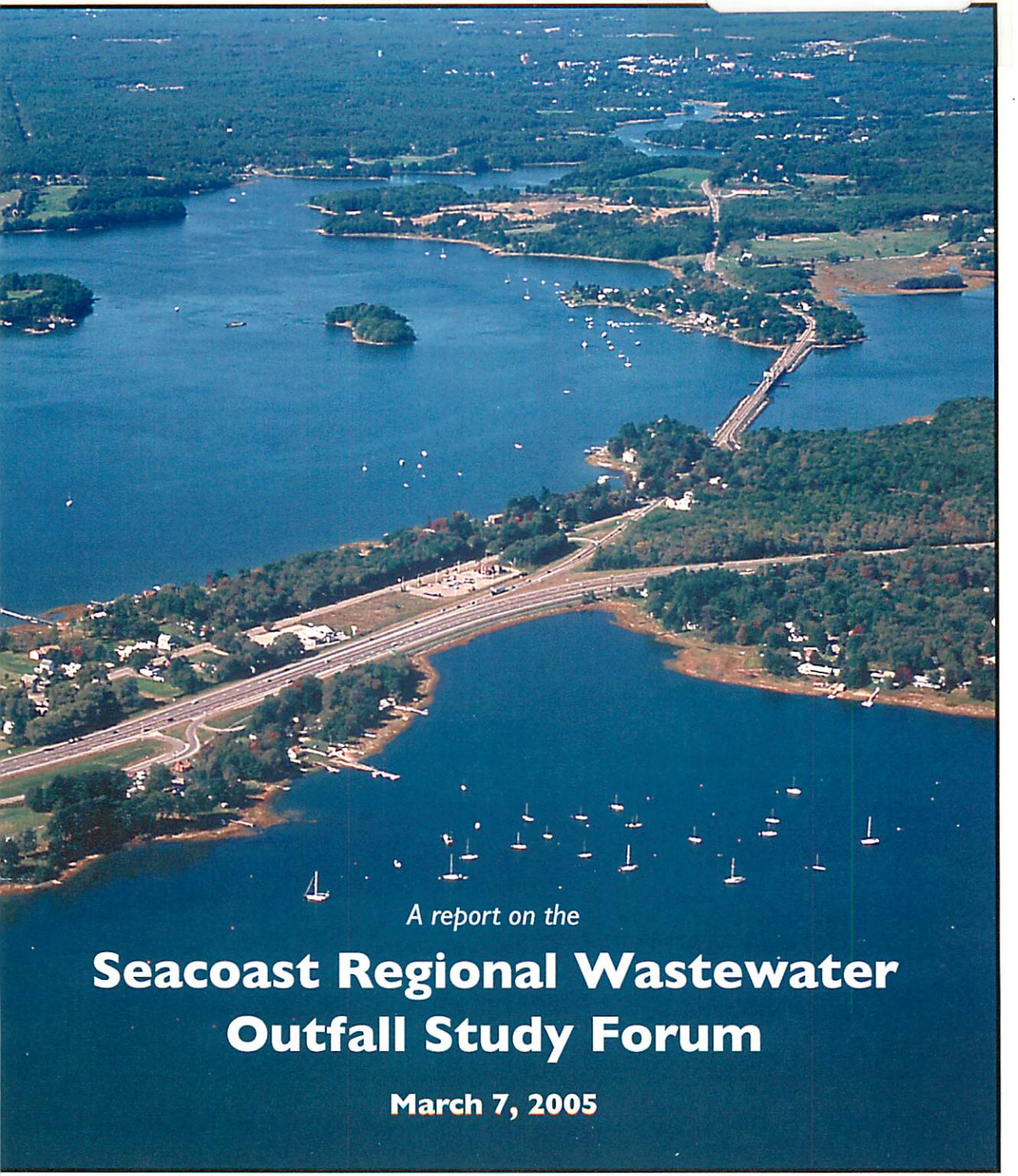

A report on the

Seacoast Regional Wastewater Outfall Study Forum

March 7, 2005

This report on the Seacoast Regional Wastewater Outfall Study Forum was prepared by Rebecca Perkins.

The Greater Piscataqua Community Foundation provided a grant to fund the forum, which was organized by the NH Marine Coalition with help from UNH Cooperative Extension and NH Sea Grant.

