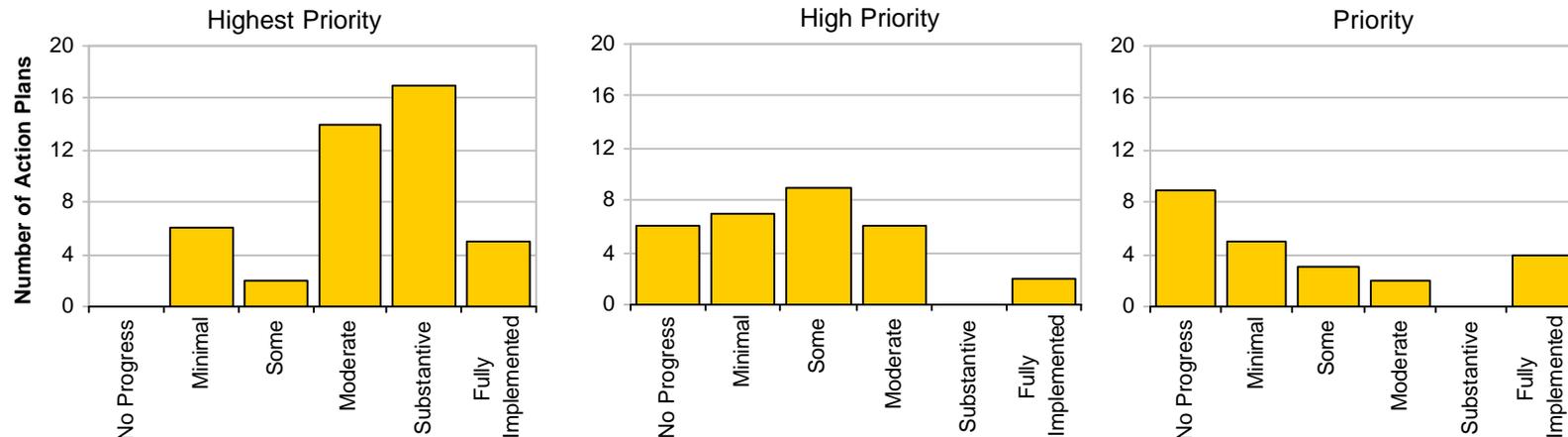
The 2000 CCMP sets forth the NHEP's Highest Priority, High Priority, and Priority Action Plans to protect and enhance the environmental quality of the State's estuaries. The NHEP monitors implementation of these plans through a comprehensive project-tracking database. NHEP staff assigned the following percent implementation ratings to each Action Plan based on activities and projects initiated by the NHEP and its partners: No Progress (0%), Minimal (1-25%), Some (26-50%), Moderate (51-75%), Substantive (76-99%), and Fully Implemented (100%). An Action Plan may be rated as Fully Implemented even though implementation is ongoing. Although environmental monitoring was not explicitly prioritized in the CCMP, implementation of a monitoring program for the NHEP is complete.

Since 2000, the NHEP has made progress on each of its 44 Highest Priority Action Plans, having Fully Implemented five and made substantive progress on 17. Thirty-six (36) of the Highest Priority Action Plans show at least 51%

implementation, while eight fall below the 50% implementation level. Of the 31 High Priority Action Plans, eight show at least 50% implementation, while 23 show less than 50% implementation. The NHEP has yet to begin implementation of six High Priority Action Plans. Four Priority Action Plans have been Fully Implemented, while nine show no progress. Seventeen (17) of the 23 Priority Action Plans show less than 50% implementation.

Following development and approval of the CCMP, the NHEP placed emphasis on implementing Highest Priority Action Plans, and this emphasis is reflected by implementation progress as illustrated in the graphs below. As implementation of the CCMP proceeds, the New Hampshire Estuaries Project will shift resources toward implementing High Priority and Priority Action Plans while ensuring the continued implementation of ongoing Highest Priority Action Plans and environmental monitoring.

Action Plan status grouped by priority



All NHEP Action Plans and their completion ratings are listed in the following table.

Completion Ratings of NHEP Action Plans.

Action ID	Action Plan Title	Priority	Completion Rating
WQ-01	Evaluate how WWTF effluent affects estuarine water quality, and seek practical options at the state level for secondary and tertiary or alternative treatment where appropriate.	High	Moderate (51-75%)
WQ-02	Evaluate the suitability of UV alternatives to chlorine in wastewater post-treatment for seacoast communities.	High	No Progress (0%)
WQ-03	Prioritize and then upgrade WWTFs to reduce bacterial pollution from hydraulic overloading.	High	Some (26-50%)
WQ-04A	Establish ongoing training and support for municipal personnel in monitoring storm drainage systems for illicit connections.	Highest	Moderate (51-75%)
WQ-04B	Assist seacoast communities in completing and maintaining maps of sewer and stormwater drainage infrastructure systems	Highest	Moderate (51-75%)
WQ-04C	Eliminate sewer and storm drain illicit connections.	Highest	Moderate (51-75%)
WQ-05	Conduct shoreline surveys for pollution sources.	Highest	Substantive (76-99%)
WQ-06	Promote collaboration of state and local officials to locate and eliminate illegal discharges into surface waters.	High	Minimal (1-25%)
WQ-07	Provide incentives to fix or eliminate illegal direct discharges such as gray water pipes, failing septic systems, and agricultural runoff.	Highest	Moderate (51-75%)
WQ-08	Research the effectiveness of innovative stormwater treatment technologies for existing urban areas in NH, and communicate results to developers and communities.	Highest	Substantive (76-99%)
WQ-09	Ensure that water quality impacts from new development or redevelopment are minimized at the planning board stage of development.	High	Minimal (1-25%)
WQ-10	Research, revise, publish and promote the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in NH.	Highest	Substantive (76-99%)
WQ-11	Revise state industrial discharge permit criteria in response to new processing technology, and re-evaluate existing permits.	Priority	No Progress (0%)
WQ-12A	Acknowledge and support the Oil Spill Response Team of the Piscataqua River Cooperative.	Priority	Fully Implemented (100%)
WQ-12B	Enhance oil spill clean up efforts through pre-deployment of infrastructure and development of high-speed current barriers.	High	Fully Implemented (100%)
WQ-13	Provide septic system maintenance information directly to shoreline property owners, and to other citizens of the coastal watershed to help improve water quality.	Highest	Substantive (76-99%)
WQ-14	Encourage the use of innovative, alternative technologies for failing septic systems to help improve water quality.	High	Moderate (51-75%)
WQ-15	Support efforts to reduce deposition of atmospheric pollutants through eliminating loopholes in current laws, encouraging the construction of more efficient plants, and encouraging energy conservation.	Priority	No Progress (0%)
WQ-16	Find funding sources for key water quality strategies.	Highest	Minimal (1-25%)
WQ-17	Coordinate public tours of wastewater treatment facilities.	Priority	No Progress (0%)
WQ-18	Support and coordinate stormwater workshops.	Priority	Some (25-50%)
WQ-19	Support and expand storm drain stenciling programs.	Highest	Moderate (51-75%)
WQ-20	Conduct an Estuarine Field Day for municipal officials.	Priority	Fully Implemented (100%)
LND-01	Prepare a report of current and future levels of imperviousness for the subwatersheds of the NH coastal watershed.	Highest	Fully Implemented (100%)
LND-02	Implement steps to limit impervious cover and protect streams at the municipal level.	Highest	Minimal (1-25%)
LND-03	Conduct research in coastal NH subwatersheds to examine the relationship between percent impervious cover and environmental degradation.	High	Moderate (51-75%)
LND-04	Prevent the introduction of untreated stormwater to wetlands by supporting the development of NH Minimum Impact Development Guidelines.	Priority	Some (26-50%)
LND-05	Support the Natural Resource Outreach Coalition (NROC), a municipal decision-maker land-use planning outreach method modeled after the University of Connecticut NEMO (Nonpoint Education for Municipal Officials) Program.	Highest	Substantive (76-99%)
LND-06	Minimize urban sprawl in coastal watersheds.	Highest	Moderate (51-75%)
LND-06A	Develop a regional pilot partnership to create a smart growth vision among towns and regional planning commissions in a subwatershed of the NH coastal watershed.	Highest	Moderate (51-75%)
LND-06B	Conduct a comprehensive review of the 43 towns in the coastal watershed to determine land-use policies that affect sprawl.	High	Some (26-50%)

