LOOKING AT THE VINEYARD
WITH AN EYE TO THE FUTURE

CLAMS AND KAYAKS: How Can We Protect Our Coastal Ponds?

FORUM PROCEEDINGS

Held on Wednesday, August 11, 2004
Old Whaling Church, Edgartown

In celebration of its 30th anniversary, the Martha's Vineyard Commission produced "Looking At The Vineyard With An Eye To The Future" with the cooperation of the All-Island Selectmen and funding from the Edey Foundation. The Commission also thanks the Vineyard Open Land Foundation for permission to use "Looking at the Vineyard", the title of its landmark 1973 planning document. The Organizing Committee included Judy Crawford (Moderator), Linda Dewitt (Commissioner), Mark London (MVC Executive Director; co-producer of this forum), Katherine Newman (Commissioner), Megan Ottens-Sargent (Commissioner), Linda Sibley (Commissioner), and Jo-Ann Taylor (MVC Coastal Planner; co-producer of this forum). These proceedings were prepared by Jo-Ann Taylor. Thanks to Christine Rose and MVTV for videotaping and broadcast.

"Clams and Kayaks: How Can We Protect Our Coastal Ponds", Wednesday, August 11, 2004, was the fourth and final forum of the highly successful series. Co-sponsored by the Martha's Vineyard Water Alliance, the final forum dealt with water quality issues. in the Old Whaling Church in Edgartown. Thanks to the Alliance and the MVC for their contributions.

As the approximately eighty interested Islanders filed into the Whaling Church for the Clams and Kayaks forum, they were treated to a slide show of various Vineyard pond scenes, accompanied by the folk singing and guitar of Corinne De Langavant. They were reminded how intimately the ponds and waters are involved with the culture and identify of the Vineyard.

Panelists Paul Bagnall, Bret Stearns, William Wilcox, Dr. Brian Howes, Karl Honkonen; and moderator Judy Crawford

The forum, moderated by Judy Crawford, was made up of the following elements:

- Keynote speaker Karl Honkonen, Director of Water Policy, Executive Office of Environmental Affairs,
- Panel Discussion with:
  - Paul Bagnall, Edgartown Shellfish Constable and Biologist;
  - Bret Stearns, Martha's Vineyard Water Alliance; Director Wampanoag Tribe Natural Resource Office;
  - William Wilcox, Water Resources Planner, Martha's Vineyard Commission,
- Closing speaker Dr. Brian Howes, Director, School for Marine Science and Technology,
- A question and answer period.

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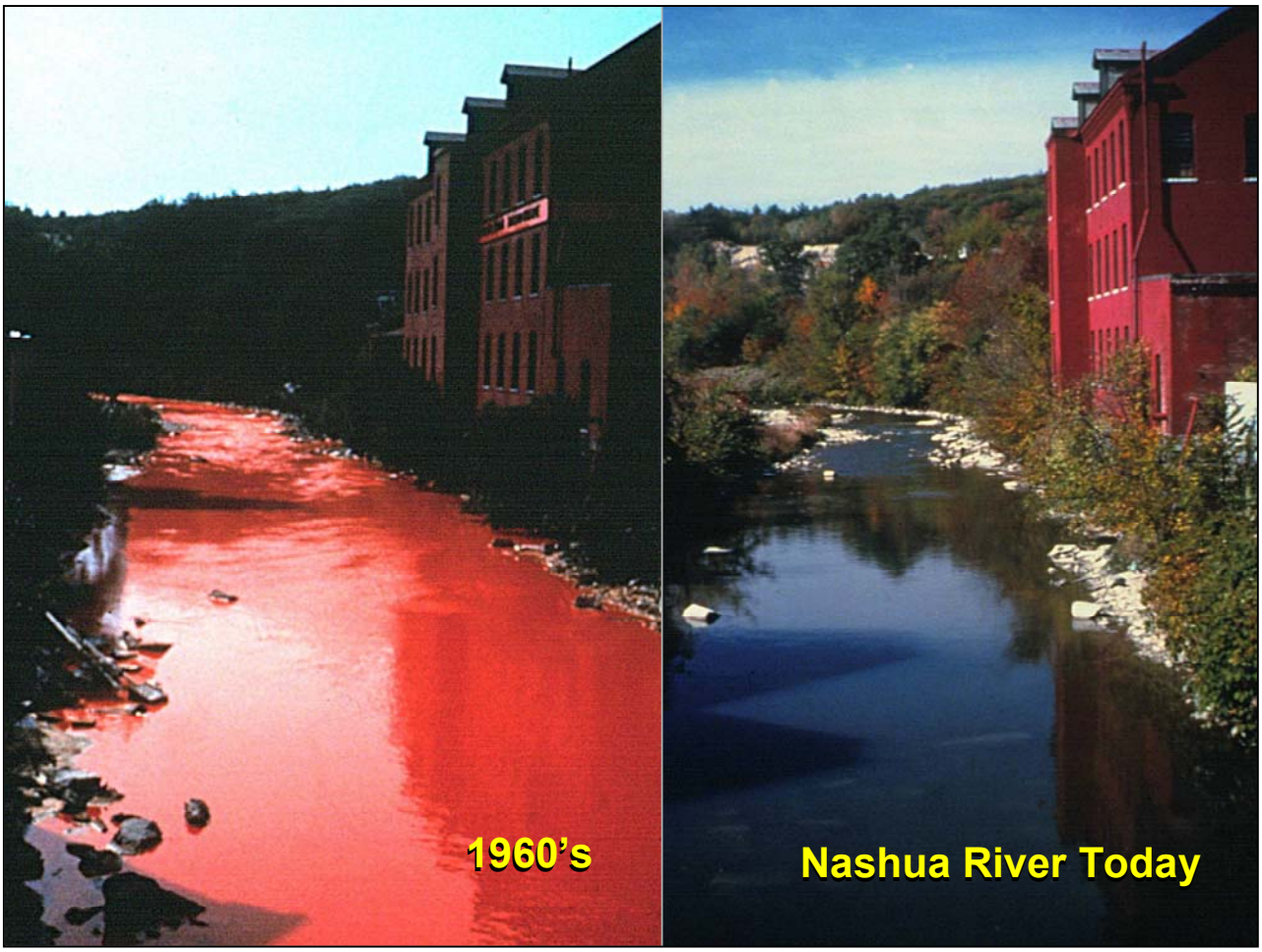
DVDs of all forums and written summaries of the proceedings are available in all Vineyard libraries; proceedings are available on the Commission's websitse www.mvcommission.org.