UNHMP-R-SG-05-12

Seacoast Regional Wastewater Outfall Study Forum

March 7, 2005

Red Hook Brewery – Ale Makers Hall

Pease International Tradeport

Portsmouth, NH

Agenda

9:30 Welcome: **Randy Gauron**, Chair, New Hampshire Marine Coalition

9:45 Overview of New Hampshire Seacoast Region Wastewater Management Study:
Bob Scherpf, Project Manager, Metcalf & Eddy

10:15 Results of 12 Years of Monitoring at the Boston Outfall:
Judy Pederson, Center for Coastal Resources, MIT Sea Grant

10:45 Fishermen's Observations:
Bill Bartlett, Commercial Fisherman, Danvers, MA

11:15 Panel: Marine Stakeholder Concerns
Moderator: **Jen Kennedy**
Blue Ocean Society for Marine Conservation
Panelists: **Ellen Goethel**
Marine Biologist and Educator
Jeff Runge
Research Professor, UNH
Mason Weinrich
Executive Director, Whale Center of New England
Fred Dauphinee
Commercial Fisherman, Scituate, MA
Judy Pederson
Center for Coastal Resources, MIT Sea Grant

1:15 Great Bay Estuaries Commission:
NH Senator **Maggie Hassan**, Commission Chair

1:35 Is an Outfall the Best Option:
Nancy Girard, Director, Conservation Law Foundation

2:05 Panel: Outfall Alternatives:

Moderator: **Ellen Goethel**
Marine Biologist and Educator

Panelists: **Tom Gillick**
State Representative, Hampton, NH
Bob Scherpf
Project Manager, Metcalf & Eddy
Cliff Sinnott
Executive Director, Rockingham Planning Commission

2:45 Panel: Role of Regulatory Agencies:

Moderator: **Neil Savage**
Marine Biologist and Educator

Panelists: **George Berlandi**
Permits and Compliance, NHDES
Roger Janson
Director, EPA, Region 1, Water Quality Management Unit
Ritchie White
Commissioner, Atlantic States Marine Fisheries Commission
Clare McBane
NH Fish & Game Marine Division

3:45 Wrap-up:

Rollie Barnaby, Extension Educator, UNH Cooperative Extension & NH Sea Grant

Introduction

On March 7, 2005, the New Hampshire Marine Coalition (a nonprofit organization whose members include recreational and commercial fishermen, educators and conservationists who work together for the sustainable use of marine resources) sponsored a forum on the Seacoast Regional Wastewater Outfall Study with the help of University of New Hampshire Cooperative Extension and New Hampshire Sea Grant. The Greater Piscataqua Community Foundation provided a grant to fund the forum, which was held at the Red Hook Brewery at Pease International Tradeport in Portsmouth, NH. Speakers and panelists included scientists, elected officials, fishermen, educators and other stakeholders. Public questions and comments were encouraged.

Brief History

Rapid growth in New Hampshire's seacoast region is taxing its existing wastewater treatment facilities. New Hampshire currently ships 25 percent of its septage to plants in neighboring South Berwick, ME, and Lawrence, MA, but those arrangements lack any assurance of longevity. Locally, the 44 communities in the seacoast region employ private septage systems or ship wastes to one of 17 municipal wastewater treatment plants. Approximately 20 million gallons per day (mgd) of treated effluent from those plants find their way into the Great Bay Estuary, known as the "jewel of the New Hampshire seacoast" for its productivity, sensitivity and immeasurable ecological, economic and recreational value. Increasingly stringent state and federal disposal standards are compounding the problems of increasing septage and limited treatment capacity in the seacoast region.

In 2003, Senate Bill 70 created the Great Bay Estuary Commission to partner with the NH Department of Environmental Services (NHDES) in studying the feasibility of a regional wastewater outfall pipe into the Gulf of Maine (also an enormously productive and valuable ecosystem). In 2004, Senate Bill 481 created the Estuary Alliance for Sewage Treatment (EAST) as a means to consider aban-

doning the current town-by-town approach in favor of a regional system. Later that year, the Great Bay Estuary Commission hired the engineering firm of Metcalf & Eddy (M&E) of Wakefield, MA, to conduct a $1-million, two-year feasibility study of various wastewater collection, treatment and disposal alternatives for the region, including a regional outfall pipe into the Gulf of Maine. Evaluation criteria for the alternatives included water quality, public acceptance and engineering, environmental and economic impacts.