Action ID	Action Plan Title	Priority	Completion Rating
LND-06C	Develop and maintain a comprehensive database or library of new smart growth funding programs.	High	Minimal (1-25%)
LND-06D	Develop a science-based handbook and video on the nature, causes, and remedies of sprawl for audiences in the coastal watershed.	Priority	Minimal (1-25%)
LND-06E	Actively participate and contribute to the development of new smart growth planning tools with emphasis on provisions that protect estuarine water quality.	High	Fully Implemented (100%)
LND-06F	Aggressively assist communities that embrace a strong smart growth philosophy to conduct comprehensive reviews, identify sources of funding, provide public education, and implement new land-use tools.	Highest	Some (26-50%)
LND-07	Fully Implemented rulemaking and begin implementation of the 'Recommended NH Wetlands Mitigation Policy' for NH DES, prepared by the Audubon Society of NH and the Steering Committee on Wetlands Mitigation.	High	Some (26-50%)
LND-08A	Strengthen enforcement and effectiveness of the state tidal buffer zone (TBZ) through outreach to local officials and tidal shoreland property owners.	Priority	Minimal (1-25%)
LND-08B	Amend state tidal buffer zone (TBZ) regulations to include regulation of dock construction.	Priority	No Progress (0%)
LND-09A	Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands through policy changes at the NHDES Wetlands Bureau.	Highest	Minimal (1-25%)
LND-09B	Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands through changes to the NHDES Site Specific Program.	Highest	Minimal (1-25%)
LND-13	Provide a framework specific and appropriate to the NH Seacoast for defining and delineating urban and non-urban shoreland areas.	High	No Progress (0%)
LND-14	Develop and implement an outreach program to encourage and assist communities in developing and adopting land use regulations to protect undisturbed shoreland buffers.	Highest	Moderate (51-75%)
LND-15	Support land conservation efforts in shoreland areas.	Highest	Moderate (51-75%)
LND-16	Improve enforcement of the state Comprehensive Shoreland Protection Act and other applicable shoreland protection policies through outreach to local officials and shoreland property owners.	Highest	Moderate (51-75%)
LND-17	Provide incentives for the relocation of grandfathered shoreland uses.	High	No Progress (0%)
LND-18	Locate, quantify and qualify groundwater inflow to the estuaries.	Highest	Substantive (76-99%)
LND-19	Locate, reduce, eliminate, and prevent groundwater contamination.	Highest	Minimal (1-25%)
LND-20	Develop and implement a Wetlands Buffer Outreach Program for planning boards.	High	No Progress (0%)
LND-21	Prevent the introduction of untreated stormwater to freshwater wetlands by enacting legislation giving NHDES authority to regulate stormwater discharge to wetlands.	High	Minimal (1-25%)
LND-22	Prevent the introduction of untreated stormwater to wetlands by strengthening municipal site plan review regulations.	High	No Progress (0%)
LND-23	Prevent the introduction of untreated stormwater to wetlands through an increased understanding of stormwater impacts on wetland ecology.	Priority	No Progress (0%)
LND-24	Work with NHDES to encourage adoption of a state wetlands mitigation policy.	High	Some (26-50%)
LND-25	Encourage municipal designation of Prime Wetlands and 100-foot buffers (or equivalent protection).	High	Some (26-50%)
LND-25A	Create a traveling Prime Wetlands display.	Priority	No Progress (0%)
LND-25B	Provide training and project assistance for towns interested in utilizing the NH Comparative Method for Wetland Evaluation.	Highest	Some (26-50%)
LND-25C	Work with local planning boards and conservation commissions on regulatory approaches to wetlands conservation.	High	Minimal (1-25%)
LND-25D	Create or enhance local land conservation programs with emphasis on high value wetlands and buffers.	High	Minimal (1-25%)
LND-26	Support implementation of state/federal land protection programs.	Highest	Fully Implemented (100%)
LND-27	Support the efforts of the Great Bay Resource Protection Partnership.	Highest	Fully Implemented (100%)
LND-28	Encourage communities to dedicate current-use tax penalties to conservation commissions for the purpose of natural resource acquisition, easements, restoration, and conservation land management.	Highest	Substantive (76-99%)
LND-29	Provide technical assistance in land protection and management to regional land trusts and municipal conservation commissions (Ecological Reserve System).	High	Some (26-50%)
LND-30	Develop and use biomonitoring standards to evaluate water quality.	High	Some (26-50%)
LND-31	Use results of biomonitoring and water quality monitoring to prioritize watershed areas for protection and remediation.	High	No Progress (0%)

Action ID	Action Plan Title	Priority	Completion Rating
LND-32	Encourage municipalities to incorporate wildlife habitat protection into local master plans by promoting NH F&G's "Identifying and Protecting Significant Wildlife Habitat: A Guide for Towns."	Highest	Substantive (76-99%)
LND-33	Develop a model local planning approach to encourage the identification and maintenance of contiguous habitat blocks.	Highest	Moderate (51-75%)
LND-34	Encourage appropriate buffers around important wildlife areas and rare or exemplary natural communities.	High	Some (26-50%)
LND-35	Maintain current use tax program.	Highest	Moderate (51-75%)
LND-36	Encourage conservation easements.	Highest	Substantive (76-99%)
SHL-01	Implement National Shellfish Sanitation Program guidance to develop an FDA-certified shellfish program.	Highest	Substantive (76-99%)
SHL-02	Identify sources of and reduce or eliminate contaminants in the coastal watershed.	Priority	Moderate (51-75%)
SHL-03	Institute land-use practices that improve water quality and shellfish habitat.	Priority	Moderate (51-75%)
SHL-04	Enhance funding to maintain a comprehensive Shellfish Program.	Highest	Substantive (76-99%)
SHL-05	Regularly collect and monitor water quality to identify sources and reduce or eliminate contaminants.	Highest	Substantive (76-99%)
SHL-06	Periodically collect and monitor shellfish tissue samples as appropriate for toxins and biotoxins.	Highest	Substantive (76-99%)
SHL-07	Maintain an ongoing shellfish resource assessment program.	Highest	Substantive (76-99%)
SHL-09A	Decrease shellfish resource depletion and increase productivity with stricter state penalties for illegal harvesting.	Priority	No Progress (0%)
SHL-09B	Increase outreach and education about methods to control shellfish predators.	Priority	Minimal (1-25%)
SHL-09C	Explore alternative recreational shellfish harvest methods.	Priority	No Progress (0%)
SHL-09D	Increase productivity by discouraging the harvest of immature shellfish.	Priority	Minimal (1-25%)
SHL-10	Provide information regarding public access to shellfish beds through distribution of maps/booklets.	Highest	Substantive (76-99%)
SHL-11	Establish Bounty of Bays shellfishing field education program.	Priority	Fully Implemented (100%)
SHL-12	Develop and maintain a shellfisher license information database for use in outreach activities.	Priority	Fully Implemented (100%)
SHL-13	Update materials issued with shellfish licenses, improve distribution of information and better utilize the NH F&G "Clam Hotline."	Priority	Some (26-50%)
SHL-14	Provide for direct citizen involvement in NH shellfish management decision-making process.	Highest	Fully Implemented (100%)
SHL-15	Evaluate and address perceived and real institutional barriers to aquaculture and promote environmentally sound aquaculture practices.	Highest	Minimal (1-25%)
RST-01	Develop and implement a plan for shellfish resource enhancement and habitat restoration to achieve a sustainable resource contributing to a healthy environment (See SHL-8).	Highest	Moderate (51-75%)
RST-02	Using the Coastal Method and other techniques, identify and restore tidal wetlands for aspects other than tidal restrictions.	High	Moderate (51-75%)
RST-03	Continue to restore the tidal wetlands listed in the NRCS report, "Method for the Evaluation and Inventory of Vegetated Tidal Marshes in New Hampshire."	Highest	Substantive (76-99%)
RST-04	Identify and implement habitat restoration projects in other important non-tidal habitat areas, such as uplands and freshwater wetlands.	High	Some (26-50%)
RST-05	Create a list of potential wetland restoration projects that could be used for wetland mitigation projects, and distribute the list to the state agencies and seacoast municipalities.	High	Moderate (51-75%)
RST-06	Pursue funding for restoration from NH DOT, USDA, NRCS, US F&WS, and other sources.	Highest	Moderate (51-75%)
EDU-01	Use media to highlight estuarine issues.	High	Moderate (51-75%)
EDU-02	Work with Seacoast newspapers to establish a monthly newspaper column devoted to coastal natural resources issues.	Priority	Minimal (1-25%)
EDU-02A	Develop an agreement with Strafford County UNH Cooperative Extension to enable the NHEP outreach project team to contribute coastal natural resource information to the column in Foster's Daily Democrat.	Priority	No Progress (0%)
EDU-03	Establish and fund a technical assistance grant program to promote and fund projects that support the NHEP Management Plan.	Highest	Fully Implemented (100%)
EDU-04	Maintain and expand the NHEP shoreline property-owner database.	High	Moderate (51-75%)
EDU-05	Support volunteer organizations active in water quality, habitat, or other estuarine watershed natural resource issues.	Highest	Substantive (76-99%)