1. Watersheds and Water Quality Protection - Karl Honkonen

The keynote speaker was Karl Honkonen (left), Director of Water Policy at the Executive Office of Environmental Affairs. He is responsible for managing programs and providing policy direction for the Secretary on all issues related to water resources protection, including protecting natural water resources (quality and quantity), ensuring drinking water safety, watershed management, and managing wastewater disposal.

Karl Honkonen began his presentation by describing the geography of a watershed and how watershed boundaries often cross-political boundaries such as town lines, noting that cooperation is often needed in order to influence watershed-based protection. He showed these dramatic before-and-after photos of the Nashua River in the 1950s and 60s, when the river actually ran different colors on different days due to the dyes released by the upstream mills.



In contrast to the drama of pollution from industries and raw sewage, Karl Honkonen described more subtle impacts to watersheds, such as widespread replacement of vegetated landscapes with paved surfaces; that may produce the same level of degradation, but are more difficult to identify and manage. He spoke about these non-point sources of pollutants: from roads and parking lots, lawn fertilizers, farm animal waste, golf courses, and urban sprawl. As an adjunct of sprawl, he introduced some startling statistics regarding lawns:

- Residential application of pesticides is 20 times greater than that of farmers
- Lawn watering is the primary reason for peak water use during the summer
- Gas-powered landscape equipment accounts for 5% of urban air pollution.

Karl Honkonen discussed a number of Best Management Practices intended to address nonpoint sources. These are good common sense practices and applicable to the Island, for the most part.

<u>Best Management Practices</u>

- Hay bales & silt fences
- Detention & retention basins
- Grassed swales
- Deep catch basins
- Street sweeping
- Water bars on logging roads

He spoke about the impacts of farming, using this pretty scene to illustrate the impacts of livestock watering in streams and wetlands.

Bucolic visuals notwithstanding, fencing and alternative water sources could spare this wetland considerable pollutants, from both pathogens and nutrients.

He spoke about the following Best Management Practices for farming, many of which are already used extensively on the Island:

Farming Best Management Practices

- Improve composting operations
- Use crop rotation & cover crops
- Limit livestock access to streams
- Implement integrated pest management (IPM)
- Install alternate water sources for livestock
- Restore riparian buffers for wildlife & water quality

He offered suggestions for those interested in improving water quality. Suggestions included securing open space around watershed areas, and supporting the local funding of the Estuary project. He stressed the importance of sound data to support funding requests. He spoke about several low-interest loans available from the Commonwealth for water quality improvement initiatives.

He ended his presentation by offering a number of Actions that could be adopted by Individuals, Conservation Organizations, Teachers and Towns:

Individual Actions

- Support local land trusts
- Contribute time and expertise to local boards
- Organize a stream team or a conservation group
- Get involved in local environmental events
- Support hazardous household waste clean-up days
- Create a vegetated buffer along a stream or wetland
- Reduce fertilizers and pesticides on your lawn
- Educate kids about the natural world
- Certify vernal pools
- Volunteer on a trail project or to control invasive species

Conservation Organizations

- Organize stream clean-ups
- Raise watershed awareness
- Assist with open space plan
- Identify & prioritize watershed issues
- Improve public access to local streams & fish passage
- Organize stream teams or volunteer monitoring groups

Cities and Towns

- Update zoning, bylaws and regulations
- Implement stormwater management guidelines
- Identify important environmental issues
- Encourage the use of Best Management Practices

- Develop & use watershed-based open space plans
- Plan & adopt water conservation strategies

Teachers

- Study a natural areas near your school
- Collect & analyze water samples
- Organize a stream clean-up
- Practice water conservation at school
- Develop recycling challenges at school
- Participate in community service projects
- Prepare a brochure on the biodiversity of a nearby conservation area

2. Panel Discussion

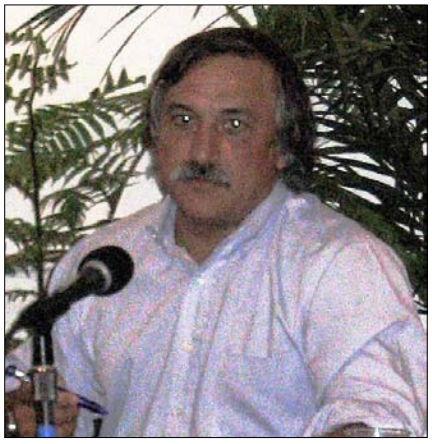
Panelists Paul Bagnall, Bret Stearns, William Wilcox