According to M&E, the study consists of four phases. Phase I was six months in duration (August 2004 through February 2005) and included community outreach and data collection. Phase II (6-12 months) involves additional community outreach and data collection and will include the screening of alternatives. In Phase III (12-18 months), while continuing to solicit community participation, M&E will analyze and compare alternatives and recommend a management plan. Finally, in summer 2006, Phase IV (18-24 months) will culminate with a final report of the study's findings. At the time of the forum, M&E was transitioning from Phase I to Phase II.

Forum Proceedings

Welcome:

Randy Gauron, Chair, NH Marine Coalition

Randy Gauron offered welcoming remarks and introduced the forum's first speaker.

Overview of New Hampshire Seacoast Region Wastewater Management Study:

Bob Scherpf, Project Manager, Metcalf & Eddy

Bob Scherpf provided a brief description of the study area and background on the regional discharge concept. He pointed to New Hampshire's Winnipesaukee River Basin Program, which treats waste from 36,500 residents in 10 Lakes Region towns, as an example of effective regional planning. According to Scherpf, the project goal is the development of a reliable, technically feasible, cost effec-

tive, environmentally acceptable and legally defensible wastewater management plan. The overall project objective, he said, is the protection of water quality.

Scherpf was adamant that M&E will objectively explore all alternatives. He summarized his company's scope of work by outlining the phases of the study before briefly introducing the four base alternatives that represent the range of potential alternatives. (M&E's goal is to eventually offer eight alternatives for analysis.)

Base Alternatives

Base Alternative 1 would require upgrades of the existing wastewater treatment plants to provide advanced treatment and continued discharge into the Great Bay Estuary. Non-sewered communities demonstrating a need for sewers in the future would construct collection systems and discharge to one of the existing plants.

Base Alternative 2 would also call for the upgrading of the existing wastewater treatment plants to advanced treatment, but would discharge treated effluent via land application (potential sites for land application are yet to be determined). As with Alternative 1, non-sewered communities demonstrating a need for sewers in the future would construct collection systems and discharge to one of the existing plants.

Base Alternative 3 would maintain the existing plants and their current level of treatment (secondary), but would discharge treated effluent into the Gulf of Maine (potential outfall sites are yet to be determined). Non-sewered communities demonstrating a need for sewers in the future would construct collection systems and discharge to one of the existing plants.

Base Alternative 4 would call for the abandonment of existing treatment plants and would convey flows to a new regional plant with discharge into the Gulf of Maine. Non-sewered communities demonstrating a need for sewers in the future would construct collection systems and discharge to the new regional plant.

Scherpf mentioned that other members of the study team include environmental consulting firm ENSR International of Westford, MA, (water resource evaluations and assessments); law firm Gallagher, Callahan and Gartrell of Boston (community outreach programs, legal issues and economics); land planning firm

TF Moran of Bedford, NH (land planning, environmental studies, GIS mapping); engineering firm Wright-Pierce of Topsham, ME (environmental engineering); and various technical advisors.

The floor was then opened for questions and comments, the most impassioned of which came from a Gulf of Maine fisherman disheartened by the study's failure to engage stakeholders. In response, Scherpf reminded the audience of the study's website (www.coastalclear.org) aimed at community outreach, and he mentioned that several public information sessions had been held and advertised in local newspapers.

Gordon Park of Exeter, NH, inquired about the process of land application. To this end, Scherpf explained that treated effluent could be applied to land or used to recharge groundwater. He mentioned the growing popularity of such application in the southeast United States and assured attendees that any application would be to non-crop land, such as golf courses.

Fisherman Peter Flanagan asked about proposed locations for a new treatment facility or an outfall pipe into the Gulf. Scherpf explained that no sites have been selected, but that they are in the process of considering some. He explained that considerations include cable areas, shipping channels, currents and depths.

Ellen Goethel (marine biologist, educator and forum panelist) asked if spawning grounds for groundfish would also be considered; Scherpf assured her they would. Other questions prompted Scherpf to explain that study participation will require no financial contributions from participating communities, but rather interviews and access to wastewater and planning information.