WATER QUALITY ACTION PLANS

The NHEP has made substantial progress toward achieving Highest Priority Water Quality Action Plans. Of the 10 Action Plans listed as Highest Priority, nine show at least 50% progress toward completion, while implementation of the tenth, WQ-16, has been minimal. High Priority Water Quality Actions show less progress, with five of the seven showing less than 50% implementation and just one, WQ-12B, rated as Fully Implemented. Finally, of the six Priority Water Quality Actions,

no progress has been made on three, while one rated some progress and two were deemed to be Fully Implemented.

To date, the NHEP has focused significant efforts and resources toward Action Plans relating to eliminating illicit connections and illegal discharges to receiving waters. Less progress has been made on Action Plans related to wastewater treatment facilities.

Water Quality Action Plan Completion Ratings.

	Highest Priority	High Priority	Priority
No Progress (0%)		WQ-02	WQ-11, WQ-15, WQ-17
Minimal (1-25%)	WQ-16	WQ-06, WQ-09	
Some (26-50%)		WQ-03	WQ-18
Moderate (51-75%)	WQ-04A, WQ-04B, WQ-04C, WQ-07, WQ-19	WQ-01, WQ-14	
Substantive (76-99%)	WQ-05, WQ-08, WQ-10, WQ-13		
Fully Implemented (100%)		WQ-12B	WQ-12A, WQ-20

Following is the list of all Water Quality Action Plans and the steps associated with Action Plan implementation. Progress on each step is assigned one of three assessments: Not Initiated, In Progress, or Complete. For a report of all NHEP activities undertaken to implement Action Plan Steps, see www.nh.gov/nhep/publications/pdf/nhepprogressreport-app-nhep-04.pdf or contact the NHEP.

WQ-01 Evaluate how WWTF effluent affects estuarine water quality, and seek practical options at the state level for secondary and tertiary or alternative treatment where appropriate.

Priority High
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|--|---------------|
| 1. ID WWTF discharges that are probable causes of nutrients and sediments to the estuaries. | In progress |
| 2. Conduct biological assessments and look for data gaps in chemical analyses of surface waters.
Conduct follow-up monitoring to isolate WWTF effluent. | In progress |
| 3. Evaluate design and capacity of WWTFs determined to have negative impact. | In progress |
| 4. Conduct cost-benefit analysis to evaluate upgrade needs for treatment. | Not initiated |
| 5. Evaluate the monitoring criteria in NPDES permits. | Not initiated |

WQ-02 Evaluate the suitability of UV alternatives to chlorine in wastewater post-treatment for seacoast communities.

Priority High
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Meet with WWTF operators to discuss impacts of chlorination. | Not initiated |
| 2. Assess byproducts of chlorination in the post-treatment stream of WWTFs. | Not initiated |
| 3. Evaluate use of UV. | Not initiated |
| 4. Determine costs and benefits of retrofits. | Not initiated |
| 5. Present findings to municipalities. | Not initiated |

WQ-03 Prioritize and then upgrade WWTFs to reduce bacterial pollution from hydraulic overloading.

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Understand the impacts of each WWTF on estuarine water quality. | In progress |
| 2. Compile and prioritize real problems at each plant. | In progress |
| 3. Develop long-term regional plan to address WWTF needs. | Not initiated |
| 4. Develop WWTF recommendation and tracking procedure. | Not initiated |
| 5. Prioritize funding for plants based on recommendations. | Not initiated |

WQ-04A Establish ongoing training and support for municipal personnel in monitoring storm drainage systems for illicit connections.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Develop review board. | In progress |
| 2. Train municipal staff in investigatory techniques of identifying illicit connections and enforcement options. | Complete |
| 3. DES help municipalities to develop an illicit connection database. | Complete |
| 4. Create monitoring plans. | In progress |
| 5. ID municipal resource needs for monitoring storm drain outfalls. | In progress |
| 6. Assist communities in securing funds to monitor storm drains as an incentive. | In progress |

WQ-04B Assist seacoast communities in completing and maintaining maps of sewer and stormwater drainage infrastructure systems.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Determine availability and completeness of infrastructure maps. | Complete |
| 2. Verify existing maps. | Complete |
| 3. Digitize infrastructure information into data layers. | In progress |
| 4. Perform field checks of final maps. | In progress |
| 5. Develop a municipal work station to update maps on ongoing basis. | Not initiated |
| 6. Train staff to access the information and create layers as needed. | In progress |

WQ-04C Eliminate sewer and storm drain illicit connections.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Create database template for municipalities to collate information from storm drainage investigations. | In progress |
| 2. Assist towns in prioritizing and scheduling removal of illicit connections. | In progress |
| 3. Help towns obtain funds. | In progress |
| 4. Remove connections. | In progress |
| 5. Monitor to document water quality change after eliminating illicit connections. | In progress |

WQ-05 Conduct shoreline surveys for pollution sources.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|-------------|
| 1. DES and volunteers conduct shoreline surveys. | In progress |
| 2. Gather survey information from local groups. | In progress |
| 3. Use existing survey database to manage results. | In progress |
| 4. Seek volunteers. | In progress |
| 5. Use GBCW volunteer training. | In progress |
| 6. Delineate area to be surveyed. | In progress |
| 7. Train and assign volunteer groups. | In progress |
| 8. Notify shorefront property owners. | In progress |
| 9. Conduct surveys. | In progress |
| 10. Enter results in database. | In progress |

WQ-06 Promote collaboration of state and local officials to locate and eliminate illegal discharges into surface waters.