Panelist William Wilcox, Water Resources Planner for the Martha's Vineyard Commission, stressed the importance of gathering a thorough baseline data set for the water quality of the Vineyard's ponds. He outlined the extensive sampling program undertaken by the Commission, resulting in some 800 samples taken and analyzed to date. He spoke about the importance of partnerships in achieving success with the sampling program, particularly the partnerships with the Wampanoag Tribe, with the M.V. Shellfish Group and with the University of Massachusetts Extension. Beyond the needs for assembling data, the data must be used effectively to devise protective measures to achieve water quality goals. He noted that the Massachusetts Estuaries Project promises to bring cutting edge evaluation to the data, in order to calculate defensible nitrogen-loading limits. He cautioned that the information and follow-up may be painful, potentially involving expensive technologies or restrictions on development.

Panelist Bret Stearns, Director of the Natural Resource Office of the Wampanoag Tribe of Gay Head (Aquinnah), and coordinator of the Martha's Vineyard Water Alliance, spoke about the Tribe's help in collecting and analyzing water samples from all over the Island, focusing mainly on the Up-Island ponds. The tribe operates its own state-certified lab. The Tribe's shellfish hatchery aims to raise 1 million oysters next year. The tribe has purchased an oil separator stormwater treatment capable of screening road runoff contaminants before they enter Herring Creek and the chain of coastal ponds. "Otherwise, it ends up in the shellfish you eat and the water you swim in," he said. The Wampanoag tribe is planning to devote some of its grant funding to a catch basin project on New York Avenue in Oak Bluffs that will reduce run-off into the Oak Bluffs harbor

Edgartown shellfish constable Paul Bagnall pointed out that water quality issues don't end at the water's edge. He noted the threats from septic systems and the fertilizer spread across Island lawns.

3. The Massachusetts Estuaries Project - Dr. Brian Howes



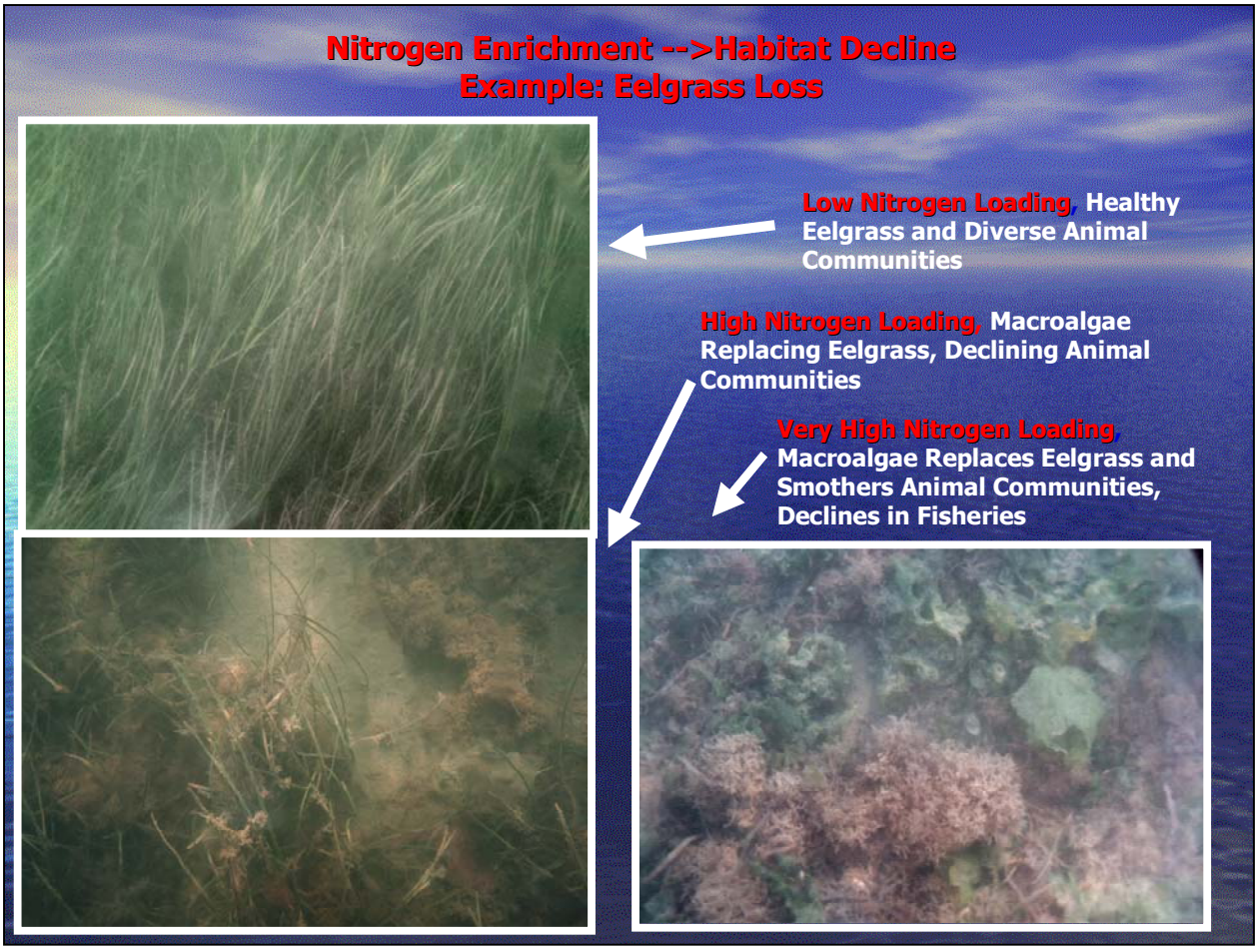
The concluding speaker was Dr. Brian Howes, Director, School for Marine Science and Technology, University of Massachusetts at Dartmouth. He spoke about the Massachusetts Estuaries Project, a collaborative effort between DEP/EOEA and SMAST/UmassD to develop critical nutrient loading levels for the 89 coastal embayments of Southeastern Massachusetts. The Estuaries Project focuses on degradation of estuaries and embayments by nutrient enrichment, primarily of nitrogen from the surrounding watersheds. He spoke about the impacts of excessive nitrogen in the watershed, the costs to communities; lost shellfish revenues for example. He summarized the impacts of nutrient enrichment:

Over-Fertilization results in declining health:

- Phytoplankton Blooms and turbid waters
- Loss of eelgrass beds
- Decline in benthic animal populations, fish & shellfish
- Low Oxygen in bay waters, fish kills, possibly odors
- Macro-algal accumulations
- At highest levels - loss of aesthetics

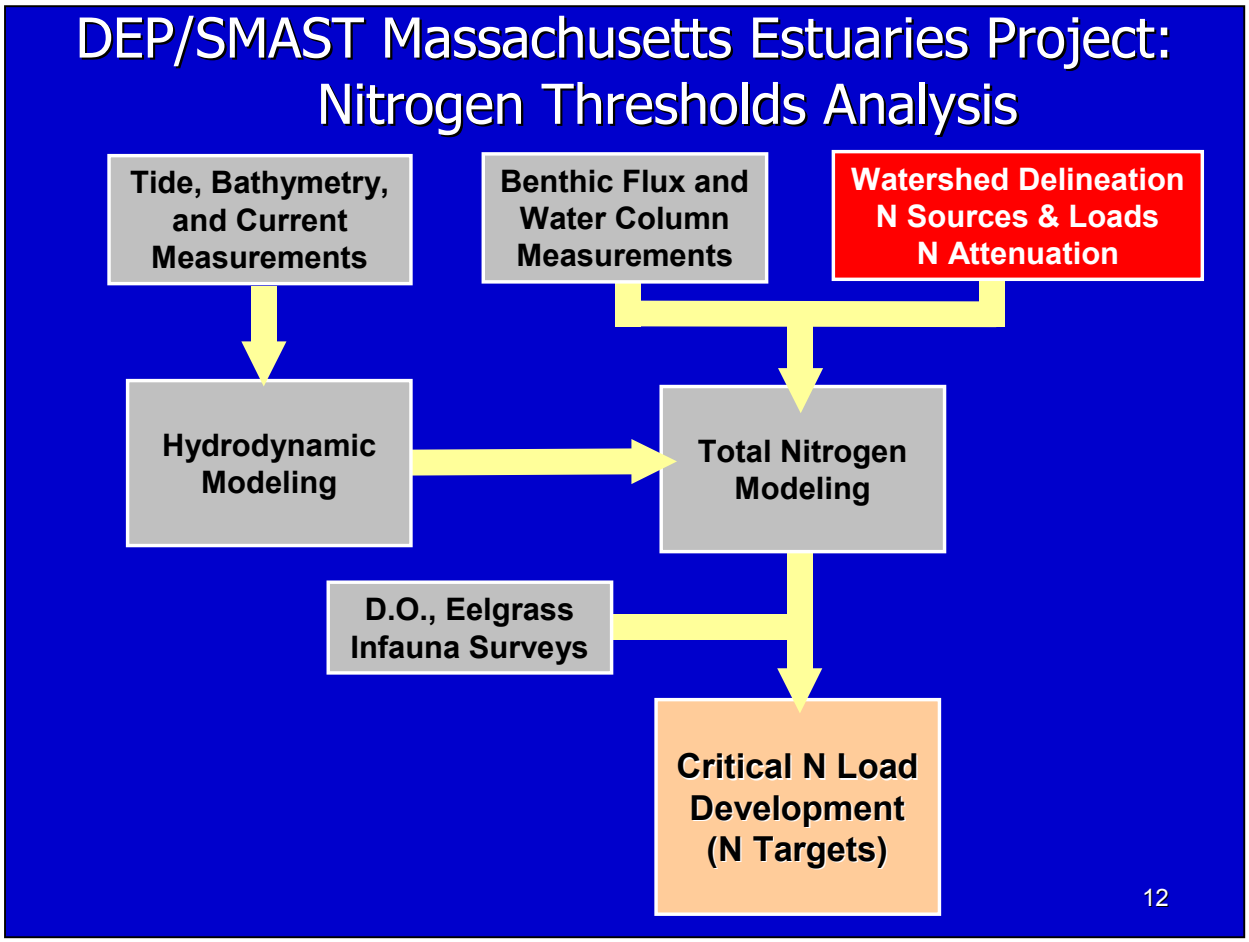
He described how algal blooms and turbid water are accompanied by disappearance of the eelgrass, a critical habitat. He noted that nutrient enrichment is a region-wide problem, not unique to Island waters. He estimated loss of critical habitat within Southeastern Massachusetts embayments at 50% region-wide. He said that scallops are in trouble in many of the Island ponds. They require a healthy eelgrass habitat to thrive as juveniles, and as adults are very sensitive to low Oxygen.