Results of 12 Years of Monitoring at the Boston Outfall:
Judy Pederson, Center for Coastal Resources, MIT Sea Grant

Judy Pederson presented the results of 12 years of pre- and post-discharge monitoring at the Boston, MA, outfall into Massachusetts Bay at Deer Island. She detailed the history of sewage treatment in Boston, including the discharge of raw sewage into the harbor, a cholera outbreak (1869), the closure of shellfish-harvesting areas (1906), Boston's resulting liability exposure, and the eventual creation of the Massachusetts Water Resource Authority (MWRA) in 1985. The MWRA's outfall pipe went on-line in 2000 and currently emits some 400mgd of treated ef-

fluent into Massachusetts Bay (approximately nine miles offshore).

Pederson listed bacteria and viruses, metals, organic chemicals, nutrients and organic materials (detritus) as pollutants and contaminants of concern. She stressed the importance of developing a comprehensive monitoring program for outfall sites and of conducting preconstruction monitoring in order to attain site-specific baseline data. She pointed out that such monitoring is expensive, timely and complex.

When asked to identify some demonstrated impacts of the Massachusetts Bay outfall pipe, Pederson identified increases in contaminants, sedimentation and liver disease in animals. However, she also mentioned observed increases in species abundance and water cleanliness since the onset of the monitoring program. Lastly, she encouraged attendees to consider non-point (such as surface runoff) and atmospheric sources of pollution, as they too contribute to the aforementioned impacts.

Fishermen's Observations:
Bill Bartlett, Commercial Fisherman, Danvers, MA

Bill Bartlett provided his perspective on the impacts of outfall pipes into Massachusetts harbors. He reported serious declines in average landings and a reduction of commercial fishing boats in Massachusetts Bay from 40 to 10 since the MWRA outfall pipe went online in 2000. He believes the influx of treated effluent has decimated the area's crab and lobster fisheries. He cautioned that an outfall pipe could wreak similar havoc and loss of livelihood along New Hampshire's coast should the state decide to discharge the region's wastewater into the Gulf of Maine. Bartlett concluded by saying that wastewater should be discharged over land and that we must stop regarding the ocean as a dumping ground.

Panel: Marine Stakeholder Concerns

Moderator: Jen Kennedy, Blue Ocean Society for Marine Conservation

Panelists: Ellen Goethel, Marine Biologist and Educator
Jeff Runge, Research Professor, UNH
Mason Weinrich, Executive Director, Whale Center of New England
Fred Dauphinee, Commercial Fisherman, Scituate, MA
Judy Pederson, Center for Coastal Resources, MIT Sea Grant

Ellen Goethel, chair of the Hampton Conservation Commission and the wife of a commercial fisherman, expressed her concerns that aquifers will be depleted if the freshwater in septage is removed from the seacoast watershed and dumped into the Gulf of Maine. She believes water to be New England's most valuable resource and one we must manage with the utmost care and respect. As a biologist, Goethel is concerned about marine invertebrate populations and the impact of chemicals not yet being monitored, such as human birth control hormones and artificial growth hormones that humans expel into the environment with each flush of the toilet. As the wife of a fisherman, she is concerned about fish abundance and water quality. Goethel believes that although land application is potentially expensive, it represents a smart and viable alternative.

As a research professor at UNH specializing in biological oceanography, Jeff Runge's primary concerns regarding a regional outfall pipe into the Gulf are the impacts of freshwater on marine stratification and, like Goethel, the influx of pharmaceutical pollutants. He stressed the importance of recognizing that onshore and offshore environments are inextricably linked, and that onshore activities necessarily influence ecologically and economically valuable fish stocks.

Mason Weinrich discussed the potential dangers of a regional outfall pipe for marine mammals, including the critically endangered northern right whale, for which the Gulf of Maine provides critical habitat each summer and fall. He talked about the susceptibility of marine mammals to nutrient loading. Nutrient loading, including that caused by wastewater outfall, encourages the growth of dynoflagellates, a nervous-system toxin. Blooms of these organisms are referred to as red

tides. Such red tide outbreaks have been linked to mass die-offs of baleen whales, including humpback, sei and minke, which can ingest enormous quantities of the dinoflagellates while feeding.

Weinrich said that given the seacoast's relatively low discharge volume (20mgd versus Massachusetts Bay's 400mgd), massive red tide outbreaks are unlikely but that they must be considered nonetheless, especially as the seacoast communities continue to grow. Of equal concern to Weinrich is toxin loading in marine mammals, whose position atop the food chain makes them particularly susceptible as a result of bioaccumulation and biomagnification [the process by which the concentration of toxic substances increases in each successive link in the food chain]. Weinrich urged the audience to also consider the influence global warming is having and will continue to have on the marine environment. Lastly, Weinrich said we must avoid regarding the ocean as an endless bounty and insist upon comprehensive regional planning.