Priority High
Completion Rating Minimal (1-25%)
Duration Ongoing
Yr. Initiated 2003
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Develop public awareness campaign to explain procedure for reporting suspected pollution sources. | In progress |
| 2. DES staff respond promptly to increased reporting. | In progress |
| 3. DES investigate reported illegal discharges. | In progress |
| 4. Create community specific status report to inform all parties of actions and results. | Not initiated |

WQ-07 Provide incentives to fix or eliminate illegal direct discharges such as grey water pipes, failing septic systems, and agricultural runoff.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|---------------|
| 1. ID funding sources for illegal discharges. | In progress |
| 2. Encourage DES to market SRL funds for septic systems. | In progress |
| 3. Develop and maintain online directory of financial assistance. | Not initiated |
| 4. Correct direct discharges found. | In progress |
| 5. Advertise success stories. | In progress |

WQ-08 Research the effectiveness of innovative stormwater treatment technologies for existing urban areas in NH, and communicate results to developers and communities.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Collate information on stormwater BMPs. | Complete |
| 2. Publish information and make it available to the public. | Complete |
| 3. Monitor effectiveness of two stormwater treatment facilities. | Complete |
| 4. Schedule workshops to demonstrate the success of the two case studies. | In progress |

WQ-09 Ensure that water quality impacts from new development or redevelopment are minimized at the planning board stage of development.

Priority High
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Update and amend documentation of NHEP area ordinances in the Base Programs Analysis. | Not initiated |
| 2. Review strategies and innovative ordinances from other states. | Not initiated |
| 3. Work with communities that lack erosion and sediment control ordinances. | Not initiated |
| 4. Coordinate to ensure consistency with State regulations. | Not initiated |
| 5. Encourage adoption of protective ordinances for projects greater than 20,000 square feet. | Not initiated |

WQ-10 Research, revise, publish and promote the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in NH.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Compile list of current education activities by organizations. | Complete |
| 2. Research new developments. | In progress |
| 3. Rewrite Green Book. | In progress |
| 4. Distribute and provide education programs on the book. | In progress |

WQ-11 Revise state industrial discharge permit criteria in response to new processing technology, and re-evaluate existing permits.

Priority Priority
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Review existing small dischargers' permits. | Not initiated |
| 2. Review municipal pre-treatment program. | Not initiated |
| 3. ID substances which can be modified to reduce toxic waste. | Not initiated |
| 4. Re-evaluate permitted discharges. | Not initiated |
| 5. Establish time table for reduction or remediation of discharges. | Not initiated |

WQ-12A Acknowledge and support the Oil Spill Response Team of the Piscataqua River Cooperative.

Priority Priority
Completion Rating Fully Implemented (100%)
Duration Ongoing
Yr. Initiated 2001
Date Completed 06/30/2001

STEPS

- | | |
|--|-------------|
| 1. NHEP develop relationship with Cooperative. | Complete |
| 2. Assist in publicizing events as relevant. | In progress |

WQ-12B Enhance oil spill clean up efforts through pre-deployment of infrastructure and development of high-speed current barriers.

Priority High
Completion Rating Fully Implemented (100%)
Duration Finite
Yr. Initiated 2001
Date Completed 12/31/2001

STEPS

- | | |
|---|----------|
| 1. Place mooring at locations for attaching booms. | Complete |
| 2. Support UNH to develop and field test fast-current oil barriers. | Complete |

WQ-13 Provide septic system maintenance information directly to shoreline property owners, and to other citizens of the coastal watershed to help improve water quality.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Ongoing
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Examine existing materials on septic system maintenance. | Complete |
| 2. Distribute maintenance information to shoreline property owners. | Complete |
| 3. Mail materials to residents. | In progress |
| 4. Give materials to real estate offices for new home owners. | Not initiated |
| 5. Submit articles to the media. | In progress |
| 6. Distribute materials to town clerks. | In progress |
| 7. Include information on Great Bay Radio. | Not initiated |

WQ-14 Encourage the use of innovative, alternative technologies for failing septic systems to help improve water quality.

Priority High
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Review innovative and alternative septic systems for NH. | Not initiated |
| 2. Pursue approval from DES for monitoring new technologies. | Not initiated |
| 3. Seek approval from DES on technologies. | Not initiated |
| 4. Conduct workshops on the new systems. | In progress |
| 5. Ensure new systems are used only for failed system replacement of existing structures. | Not initiated |

WQ-15 Support efforts to reduce deposition of atmospheric pollutants through eliminating loopholes in current laws, encouraging the construction of more efficient plants, and encouraging energy conservation.

Priority	Priority	STEPS	
Completion Rating	No Progress (0%)	1. Revise state standards to eliminate Clean Air Act loopholes.	Not initiated
Duration	Finite	2. Implement tax credits for exceeding BACT standards.	Not initiated
Yr. Initiated		3. Hasten construction of newer, cleaner, plants.	Not initiated
Date Completed		4. Increase participation in conservation programs.	Not initiated

WQ-16 Find funding sources for key water quality strategies.

Priority	Highest	STEPS	
Completion Rating	Minimal (1-25%)	1. Partners submit list of known funding source information.	Complete
Duration	Ongoing	2. NHEP create database.	Not initiated
Yr. Initiated	2001	3. Research additional sources.	In progress
Date Completed		4. Maintain database.	Not initiated
		5. Upload on a website.	In progress
		6. Promote the database.	Not initiated

WQ-17 Coordinate public tours of wastewater treatment facilities.

Priority	Priority	STEPS	
Completion Rating	No Progress (0%)	1. Coordinate tours of WWTFs.	Not initiated
Duration	Finite	2. Plant managers conduct tours.	Not initiated
Yr. Initiated		3. Provide educational materials to tour participants.	Not initiated
Date Completed		4. Invite public to the tours.	Not initiated

WQ-18 Support and coordinate stormwater workshops.

Priority	Priority	STEPS	
Completion Rating	Some (25-50%)	1. Conduct training on reducing, treating, and improving quality of stormwater.	In progress
Duration	Ongoing		
Yr. Initiated	2000		
Date Completed			

WQ-19 Support and expand storm drain stenciling programs.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Recruit school groups. | In progress |
| 2. Conduct workshop with each group before event. | In progress |
| 3. Work with DPW to ID locations and obtain supplies. | In progress |
| 4. Inform media contacts. | In progress |
| 5. Prepare handouts. | In progress |

WQ-20 Conduct an Estuarine Field Day for municipal officials.

Priority Priority
Completion Rating Fully Implemented (100%)
Duration Ongoing
Yr. Initiated 2000
Date Completed 12/31/2000

STEPS

- | | |
|---|----------|
| 1. Sea Grant invites municipal officials to event. | Complete |
| 2. Introduce innovative technologies and techniques to prevent/reduce contamination to Great Bay. | Complete |

LAND USE AND HABITAT PROTECTION ACTION PLANS

This focus area encompasses more Actions than any of the others, a total of 45. Of the 21 Highest Priority Land Use Action Items, implementation has started on each and all but six show at least 50% progress. Three Highest Priority Action Plans are rated as Fully Implemented.

Generally, the 18 High Priority Land Use Action Items show a lower completion rate than the Highest Actions, with five yet to begin implementation and another 11 falling between 1-50%

implementation. One High Priority Action, LND6-E, has been Fully Implemented. Of the six Priority Action Items, just one shows over 25% progress, while three have yet to be initiated.