Dr. Howes used these photographs of thriving eelgrass beds and beds in various states of decline to illustrate the impacts of excessive nitrogen loading.



He stressed that scientific data is key to solving these problems. The Estuaries Project has begun to gather and evaluate water quality data from some of the 89 coastal embayments in Southeastern Massachusetts. He said that the Estuaries Project will result in definition of specific nitrogen limits for each of the watersheds in the program. Recommendations will be made to the towns. It will then be up to the decision-makers and townspeople to implement those recommendations.

He used the following graphic to illustrate the Estuaries Project approach to analyzing nitrogen thresholds, by investigating existing conditions and modeling buildout conditions, in order to determine finite limits to the amount of nitrogen that a watershed system can assimilate:



Three Island ponds, Edgartown Great Pond, Lake Tashmoo and Lagoon Pond, are nearing completion. The recommendations to the towns will be forth coming within 10 months.

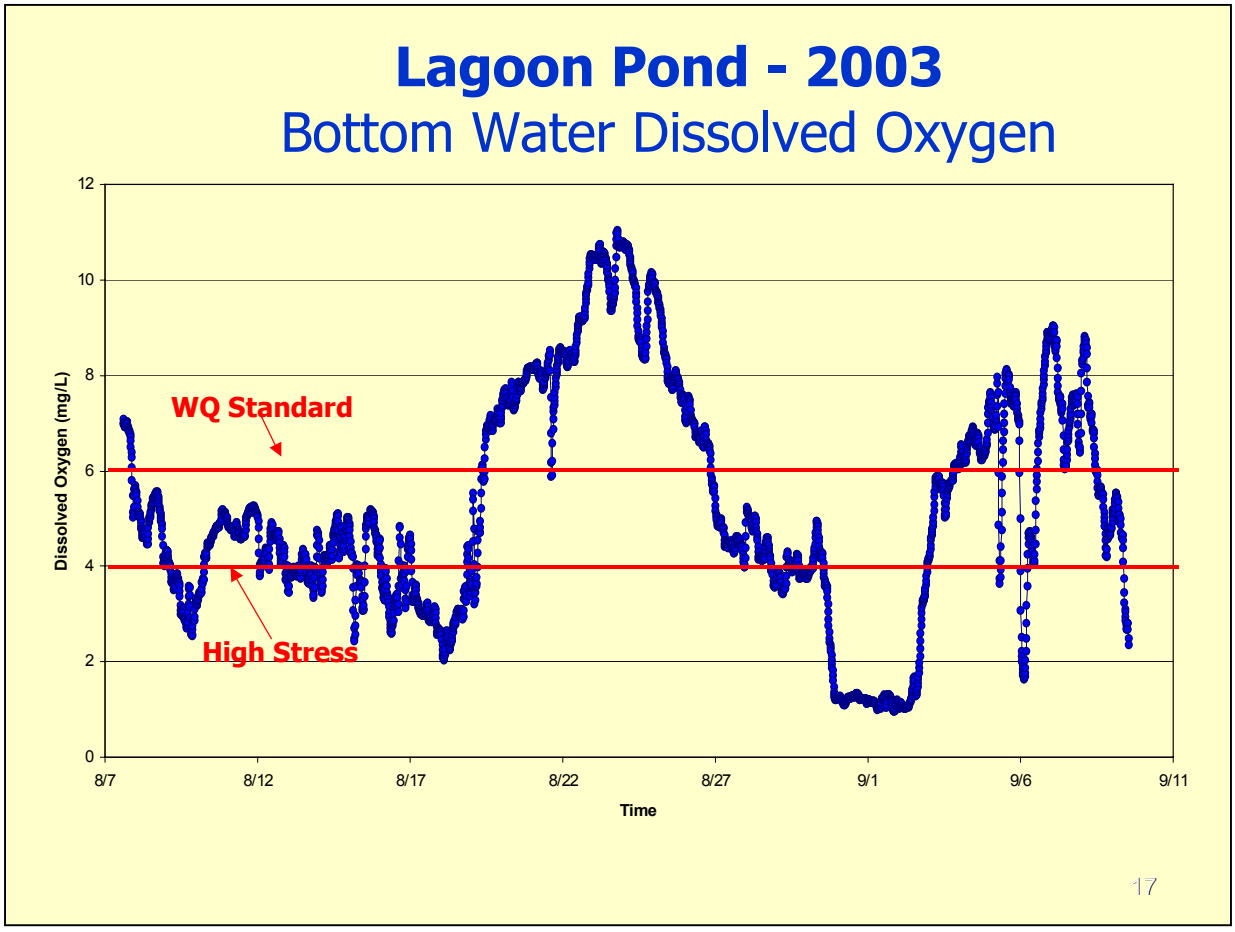
He gave updates on the status of each of the Island ponds in the program, Edgartown Great Pond, Lagoon Pond and Lake Tashmoo:

- Nitrogen Loading Model
  - Watershed delineation and transport time
  - Land-use inputs: natural and anthropogenic
  - Natural attenuation of nitrogen
- Hydrodynamic Model
  - Flushing characteristics
- Water Quality Model
  - Nitrogen species, salinity
  - Recycled nitrogen
- Site-Specific Critical N Loads (Thresholds)
  - Benthic animals, eelgrass, macroalgae, D.O., etc.