Fred Dauphinee expressively detailed his dwindling livelihood, which he believes is due to discharge from outfall pipes near the fishing grounds he uses. He said that in order to make a living, Massachusetts fishermen are being driven further out to sea, away from the effects of the outfall pipe. He referenced the recent death of a local fisherman who was fishing further offshore than usual in an attempt to find fish. He pleaded with all attendees to take care of their wastes in their own backyards and to consider the socioeconomic situation of fishermen.

Judy Pederson sat in on the panel and spoke further about the issue of trace amounts of pharmaceuticals in the environment. Even the MWRA, she said, is not yet equipped with the analytical technology to monitor emerging contaminants such as pharmaceuticals and caffeine. She confirmed that there is a caffeine signal in Massachusetts Bay, and that human birth control hormones have been found in the tissues of marine organisms. In response to a question regarding the importance of monitoring fish stocks around outfall pipes, Pederson explained that although such monitoring needs to be done, the MWRA cannot afford to. Instead, the MWRA relies on the fish data collected by state agencies and focuses its energies on monitoring contaminants.

Comments for the panelists included some from UNH professors Rich Langan and Steve Jones. Langan urged all to consider the potential effects of taking water (treated effluent) out of the freshwater system. He also warned that an outfall pipe into the Gulf could severely curtail, if not destroy, economically valuable offshore mussel farms. Jones, who has studied Great Bay Estuary for 17 years, spoke of the extensive long-term and ongoing monitoring projects in the estuary (including monitoring of nutrients, bacteria, shellfish, toxic contaminants and emerging compounds) and how comparatively little has been done in the Gulf.

Great Bay Estuaries Commission:
NH Senator Maggie Hassan, Commission Chair

Senator Maggie Hassan stressed that the Great Bay Estuaries Commission does not necessarily believe an outfall pipe is the inevitable outcome of the regional study. Rather, she explained, the study offers the opportunity to consider wastewater treatment options in light of both marine and estuarine systems. She believes the interests of all involved are too similar and the area too small for stakeholders to be at odds. Senator Hassan assured attendees that she is working to include fishermen on the commission so that they will have more direct participation. She encouraged attendees to recognize that wastewater-management decisions can influence development in New Hampshire and that residents need to preserve the natural heritage that draws people to the state.

Is an Outfall the Best Option:
Nancy Girard, Director, Conservation Law Foundation (CLF)

Nancy Girard spoke at length about the need for New Hampshire to consider sustainable, decentralized systems. She explained that CLF supports a decentralized system of land application of treated septage and the maintenance of non-sewered towns as such. CLF recommends this alternative because it will help curb growth, maintain open space, ensure freshwater recharge and prevent the dewatering of the seven rivers feeding into Great Bay, especially during low-flow months like July and August.

Furthermore, Girard expressed the importance of protecting the state's investiture in the existing treatment plants, pointing out that to abandon them in

the name of a regional plant would be fiscally irresponsible. Further, she fears a centralized system would celebrate growth in the region rather than control it and would be in direct opposition to the state's smart growth policy. She identified New Hampshire as the fastest growing state in New England, losing 250 acres of open space per week to development. What's more, 25 percent of the state's 1.2 million people live in the seacoast region. Lastly, Girard predicted that, after oil, water will be the next major international issue, saying that New England has already been looked at for water exportation to places without freshwater. She urged attendees to not take water and its quality for granted and to recognize it as the finite resource it is.

Panel: Outfall Alternatives:

Moderator: Ellen Goethel, Marine Biologist and Educator
Panelists: Tom Gillick, State Representative, Hampton, NH
Bob Scherpf, Project Manager, Metcalf & Eddy
Cliff Sinnott, Executive Director, Rockingham Planning Commission

Cliff Sinnott said the future of growth in the region will be determined by the capacity of regional wastewater treatment plants and that growth impacts must be central to all considerations. He challenged the premise that regional growth will be lessened if upgrades are not made. He believes such inaction will only push growth to areas not served by the treatment plants, perhaps to places where growth is even less preferred. Sinnott believes the right solution will be a combination of strategies, with different approaches for different communities and locales. He encouraged attendees to not prejudice themselves prematurely, emphasizing that all alternatives must be considered honestly and fearlessly.