The NHEP has made most of its Land Use related progress in the areas of habitat protection and land use planning, with comparatively less progress in protecting shorelands and freshwater wetlands

Land Use and Habitat Protection Action Plan Completion Ratings

	Highest Priority	High Priority	Priority
No Progress (0%)		LND-13, LND-17, LND-20, LND-22, LND-31	LND-08B , LND-23 , LND-25A
Minimal (1-25%)	LND-02, LND-09A, LND-09B, LND-19	LND-06C, LND-21, LND-25C, LND-25D	LND-06D, LND-8A
Some (26-50%)	LND-06F, LND-25B	LND-06B, LND-07, LND-24, LND-25, LND-29, LND-30, LND-34	LND-04
Moderate (51-75%)	LND-06, LND-06A, LND-14, LND-15, LND-16, LND-33, LND-35	LND-03	
Substantive (76-99%)	LND-05, LND-18, LND-28, LND-32, LND-36		
Fully Implemented (100%)	LND-01, LND-26, LND-27	LND-06E	

Following is the list of all Water Quality Action Plans and the steps associated with Action Plan implementation. Progress on each step is assigned one of three assessments: Not Initiated, In Progress, or Complete. For a report of all NHEP activities undertaken to implement Action Plan Steps, see www.nh.gov/nhep/publications/pdf/nhepprogressreport-app-nhep-04.pdf or contact the NHEP.

LND-01 Prepare a report of current and future levels of imperviousness for the subwatersheds of the NH coastal watershed.

Priority Highest
Completion Rating Fully Implemented (100%)
Duration Finite
Yr. Initiated 2001
Date Completed 03/30/2003

STEPS

- | | |
|--|---------------|
| 1. Define and map second order subwatersheds. | Complete |
| 2. Estimate current amount and percent of impervious surface area by subwatershed. | Complete |
| 3. Project build-out amounts of impervious surface. | Not initiated |
| 4. Distribute completed report to municipalities, partners, and regional planning commissions. | Complete |

LND-02 Implement steps to limit impervious cover and protect streams at the municipal level.

Priority Highest
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Develop watershed-based zoning using impervious surface information. | In progress |
| 2. Protect sensitive streams, wetlands, floodplains, shoreland, and critical habitat from development. | In progress |
| 3. Establish a stream buffer network. | In progress |
| 4. Modify subdivision code to reduce impervious surface cover. | In progress |
| 5. Limit disturbance and erosion of soils during construction. | In progress |
| 6. Treat quantity and quality of stormwater runoff using BMPs. | In progress |
| 7. Maintain stream protection infrastructure. | In progress |

LND-03 Conduct research in coastal NH subwatersheds to examine the relationship between percent impervious cover and environmental degradation.

Priority High
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Delineate subwatersheds. | Complete |
| 2. Sample 20-30 subwatersheds to compare stream morphology, water quality, and instream habitat for watersheds of varying development percentage. | Complete |
| 3. Analyze data to quantify the relationship between watershed imperviousness and stream quality. | In progress |
| 4. Disseminate information. | Not initiated |

LND-04 Prevent the introduction of untreated stormwater to wetlands by supporting the development of NH Minimum Impact Development Guidelines.

Priority Priority
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Prepare documents containing practices and indicators of minimum impact development. | In progress |
| 2. Work with communities and developers to encourage adoption of practices. | In progress |

LND-05 Support the Natural Resource Outreach Coalition (NROC), a municipal decision-maker land-use planning outreach method modeled after the University of Connecticut NEMO (Nonpoint Education for Municipal Officials) Program.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Develop Natural Resource Outreach Coalition to coordinate natural resource education for municipalities. | Complete |
| 2. Establish sustainable structure for the group. | Complete |
| 3. Provide programs to communities. | In progress |

LND-06 Minimize urban sprawl in coastal watersheds.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|----------------------------------|-------------|
| 1. Implement Action Plans 6a-6f. | In progress |
|----------------------------------|-------------|

LND-06A Develop a regional pilot partnership to create a smart growth vision among towns and regional planning commissions in a subwatershed of the NH coastal watershed.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Conduct community visioning to develop consensus on goals for growth, regional character, and natural resource preservation in a single watershed. | In progress |
|---|-------------|

LND-06B Conduct a comprehensive review of the 43 towns within the coastal watershed to determine land-use policies that affect sprawl.

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Comprehensively review the land-use policies of the 42 watershed municipalites to identify policies that affect sprawl. | In progress |
| 2. Use results to develop guidelines for communities to practice smart growth. | In progress |
| 3. Emphasize policies that affect estuarine water quality. | In progress |

LND-06C Develop and maintain a comprehensive database or library of new smart growth funding programs.

Priority High
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Regional Planning Commissions develop and maintain a library of smart growth funding programs. | Not initiated |
| 2. Assist communities in acquiring funds for smart growth implementation. | In progress |

LND-06D Develop a science-based handbook and video on the nature, causes, and remedies of sprawl for audiences in the coastal watershed.

Priority Priority
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

1. Create science-based handbook and video on nature, causes, and remedies of sprawl. Not initiated

LND-06E Actively participate and contribute to the development of new smart growth planning tools with emphasis on provisions that protect estuarine water quality.

Priority High
Completion Rating Fully Implemented (100%)
Duration Ongoing
Yr. Initiated 2001
Date Completed 5/30/2003

STEPS

1. Develop tool kit of model ordinances, regulations, codes, BMPs, and planning concepts. Complete
2. Promote tools to communities. Complete

LND-06F Aggressively assist communities that embrace a strong smart growth philosophy to conduct comprehensive reviews, identify sources of funding, provide public education, and implement new land-use tools.

Priority Highest
Completion Rating Some (26-50%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

1. Work with RPCs to help communities conduct comprehensive reviews. In progress
2. Identify funding sources. In progress
3. Provide public education. In progress
4. Implement new land-use tools. In progress

LND-07 Complete rulemaking and begin implementation of the 'Recommended NH Wetlands Mitigation Policy' for NH DES, prepared by the Audubon Society of NH and the Steering Committee on Wetlands Mitigation.

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

1. DES to complete state rule making. In progress
2. Begin implementation of mitigation policy. Not initiated

LND-08A Strengthen enforcement and effectiveness of the state tidal buffer zone (TBZ) through outreach to local officials and tidal shoreland property owners.

Priority Priority
Completion Rating Minimal (1-25%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Strengthen enforcement of the state tidal buffer zone by educating communities. | In progress |
| 2. DES staff inspect activities in the TBZ via field surveys and aerial photographs. | Not initiated |

LND-08B Amend state tidal buffer zone (TBZ) regulations to include regulation of dock construction.

Priority Priority
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Develop and implement changes to DES Wetlands Admin Rules to require a permit for deck construction in the TBZ. | Not initiated |
|--|---------------|

LND-09A Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands through policy changes at the NHDES Wetlands Bureau.

Priority Highest
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2003
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Convene group to discuss DES policy changes to regulate the timing and flow of stormwater to tidal wetlands. | In progress |
| 2. Runoff rates and impacts should not exceed pre-development rates. | Not initiated |
| 3. Enforce wetland permits to require applicants to fix damage to salt marshes caused by stormwater flow. | Not initiated |
| 4. RPCs encourage rules at the local level. | Not initiated |

LND-09B Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands through changes to the NHDES Site Specific Program.

Priority Highest
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2003
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Change the DES Site Specific Program to ensure regulation of all appropriate sites even when they employ impact/disturbance partitioning. | In progress |
|--|-------------|

LND-13 Provide a framework specific and appropriate to the NH Seacoast for defining and delineating urban and nonurban shoreland areas.