Work has begun on Sengekontacket Pond also. He noted the status of the Island's most recent entry into the program, Sengekontacket Pond:

- Nitrogen Loading Model
  - Watershed delineation and transport time
  - Land-use inputs: natural and anthropogenic
  - Natural attenuation of nitrogen
- Hydrodynamic Model
  - Flushing characteristics
- Water Quality Model
  - Nitrogen species, salinity
  - Recycled nitrogen
- Site-Specific Critical N Loads (Thresholds)
  - Benthic animals, eelgrass, macroalgae, D.O., etc.

He noted that preliminary data indicate that some Island waters are significantly degraded. He illustrated the Lagoon Pond conditions, showing levels of dissolved oxygen, noting that there were periods below the standard and periods below the high stress level of 4 mg/l, below which fish kills may occur:



The Estuaries Project will set targets to develop critical nitrogen loads. He noted that all estuaries can take some nitrogen without getting hurt, but that planners need to know what is the site-specific critical level for each watershed. He went on to stress that eighty per cent of manageable nitrogen loading is from septic systems, indicating a need to examine and manage growth and development in the watersheds.

On a more hopeful note, Dr. Howes said that recovery can be quite rapid. He said that cleanup can bring positive results in three to five years, even though the inputs of nitrogen leaching from septic systems and runoff entered the watersheds 20 or 30 years ago. Dr. Howes discussed restoration methods:

- Approach: to design with nature, to maximize the natural nitrogen removal processes that exist within the watershed and embayments.
- Typical management options:
  - –Maximize Tidal Flushing
  - –Enhance Nitrogen removal by riverine & tidal wetlands
  - –Enhance Nitrogen removal by lakes and ponds
  - –Relocation of Nitrogen discharges
  - –Nitrogen source reduction (fertilizers, wastewater)
  - –Decentralized & centralized wastewater treatment

Dr. Howes concluded by praising the environmental partnering that happens on the Vineyard, saying that the Vineyard is out in front.
For further information on Dr. Brian Howes: www.smast.umassd.edu/cmastweb/biohowes and the Estuaries Project: www.state.ma.us/dep/smerp/smerp and webserver.smast.umassd.edu/smast/coastal.

APPENDICIES

A1 Coastal Ponds and Their Watersheds Connection

This article, by William Wilcox, MVC Water Resources Planner, and Jo-Ann Taylor, MVC Coastal Resources Planner, appeared in the Martha's Vineyard Times on August 5, 2004 and in the Vineyard Gazette on August 6, 2004.

There are approximately 8800 acres of coastal salt ponds that ring our shoreline and help define the visual character of the Vineyard. They vary from ponds that are fully tidal such as Sengekontacket Pond to those that are tidal for short periods of time after their barrier beach has been trenched connecting them to the ocean (like Oyster Pond). All of our ponds are estuarine in character having enough fresh water input to measurably dilute the marine salinity.

The fresh water that enters our coastal ponds reduces their salinity and creates an estuarine character that strongly influences the nature of the habitat (Will it support eelgrass or is it too fresh?) and the community of animals that can live there (Is it suitable for scallops or better suited to oysters?). The fresh water input for all of the ponds in Edgartown, Oak Bluffs and Tisbury is nearly entirely from groundwater. The coastal ponds in West Tisbury, Chilmark and Aquinnah have important inputs of fresh water from streams. The fresh water input carries nutrients that are affected strongly by the nature of the land use in the watershed. A heavily developed watershed with all dwellings using septic systems will have much higher nitrogen concentrations in the groundwater and streams than a watershed that has large areas of open space. For all coastal ponds, nitrogen is a vital nutrient that is in short supply. When it is added from the watershed or from acid rain, the yield of microscopic and large aquatic plants increases. As the amount of plant material in the system increases, water column transparency is reduced and the demand for oxygen increases both for photosynthesis and for decay. Increasing nitrogen input will push a coastal pond to the point where the eelgrass beds disappear due to lack of light and where filter feeders like scallops are greatly reduced or eliminated due to low oxygen levels or deposits of large amounts of algae smothering them. Development in the watershed can be predicted from zoning and available land and the expected amount of nitrogen from the land use determined as a means of predicting the eventual water quality in each pond.

In most ponds, the greatest threats to water quality are the nitrogen loading from septic systems. Septic systems release nitrogen to the groundwater at a concentration of about 35 parts per million. When the nitrogen concentration in a coastal pond exceeds about 0.4 ppm, important resources like eelgrass decline and the system begins to shift away from the production of important shellfish and finfish.

The ability of a coastal pond to process nitrogen is dependent on how quickly tidal exchange carries the nitrogen out of the system. The longer the nitrogen is resident in a coastal pond, the more times it can be passed on to stimulate the growth of new generations of phytoplankton and wrack algae. The length of time nitrogen spends in the system can be determined from a tidal flushing formula. Scientists are able to determine a range of acceptable nitrogen loading based on each pond's tidal flushing period and the desired water quality goal for the system.

The watersheds for each down-island coastal pond have been determined based on the shape of the groundwater table in their area. The slope of the watershed determines whether groundwater will flow into a coastal pond or bypass it and enter the ocean. In those areas of the Island where the soil contains significant clay and the land supports streams and wetlands, the topography of the lands surface is used to determine the area that is expected to contribute surface flow to a coastal pond.