Tom Gillick expressed concern over aquifer recharge in the event that an outfall pipe into the Gulf of Maine is employed. He also emphasized the importance of considering the economic, environmental and technological feasibility of each alternative.

Bob Scherpf of M&E echoed many of Girard's concerns, including those about taking freshwater out of the coast's watershed and about the importance of considering upgrades to existing facilities. Scherpf also mentioned that land application of treated effluent is not a new concept in New Hampshire. He pointed to Wolfeboro, NH, as an example of a municipality with such a system, albeit one managing one-twentieth the septage volume of the seacoast region.

Panel: Role of Regulatory Agencies:

Moderator: Neil Savage, Marine Biologist and Educator

Panelists: George Berlandi, Permits and Compliance, NHDES
Roger Janson, Director, EPA, Region 1, Water Quality Management Unit
Ritchie White, Commissioner, Atlantic States Marine Fisheries Commission
Clare McBane, NH Fish & Game Marine Division

George Berlandi explained the Permits and Compliance Division's role in the study as one of technical assistance. He believes that growth is inevitable and that current septage volume is approaching the full capacity of the 17 existing plants. He also pointed out that nearly half of the plants do not have a freshwater to septage ratio at or above 10:1, deeming them problematic.

Roger Janson explained that nutrients will be included in the next generation of permit requirements as standards become more stringent. The EPA's role will be to issue a permit for whichever wastewater treatment alternative is selected, assuming it meets set criteria (the criteria, he noted, are different for freshwater and marine environments).

Further, the EPA will work with NHDES to help predict discharge requirements for the 17 plants as a basis for the cost comparison of alternatives. He listed other federal agencies likely to get involved in the approval process, including the Army Corps of Engineers, the National Oceanographic and Atmospheric Association, the US Fish and Wildlife Service and the US Coast Guard. He was also certain that this process of managing the region's wastewater is bound to trip Environmental Impact Statement (EIS) requirements that will include a great deal of analysis.

Ritchie White described the Atlantic States Marine Fisheries Commission as a federally funded, non-federal organization that manages species within three miles of shore. He explained that although the commission does not issue permits directly, it does report to regulatory agencies. He identified lobster stocks as an area of serious concern in the region, pointing to the collapsed stock of Long Island Sound.

Clare McBane expressed her department's hesitancy to judge alternatives before seeing models, listing models on volumes, plankton and seasons as necessary. She did say that she is certain there will be impacts on the marine environment if freshwater (treated effluent) is dumped into the gulf.

Rollie Barnaby, a member of the NH Marine Coalition and an extension educator with UNH Cooperative Extension and NH Sea Grant, provided concluding remarks and thanks to participants and organizers.

Summary

The Seacoast Regional Wastewater Outfall Study aims to proactively address the wastewater management limitations of the 44 towns in the seacoast region. The area is quickly outgrowing its wastewater treatment capacity and continued discharge into Great Bay Estuary threatens the ecosystem's productivity and diversity. With its 17 treatment facilities approaching capacity and discharging into Great Bay, lawmakers mandated the feasibility study to explore the potential of a large, regional outfall pipe into the Gulf of Maine. The study will also consider alternatives, as described above, to abandon the 17 existing plants for one regional plant as well as the possibilities, with or without a new plant, of continued discharge into Great Bay or land application of the area's treated wastes.

Speakers and audience members raised concerns regarding the alternative of a regional outfall pipe into the Gulf of Maine. Those concerns included potential impacts of nutrient and toxin loading on water quality and, in turn, the impact on the health and abundance of marine organisms, including commercially valuable fish and lobster and critically endangered whales. Presenters frequently discussed how a decline of such species would have detrimental effects on the livelihood of fishermen. Panelists also expressed fears that discharging large amounts of

freshwater into the Gulf of Maine would deplete aquifers and dewater the seven rivers that empty into Great Bay. On that score, the importance and value (locally as well as globally) of New Hampshire's marine and freshwater resources were emphasized.

In addition to pleas for respect of our natural resources and to manage our wastes responsibly, speakers and audience members made appeals for decentralized, land-based systems that will help curb population growth rather than invite it, thereby preserving open land and the unique character of the New Hampshire seacoast. Lastly, speakers and attendees alike expressed the importance of early and ongoing monitoring at potential discharge sites and the need to engage stakeholders in the process of assessing alternatives.