Priority High
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Develop standard definition of urban and non-urban shoreland areas. | Not initiated |
| 2. Seek out existing definitions and tailor definitions to fit coastal NH. | Not initiated |
| 3. Conduct outreach to communities. | Not initiated |

LND-14 Develop and implement an outreach program to encourage and assist communities in developing and adopting land use regulations to protect undisturbed shoreland buffers.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Develop clear rationale for protecting shoreland areas. | Complete |
| 2. Develop tools and case studies to illustrate benefits of natural buffers over engineered ones. | Complete |
| 3. Develop outreach strategy to distribute tools to communities. | Complete |
| 4. Review regulations and land-use controls. | Complete |
| 5. Pilot the strategy in one watershed. | Complete |
| 6. Train code enforcement officials. | Complete |
| 7. Develop tax-incentive models to encourage buffer protection. | Not initiated |
| 8. Identify and eliminate incentives to develop shoreland. | Not initiated |
| 9. Pilot the project in single watershed. | Complete |

LND-15 Support land conservation efforts in shoreland areas.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. ID and prioritize shoreland areas for protection. | In progress |
| 2. Promote priorities with conservation groups. | In progress |
| 3. Promote protection through fee simple and easement. | In progress |
| 4. Provide funds for transaction costs associated with key parcels. | Complete |

LND-16 Improve enforcement of the state Comprehensive Shoreland Protection Act and other applicable shoreland protection policies through outreach to local officials and shoreland property owners.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Develop outreach program for code enforcement officers and building inspectors on CSPA and shoreland protection policies. | In progress |
| 2. Conduct project in 17 coastal towns. | Complete |
| 3. Conduct project in rest of watershed. | In progress |

LND-17 Provide incentives for the relocation of grandfathered shoreland uses.

Priority High
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Study options for incentives to remove grandfathered uses that adversely affect waters subject to CSPA. | Not initiated |
| 2. Conduct outreach. | Not initiated |

LND-18 Locate, quantify and qualify groundwater inflow to the estuaries.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Quantify characteristics of groundwater flows to the Great Bay and Hampton/Seabrook estuaries. | Complete |
| 2. Assess water chemistry of groundwater inflows. | In progress |
| 3. Assess the impact of water resource use and land uses on groundwater freshwater discharges to the estuaries. | In progress |

LND-19 Locate, reduce, eliminate, and prevent groundwater contamination.

Priority Highest
Completion Rating Minimal (1-25%)
Duration Ongoing
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Eliminate contaminants identified in LND-18. | In progress |
| 2. Communicate results to the public to achieve groundwater protection. | In progress |

LND-20 Develop and implement a Wetlands Buffer Outreach Program for planning boards.

Priority High
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Update and focus wetland buffers program. | Not initiated |
| 2. Distribute buffer guide to municipalities. | Not initiated |
| 3. Create zoning regulation models for use by all towns in the coastal watershed. | Not initiated |

LND-21 Prevent the introduction of untreated stormwater to freshwater wetlands by enacting legislation giving NHDES authority to regulate stormwater discharge to wetlands.

Priority High
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2003
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Pursue legislation to give DES statewide authority to prevent wetlands degradation from introduction of stormwater. | In progress |
|--|-------------|

LND-22 Prevent the introduction of untreated stormwater to wetlands by strengthening municipal site plan review regulations.

Priority High
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Develop site plan review regulations to protect wetlands from stormwater degradation. | Not initiated |
| 2. Conduct outreach to municipal boards. | Not initiated |
| 3. Implement new regulations locally. | Not initiated |

LND-23 Prevent the introduction of untreated stormwater to wetlands through an increased understanding of stormwater impacts on wetland ecology.

Priority Priority
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Develop research project to increase understanding of the impacts of stormwater on wetlands. | Not initiated |
|---|---------------|

LND-24 Work with NHDES to encourage adoption of a state wetlands mitigation policy.

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Include freshwater wetlands in state mitigation rules outlined in LND-7. | In progress |
|---|-------------|

LND-25 Encourage municipal designation of Prime Wetlands and 100-foot buffers (or equivalent protection).

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

1. Assist communities in designating Prime Wetlands or other enhanced protection for exemplary wetlands. Not initiated

LND-25A Create a traveling Prime Wetlands display.

Priority Priority
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

1. Develop traveling display and public presentation about Prime Wetlands. In progress

LND-25B Provide training and project assistance for towns interested in utilizing the NH Comparative Method for Wetland Evaluation.

Priority Highest
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

1. Provide technical assistance to communities in conducting wetland evaluations to ID exemplary wetlands. In progress

LND-25C Work with local planning boards and conservation commissions on regulatory approaches to wetlands conservation.

Priority High
Completion Rating Minimal (1-25%)
Duration Ongoing
Yr. Initiated 2002
Date Completed

STEPS

1. Provide communities with land-use regulations for protecting wetland values. In progress
2. Minimize wetland impacts from proposed development by training conservation commissions to work with the state wetland permit applicants. Not initiated

LND-25D Create or enhance local land conservation programs with emphasis on high value wetlands and buffers.

Priority High
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

1. Train conservation commissions and land trusts in conservation techniques targeting exemplary wetlands. In progress

LND-26 Support implementation of state/federal land protection programs.

Priority Highest
Completion Rating Fully Implemented (100%)
Duration Finite
Yr. Initiated 2000
Date Completed 01/01/2001

STEPS

- | | |
|--|----------|
| 1. Develop public information campaign for a state conservation program. | Complete |
| 2. Display materials at appropriate locations. | Complete |
| 3. Educate citizens about habitat protection and land conservation. | Complete |

LND-27 Support the efforts of the Great Bay Resource Protection Partnership.

Priority Highest
Completion Rating Fully Implemented (100%)
Duration Finite
Yr. Initiated 2001
Date Completed 05/30/2003

STEPS

- | | |
|--|----------|
| 1. Complete up to 3 community habitat assessments to provide the Great Bay Partnership with habitat value information. | Complete |
| 2. Assist partnership in securing funding for the Coordinator position. | Complete |
| 3. Partnership works with land trusts and others to protect land. | Complete |

LND-28 Encourage communities to dedicate current-use tax penalties to conservation commissions for the purpose of natural resource acquisition, easements, restoration, and conservation land management.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Educate municipal officials about using current-use penalty tax for a conservation fund. | In progress |
| 2. Conduct outreach to all communities. | In progress |
| 3. Create model warrant article for town meeting approval. | In progress |

LND-29 Provide technical assistance in land protection and management to regional land trusts and municipal conservation commissions (Ecological Reserve System).

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Encourage support for the guidelines of the NH Ecological Reserve System project. | Complete |
| 2. Develop program to assure land trusts and conservation commissions have access to professional expertise to help them protect and manage lands for biodiversity. | In progress |
| 3. Use the ERSP criteria to evaluate conservation and non-conservation lands for biodiversity features. | In progress |
| 4. Work with academia to evaluate the impacts of land-use change on the capacity to preserve the region's biodiversity. | In progress |

LND-30 Develop and use biomonitoring standards to evaluate water quality.

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Investigate biomonitoring in the Northeast. | Complete |
| 2. Develop biomonitoring standards for the NH coastal region. | In progress |
| 3. Incorporate standards in water-quality monitoring programs. | Not initiated |

LND-31 Use results of biomonitoring and water quality monitoring to prioritize watershed areas for protection and remediation.

Priority High
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Complete Action LND-30 and develop plan for assessing the NH coastal watershed. | Not initiated |
| 2. Evaluate the ecological integrity of the watershed and streams. | Not initiated |
| 3. Use information to ID and prioritize watershed areas for protection and remediation. | Not initiated |

LND-32 Encourage municipalities to incorporate wildlife habitat protection into local master plans by promoting NH F&G's "Identifying and Protecting Significant Wildlife Habitat: A Guide for Towns."