By knowing the extent of the watershed, we can determine the number of acres of land, the number of residences, the developable land and the conservation land within the watershed. This information allows a projection of the expected ultimate land use within the watershed when all lands that can be developed are. The accompanying spreadsheet lays out the basic knowledge of each pond's watershed. A nitrogen loading model will be developed that will predict the nitrogen loading to each pond based on the land use picture. In the Massachusetts Estuaries Project, this nitrogen loading model will be linked to a computer circulation model and a model of water quality parameters to predict the likely future water quality in the system and to identify steps that may be taken to compensate for excess nitrogen loading. At this time, Edgartown Great Pond and Lagoon Pond are in the Estuaries Project and Tashmoo and Sengekontacket Pond will follow in the near future.

For south shore Great Ponds that are breached to the ocean three or so times each year, the pond level drops three or even four feet. The drop exposes large areas of tidal flats and drastically changes the area of the surface water in the system. By lowering the discharge point for the water table it also increases the rate of groundwater flow into the pond and as a result expands the watershed significantly near the shore and less so moving back into the watershed. The increase in groundwater input carries more nitrogen into the system. If the pond does not remain connected to the ocean to allow tidal action to remove this nitrogen, the breaching process will adversely affect the pond quality. Connecting these ponds to the ocean regularly is desirable because it maintains the salinity within the brackish range suitable for oysters and herring. If breaching were not allowed, these ponds would convert to fresh waters until a significant storm came along at which time they would naturally breach causing a drastic change in salinity and killing off the fresh water community in the pond. The radical shifting from fresh to salty is not a desirable process.

The tidal ponds change their levels twice each day with the high and low tides. The constant exchange maintains higher salinity continuously. The watersheds are much more stable and the land use pattern and nitrogen-loading estimates are much easier to determine.

In the accompanying spreadsheet, ponds with present-day water quality problems and ponds that we now estimate are at or very near their nitrogen-loading limit are highlighted. The manifestation of poor water quality includes the growth of brown slime coating algae on rocks, pilings, boats and eelgrass. Large green algae may grow and begin to drift in June and through the summer. When they lodge on a tidal flat and begin to decay, they may remove all the oxygen from the water killing out soft shell clams or other shellfish in the area. Phytoplankton may grow to the point where the water column transparency is greatly reduced from over 6 feet to less than 3 feet. Eelgrass beds that are in deeper water begin to thin out and disappear. All of this excess vegetation may accumulate in the deeper basin in a pond and cause oxygen levels to f\drop drastically to near

zero overnight. These waters become devoid of life and store large amounts of nutrients that may circulate up into the upper water to stimulate even more plant growth. At the worst, the drifting algae may rot and release noxious odors and interfere with boating.

We are fortunate at this time that these symptoms are only beginning to show in our ponds. However, development from further back in the watershed that has occurred in the last 10 to 20 years has released substantial amounts of nitrogen into the groundwater that has not yet reached the coastal ponds. When the increased concentrations of nitrogen begin to enter the coastal ponds, water quality will respond and our options for addressing the problems will be very limited.

The options available to address the nitrogen loading problems include two broad groups. There are those that involve management of the watershed itself and those that include pond management options.

Within the watershed, the following options exists to address existing and projected nitrogen loading excess:

- Reduce wastewater load by municipal sewer to treat and discharge the waste and nitrogen in another watershed or within the same watershed but at lower concentrations.
- Reduce nitrogen loading by constructing community treatment facilities or package treatment facilities to reduce the nitrogen loading from a neighborhood.
- Require individual residential system upgrades to denitrifying technology at sale or transfer.
- Educate the public to reduce their use of landscaping fertilizers.
- Eliminate direct stormwater discharges to coastal ponds.
- Acquire conservation easements and title to remove development potential.
- Reduce residential density by zoning changes.

Within the pond, there are also options to reduce the magnitude of the nitrogen response:

- Improve tidal circulation by dredging obstructions within the inlet and sand deposits that reduce circulation in the inner reaches of the ponds so that the nitrogen is rapidly removed.
- Increase shellfish harvests through aquaculture and other means to increase wild populations. For every 2000 kilograms of shellfish harvest from the pond, we remove the nitrogen loading from about 4 residences.
- Increase populations of herring and other anadromous fishes that grow in the headwaters of our coastal ponds and migrate offshore taking their nitrogen with them.

For further information on the Martha's Vineyard Commission and its Coastal Ponds program: mvcommission.org/planning/ponds.

A2 Martha's Vineyard Great Ponds

	Tidal	**Acreage**[1]
1.	Katama Bay	1695
2.	Cape Poge Bay	1563
3.	Sengekontacket Pond	691
4.	Menemsha Pond	682
5.	Lagoon Pond	583
6.	Lake Tashmoo	270
7.	Nashaquitsa Pond	119
8.	Poucha Pond	114
9.	Trapps Pond	46
10.	Farm Pond	39
11.	Calebs Pond	39
12.	Shear Pen Pond	35
13.	Oak Bluffs Harbor	30
	Brackish	
14.	Edgartown Great Pond	1563
15.	Tisbury Great Pond	744
16.	Chilmark Ponds	198
17.	Oyster Pond	191
18.	Black Point Pond	58
19.	James Pond	41
20.	Crackatuxet Pond	39
	Fresh	
21.	Squibnocket Pond	603
22.	Long Cove	79
23.	Watcha Pond	61
24.	Jobs Neck Pond	59
25.	Homer Pond	32

[1] Martha's Vineyard Commission Regional Island Plan, 1991

A3 The Commonwealth's Draft Water Policy

As Director of Water Policy at the Executive Office of Environmental Affairs, Karl Honkonen is responsible for managing programs and providing policy direction for the Secretary on all issues related to water resources protection, including protecting natural water resources (quality and quantity), ensuring drinking water safety, watershed management, and managing wastewater disposal.