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Prioritize communities for the wildlife habitat manual. | Complete |
| 2. Provide technical assistance to communities in using the manual. | Complete |
| 3. Develop model wildlife habitat format for local master plans. | Complete |
| 4. Implement training for community boards in using the manual. | In progress |

LND-33 Develop a model local planning approach to encourage the identification and maintenance of contiguous habitat blocks.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Review region-wide information to ID existing habitat blocks over 500 acres. | Complete |
| 2. Research how to maintain contiguous blocks practiced in other places. | In progress |
| 3. Develop model approach to habitat protection. | Complete |
| 4. Educate municipal officials about large habitat blocks. | In progress |
| 5. Incorporate habitat model into other smart growth actions. | In progress |
| 6. Review state actions that influence sprawl for compliance with the state sprawl initiative. | Complete |

LND-34 Encourage appropriate buffers around important wildlife areas and rare or exemplary natural communities.

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|--|---------------|
| 1. Map locations of important wildlife habitat identified in LND-32 and determine appropriate buffers. | In progress |
| 2. Work with conservation commissions to adopt appropriate buffers into local zoning. | Not initiated |
| 3. Work with private landowners to create adequate buffers to protect priority areas. | In progress |

LND-35 Maintain current use tax program.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Keep state legislators aware of the importance of current-use program. | Complete |
| 2. Track changes to the program. | In progress |
| 3. Assess role of the program in the State's changing tax structure. | Not initiated |

LND-36 Encourage conservation easements.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Ongoing
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Collect and distribute fact sheets on easements. | In progress |
| 2. Make land conservation expertise available to municipal conservation commissions at no cost. | In progress |
| 3. Present estate-planning workshop annual in the Seacoast region. | In progress |

SHELLFISH RESOURCES ACTION PLANS

Seventeen (17) Shellfish Resources Action Items were identified in the NHEP *Management Plan*. There are eight Highest Priority Shellfish Resources Action Items, and seven show Substantive progress toward implementation. The eighth, SHL-15, shows minimal implementation. The remaining nine Shellfish Resource Actions are rated as Priority Actions.

Implementation has yet to begin on Actions SHL-9A and SHL-9C, while Actions SHL-10 and SHL-11 are Fully Implemented.

Overall, most of the NHEP's progress with regard to shellfish resources has been made on sanitation management and outreach. The NHEP has made less progress toward resource management.

Shellfish Resources Action Plan Completion Ratings

	Highest Priority	High Priority	Priority
No Progress (0%)			SHL-09A, SHL-09C
Minimal (1-25%)	SHL-15		SHL-09B, SHL-09D
Some (26-50%)			SHL-13
Moderate (51-75%)			SHL-02, SHL-03
Substantive (76-99%)	SHL-01, SHL-04, SHL-05, SHL-06, SHL-07, SHL-10		
Fully Implemented (100%)	SHL-14		SHL-11, SHL-12

Following is the list of all Water Quality Action Plans and the steps associated with Action Plan implementation. Progress on each step is assigned one of three assessments: Not Initiated, In Progress, or Complete. For a report of all NHEP activities undertaken to implement Action Plan Steps, see www.nh.gov/nhep/publications/pdf/nhepprogressreport-app-nhep-04.pdf or contact the NHEP.

SHL-01 Implement National Shellfish Sanitation Program guidance to develop an FDA-certified shellfish program.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|-------------|
| 1. State agencies address deficiencies in NH Shellfish Program. | Complete |
| 2. Review rules and draft new regulations as necessary for compliance with federal requirements. | Complete |
| 3. Draft MOA required by FDA. | Complete |
| 4. Submit application to FDA for certification of recreational and commercial shellfish program. | Complete |
| 5. Conduct Schedule of Growing Area Work. | In progress |

SHL-02 Identify sources of and reduce or eliminate contaminants in the coastal watershed.

Priority Priority
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|-------------------------------------|-------------|
| 1. Implement water quality actions. | In progress |
|-------------------------------------|-------------|

SHL-03 Institute land-use practices that improve water quality and shellfish habitat.

Priority Priority
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--------------------------------|-------------|
| 1. Implement land use actions. | In progress |
|--------------------------------|-------------|

SHL-04 Enhance funding to maintain a comprehensive Shellfish Program.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Assist DES Shellfish Program in funding activities and securing state program funding. | In progress |
|---|-------------|

SHL-05 Regularly collect and monitor water quality to identify sources and reduce or eliminate contaminants.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

1. Develop and implement a comprehensive water quality monitoring program to make shellfish harvesting and management decisions. In progress

SHL-06 Periodically collect and monitor shellfish tissue samples as appropriate for toxins and biotoxins.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

1. Consider additional PSP sample site. Complete
2. Support development of volunteer biotoxin monitoring program. In progress
3. Work with Gulf Watch to share permanent monitoring sites. Complete
4. Consider using surf clams to evaluate PSP and/or toxic substances, and other species for PSP monitoring especially before/after a bloom. In progress
5. Monitor soft shell clams and oysters for toxics. In progress

SHL-07 Maintain an ongoing shellfish resource assessment program.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

1. F&G develop a strategic plan and assessment schedule. In progress
2. Establish standardize sampling protocols. Complete
3. Establish data management and reporting protocol. Complete
4. Evaluate natural and human influences on population change. In progress
5. Develop a dissemination plan to report to other agencies. In progress
6. Update shellfish location database with acreage of the resource, density estimate, and date of most recent inventory. Complete

SHL-09A Decrease shellfish resource depletion and increase productivity with stricter state penalties for illegal harvesting.

Priority Priority
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

1. Monitor effectiveness of penalties of shellfish harvesting violations. Not initiated
2. Change penalties if deemed necessary. Not initiated

SHL-09B Increase outreach and education about methods to control shellfish predators.

Priority Priority
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Conduct outreach on shellfish predators. | In progress |
| 2. Develop brochure on predators for shellfish license-holders. | Not initiated |
| 3. Encourage harvest of predators for bait. | Not initiated |
| 4. Assess need for a program to track abundance of shellfish predators. | In progress |

SHL-09C Explore alternative recreational shellfish harvest methods.

Priority Priority
Completion Rating No Progress (0%)
Duration Finite
Yr. Initiated
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Provide information on obtaining scientific permit for evaluating alternate harvest methods. | Not initiated |
| 2. Evaluate the potential methods. | Not initiated |

SHL-09D Increase productivity by discouraging the harvest of immature shellfish.

Priority Priority
Completion Rating Minimal (1-25%)
Duration Ongoing
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Educate resource users on returning immature oysters and oyster shells with spat attached. | In progress |
|---|-------------|

SHL-10 Provide information regarding public access to shellfish beds through distribution of maps/booklets.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Collate shellfish bed maps to show harvestable locations. | Complete |
| 2. Produce map. | Complete |
| 3. Distribute map. | In progress |
| 4. Post information on the web. | Complete |

SHL-11 Establish Bounty of Bays shellfishing field education program.

Priority Priority
Completion Rating Fully Implemented (100%)
Duration Finite
Yr. Initiated 2002
Date Completed 06/30/2003

STEPS

- | | |
|--|----------|
| 1. Offer Bounty of the Bay program. | Complete |
| 2. Coordinate with recreational users to assist with the course. | Complete |
| 3. Advertise course. | Complete |
| 4. Establish curriculum. | Complete |

SHL-12 Develop and maintain a shellfisher license information database for use in outreach activities.

Priority Priority
Completion Rating Fully Implemented (100%)
Duration Finite
Yr. Initiated 2000
Date Completed 01/01/2000

STEPS

- | | |
|--|----------|
| 1. Maintain shellfish database and make it available to state agencies involved with shellfish management. | Complete |
| 2. Limit use of database to distribution of educational information. | Complete |

SHL-13 Update materials issued with shellfish licenses, improve distribution of information and better utilize the NH F&G "Clam Hotline."

Priority Priority
Completion Rating Some (26-50%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Provide seasonal mailings to shellfishers. | In progress |
|---|-------------|

SHL-14 Provide for direct citizen involvement in NH shellfish management decision-making process.