As part of the Commonwealth's Water Policy Task Force, he was instrumental in development of the Commonwealth's draft Water Policy. A brief summary is on the opposite page.

For further information on Karl Honkonen and the Commonwealth's draft Water Policy: www.mass.gov/envir/wptf/draft.

TASK FORCE REPORT- SUMMARY OF RECOMMENDATIONS

In order for the state and municipalities to work together more effectively to promote proactive water resource management and sustainable development and water resource protection practices, the Water Policy Task Force recommends appropriate planning, additional tools, technical assistance on how to use the tools, incentives to use the tools, and a toolbox to keep us organized. In addition, better coordination and setting clear priorities for new data, assessment and monitoring to support the Water Policy will be required.

I. THE TOOLBOX

- RECOMMENDATION 1: Create a toolbox based on the Stress Framework and water offsets, with increasingly stringent recommendations and requirements as a community approaches "stressed" conditions. This will move local and regional water entities to a more proactive posture and also provide guidance as to when certain tools should be used.

II. PROMOTE PROACTIVE WATER RESOURCE MANAGEMENT

- RECOMMENDATION 2: Develop clear guidance and planning materials to help communities on how to meet existing and future water uses by developing watershed solutions based on water budgets.
- RECOMMENDATION 3: Advance the efficient use of water by: (a) revising the Water Conservation Standards to include measurable criteria; (b) developing a seasonal peak pricing strategy; (c) pursuing legislation that requires local enterprise accounts to fund operation and maintenance of infrastructure; and (d) crafting a policy on maintenance and repair of leaking water supply and sewer system infrastructure.
- RECOMMENDATION 4: Increase treated wastewater recharge and reuse.
- RECOMMENDATION 5: Promote stormwater recharge close to its site of origin.
- RECOMMENDATION 6: Advance effective water supply management by: (a) crafting a state policy on water supply development; and (b) actively promoting the optimization of water withdrawals.

III. PROMOTE A PARTNERSHIP WITH MUNICIPALITIES TO GROW SMARTER, and PROTECT AND RESTORE THE ECOLOGICAL ENVIRONMENT

- RECOMMENDATION 7: Develop clear guidance and planning materials (including the "Growing Smarter Toolkit") to help municipalities, developers and consultants advance development that reduces negative impacts on the environment.
- RECOMMENDATION 8: To protect aquatic habitats, including lakes and ponds, implement and integrate Living Waters and BioMap into planning, education, and outreach efforts to landowners and local decision-makers, and a mix of protection, smart growth, and restoration projects.
- RECOMMENDATION 9: Develop a methodology for prioritizing restoration projects and measuring success based on the approach of using Target Fish and Fish Communities as an indicator of environmental conditions.
- RECOMMENDATION 10: Establish a grant program that works with communities to protect land critical to water resource priorities and seeks opportunities to thereby enhance natural treatment capacities and reduce costs.

IV. TECHNICAL ASSISTANCE AND COORDINATION

- RECOMMENDATION 11: Provide communities, developers and consultants with a single point of contact for technical assistance on interagency permitting issues, environmentally-friendly development strategies (including the "Growing Smart Toolkit"), fast-tracking, and resource protection strategies within EOEA's Office of Technical Assistance.
- RECOMMENDATION 12: Create a working group to define pre-application processes, coordinated public comment periods and other coordinating strategies so as to arrive at holistic timelines for permits that involve various agencies.
- RECOMMENDATION 13: Take advantage of the new OCD structure to advance more effective planning with Mass Highways and other development agencies. As a first step, work to improve culvert, bridge, road and roadbed design in order to address impacts to: (a) fish and wildlife passage at road/water crossings; and (b) habitat along highways.

V. INCENTIVES TO USE THE TOOLS

- RECOMMENDATION 14: Promote sustainable development, timely maintenance of old infrastructure (Fix-It-Early), and the protection of priority water resources through refinements to the Clean and Drinking Water State Revolving Fund loan programs.
- RECOMMENDATION 15: Actively promote greywater (reclaimed water) reuse at specific recreational and institutional venues and new large development sites.

A4. Useful Reference Links

The following websites may be perused for further information on the Martha's Vineyard Commission's coastal ponds program, on the Commonwealth's draft Water Policy, and on the Estuaries Project. Much useful information resides there, including many downloadable reports, and links to related sites.

Martha's Vineyard Commission and its Coastal Ponds program:
www.mvcommmission.org/planning/ponds

Karl Honkonen and the Commonwealth's draft Water Policy:
www.mass.gov/envir/wptf/draft

Dr. Brian Howes:
www.smast.umassd.edu/cmastweb/biohowes

Mass Estuaries Project:
www.state.ma.us/dep/smerp/smerp
webserver.smast.umassd.edu/SMAST/Coastal/

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