Priority Highest
Completion Rating Fully Implemented (100%)
Duration Ongoing
Yr. Initiated 2000
Date Completed 01/01/2002

STEPS

- | | |
|--|----------|
| 1. F&G inform shellfishing public about the Advisory Committee on Shore Fisheries. | Complete |
| 2. DES inform public about the NHEP Shellfish Team. | Complete |
| 3. Continue support for volunteer participation in shellfish resource management. | Complete |

SHL-15 Evaluate and address perceived and real institutional barriers to aquaculture and promote environmentally sound aquaculture practices.

Priority Highest
Completion Rating Minimal (1-25%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Evaluate public perceptions and attitudes towards aquaculture. | Complete |
| 2. Streamline the permitting process. | Not initiated |
| 3. ID and correct deficiencies in the State NSSP program. | In progress |
| 4. Review and disseminate information on responsible aquaculture practices. | In progress |

HABITAT RESTORATION ACTION PLANS

The NHEP CCMP identifies six Habitat Restoration objectives. There are three Highest Priority Actions, and three High Priority Actions. All but RST-04 show at least 50% progress.

Habitat Restoration Action Plan Completion Ratings

	Highest Priority	High Priority	Priority
No Progress (0%)			
Minimal (1-25%)			
Some (26-50%)		RST-04	
Moderate (51-75%)	RST-01, RST-06	RST-02, RST-05	
Substantive (76-99%)	RST-03		
Fully Implemented (100%)			

Following is the list of all Habitat Restoration Action Plans and the steps associated with Action Plan implementation. Progress on each step is assigned one of three assessments: Not Initiated, In Progress, or Complete. For a report of all NHEP activities undertaken to implement Action Plan Steps, see www.nh.gov/nhep/publications/pdf/nhepprogressreport-app-nhep-04.pdf or contact the NHEP.

RST-01 Develop and implement a plan for shellfish resource enhancement and habitat restoration to achieve a sustainable resource contributing to a healthy environment (See SHL-8).

Priority Highest
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Develop strategy for shellfish resource enhancement and restoration. | Complete |
| 2. ID restoration needs and priorities. | In progress |
| 3. Implement restoration. | In progress |

RST-02 Using the Coastal Method and other techniques, identify and restore tidal wetlands for aspects other than tidal restrictions.

Priority High
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2001
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Identify restorable tidal wetlands focusing on those affected by other than tidal restrictions. | In progress |
| 2. Work to restore the identified sites. | In progress |

RST-03 Continue to restore the tidal wetlands listed in the NRCS report, "Method for the Evaluation and Inventory of Vegetated Tidal Marshes in New Hampshire."

Priority Highest
Completion Rating Substantive (76-99%)
Duration Finite
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Investigate and monitor salt marshes to determine potential impacts from restoration to define methodology. | In progress |
| 2. Restore site. | In progress |
| 3. Conduct post-restoration monitoring. | In progress |

RST-04 Identify and implement habitat restoration projects in other important non-tidal habitat areas, such as uplands and freshwater wetlands.

Priority High
Completion Rating Some (26-50%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|---|-------------|
| 1. Review NRCS method for identifying non-tidal habitat in need of restoration. | Complete |
| 2. Assist 2 communities per year in analyzing restoration opportunities. | In progress |
| 3. Create a habitat restoration project funding database. | In progress |
| 4. Complete at least one restoration project per year. | In progress |

RST-05 Create a list of potential wetland restoration projects that could be used for wetland mitigation projects, and distribute the list to state agencies and seacoast municipalities.

Priority High
Completion Rating Moderate (51-75%)
Duration Finite
Yr. Initiated 2002
Date Completed

STEPS

- | | |
|---|---------------|
| 1. Increase amount of wetland restoration performed as mitigation by developing long-term agreements between NH DOT and other state agencies. | Not initiated |
| 2. Develop a list of potential wetland mitigation sites for distribution. | In progress |
| 3. Use GIS to identify and illustrate potential sites in the Seacoast. | In progress |
| 4. Monitoring restoration work. | In progress |

RST-06 Pursue funding for restoration from NH DOT, USDA, NRCS, US F&WS, and other sources.

Priority Highest
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Pursue restoration funds for various sources. | In progress |
| 2. Keep funding sources informed of potential restoration opportunities. | In progress |

PUBLIC OUTREACH AND EDUCATION ACTION PLANS

The 6 remaining Action Plans fall within the Outreach and Education focus area. The two Highest Priority Outreach and Education Action Plans show substantive progress toward implementation, while the two High Priority Actions show moderate progress. Of the Priority Action Plans, EDU-2A shows no progress, and EDU-2 shows minimal progress.

Public Outreach and Education Action Plan Completion Ratings

	Highest Priority	High Priority	Priority
No Progress (0%)			EDU-02A
Minimal (1-25%)			EDU-02
Some (26-50%)			
Moderate (51-75%)		EDU-01, EDU-04	
Substantive (76-99%)	EDU-05		
Fully Implemented (100%)	EDU-03		

Following is the list of all Public Outreach and Education Action Plans and the steps associated with implementation. Progress on each step is assigned one of three assessments: Not Initiated, In Progress, or Complete. For a report of all NHEP activities undertaken to implement Action Plan Steps, see www.nh.gov/nhep/publications/pdf/nhepprogressreport-app-nhep-04.pdf or contact the NHEP.

EDU-01 Use media to highlight estuarine issues.

Priority High
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2002
Date Completed

STEPS

1. Develop coordinated approach to utilizing the media, including outdoor recreation, Great Bay Radio, NH Public Radio, television, and print articles. In progress

EDU-02 Work with Seacoast newspapers to establish a monthly newspaper column devoted to coastal natural resources issues.

Priority Priority
Completion Rating Minimal (1-25%)
Duration Ongoing
Yr. Initiated 2002
Date Completed

STEPS

1. Build team of writers to draft natural resource articles for print media. In progress

EDU-02A Develop an agreement with Strafford County UNH Cooperative Extension to enable the NHEP outreach project team to contribute coastal natural resource information to the column in Foster's Daily Democrat.

Priority Priority
Completion Rating No Progress (0%)
Duration Ongoing
Yr. Initiated
Date Completed

STEPS

1. Partner with Great Bay Coast Watch to contribute to the Cooperative Extension column with Fosters. Not initiated
2. Supply articles every five weeks. Not initiated

EDU-03 Establish and fund a technical assistance grant program to promote and fund projects that support the NHEP Management Plan.

Priority Highest
Completion Rating Fully Implemented (100%)
Duration Ongoing
Yr. Initiated 2001
Date Completed 01/02/2001

STEPS

1. Establish Technical Assistance grant program for local partners. Complete
2. Award grants through a competitive process. Complete

EDU-04 Maintain and expand the NHEP shoreline property-owner database.

Priority High
Completion Rating Moderate (51-75%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

1. Update shoreline property-owner database on an ongoing basis. In progress
2. Expand database to include freshwater portions of the watershed. In progress

EDU-05 Support volunteer organizations active in water quality, habitat, or other estuarine watershed natural resource issues.

Priority Highest
Completion Rating Substantive (76-99%)
Duration Ongoing
Yr. Initiated 2000
Date Completed

STEPS

- | | |
|--|-------------|
| 1. Financially assist volunteer monitoring organizations. | In progress |
| 2. Train water-quality monitoring volunteers 4-6 times per year through workshops on issues. | In progress |
| 3. Recognize and support non-profit groups. | In progress |
| 4. Engage 2-3 school groups/year in natural resource hands-on activities. | In progress |
| 5. Assist volunteer groups with speaking commitments. | In progress |