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COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DOCKET NOS. 99-046, 99-047, 99-048
PERMIT NO. SE#2-24

_____)
In the matter of:)

TOWN OF EDGARTOWN)
WASTEWATER COMMISSION)
_____)

PREFILED TESTIMONY OF WILLIAM M. WILCOX

1. My name is William M. Wilcox. I am presently employed by the Martha's Vineyard Commission ("MVC"), a regional planning agency, as Water Resource Planner. A copy of my resume is attached as Exhibit "A."

2. I served as Project Director of a study conducted pursuant to the so-called 604(b) grant to the MVC. The 604(b) grant was funded by the United States Environmental Protection Agency, as part of a program to support water quality management planning. In particular, the purpose of the 604(b) grant was to study the sources and extent of nitrogen loading of Edgartown Great Pond from the surrounding watershed, and to determine the Pond's tolerance for such loading. The 604(b) Study also assessed future impacts of growth within the watershed by consideration of two basic inputs: (a) projections of nutrient loading at buildout; and (b) estimation of the critical loading limit which the Pond can tolerate without manifesting the undesirable side effects of eutrophication.

3. As Project Director of the 604(b) Study, I designed and carried out the project. I engaged in well monitoring for purposes of making an accurate delineation of the Edgartown Great Pond watershed. I conducted lawn assessments as a means of better estimating nitrogen contribution from lawns. I participated in the collection of data reflecting wastewater flow and the nitrogen content of the treated wastewater discharged from the Edgartown Wastewater Treatment Facility (the "Facility"), in order to estimate more accurately that nitrogen source both as of today and in the past, and to serve as a basis for projections of future loading.

4. The results of the 604(b) Study were documented in a final report dated March 1999 and entitled "Edgartown Great Pond: Nutrient Loading and Recommended Management Program 1996-1998," which I authored. A copy of this 604(b) Report is attached as Exhibit "B." I adopt the substance of the 604(b) Report as my testimony, and incorporate it by reference herein.

5. The 604(b) Report presents the results of four principal study tasks. First, the Report addresses the Edgartown Great Pond recharge delineation. (See Ex. B, Task One, pp. 6-20 and the accompanying tables and figures.) In other words, the Report shows the location and size of the Edgartown Great Pond watershed, within which groundwater is traveling to the Pond. These results show that nitrogen loading within the watershed is a consequence of many sources, including area septic systems, residential lawns, agricultural enterprises, the Facility, and acid rain.

6. Second, the 604(b) Report addresses land use, nutrient loading and buildout projects within the Edgartown Great Pond watershed. (See Ex. B, Task Two, pp. 21-52 and the accompanying tables and figures.) In this section, the Report compiles

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current knowledge about population and present day land use, and projects several alternative growth scenarios (low growth, moderate growth and high growth) that yield a range of nitrogen loads that will define the potential extremes of nutrient loading. This exercise highlights which nitrogen sources are the largest, and may identify the prime portions of the total loading to target in a nitrogen loading reduction effort. Significantly, the Study concludes that the Facility is today among the minor sources of nitrogen loading to the Edgartown Great Pond watershed, accounting only for an estimated 6-15% of the total projected nitrogen load. *Id.* at pp. 41-42 and Table 2.3-1. The largest source of nitrogen loading is septic systems (accounting for an estimated 41-58% of the total projected load). Acid rain accounts for an estimated 13-29% of the projected total load; farm sources account for an estimated 9-19% of the projected total load; and lawns account for an estimated 5-7% of the projected total load. (*Id.*)

7. Third, the 604(b) Report addresses the nutrient loading limits for Edgartown Great Pond. (See Ex. B, Task Three, pp. 53-66 and Appendix C and the accompanying tables.) This section of the Report reproduces the findings and recommendations of Arthur G. Gaines, Jr., Ph.D. with respect to the Pond's estimated allowable loading rate or carrying capacity for nitrogen, and with respect to methods and programs for managing the nitrogen loading to the Pond. (On this point, I understand that Dr. John M. Teal has conducted and recently updated his own analysis of the carrying capacity of the Pond, which is the subject of separate testimony presented by the Edgartown Wastewater Commission in this proceeding.)

8. Finally, the 604(b) Report addresses recharge area management options and recommended strategy. (See Ex. B, Task Four, pp. 67-98 and the accompanying

tables.) Among other things, the 604(b) Report establishes an interim recommended nitrogen loading limit for the Edgartown Great Pond, from all sources, of 42.5 kilograms per day of nitrogen. In addition, the 604(b) Report recommends that Facility be limited to an annual loading of 2,200 kilograms of nitrogen. The Facility's current groundwater discharge permit is consistent with both of these recommendations, and the 604(b) Report does not propose or recommend any modifications to the terms and conditions of the Facility's current permit.

9. As the 604(b) Report reflects, the leachate plume from the Facility that was created during the roughly 20 years of the original plant operation, prior to the major Facility upgrade, was the product of secondary treatment of the wastewater, with no nitrogen removal capability. This plume is in the groundwater system within the Edgartown Great Pond watershed now. The nitrogen content of this existing plume is in all likelihood substantially higher than the nitrogen content of the plume now being formed from the treated effluent from the upgraded Facility. Notably, the nitrogen in the effluent discharge from the Facility prior to the upgrade was well in excess of 10 milligrams per liter (mg/L), while the nitrogen in the effluent discharge since the upgraded Facility went on line in 1996 is less than 3 mg/L. It will be many years until the plume from the effluent discharge from the upgraded Facility reaches the Pond.

10. I have reviewed the prefiled testimony of Veronica M. Berounsky, submitted on behalf of the petitioners in this case. In my opinion, Dr. Berounsky has substantially overestimated both the past and present nitrogen loadings from the Facility, as a result of important errors in her calculations. First, Dr. Berounsky has ignored the seasonal variations in the daily wastewater flow, and used the highest summertime flow

rates as if they applied on a year-round basis. In addition, Dr. Berounsky has ignored the available laboratory data showing the actual nitrogen concentration in the treated wastewater for each month since the upgraded facility went on-line (which is under 3 mg/L), and has instead assumed an actual nitrogen concentration of 5 mg/L. Accordingly, Dr. Berounsky's conclusion that the Facility is now exceeding the budget of 2,200 kilograms per year of nitrogen recommended in the 604(b) Study is erroneous. In fact, the current nitrogen loading from the Facility to Edgartown Great Pond is a fraction of that number.

11. In my opinion, Dr. Berounsky has also erred by overestimation in her calculation of the current nitrogen loading from all sources to Edgartown Great Pond. Dr. Berounsky has based her calculations on selected groundwater samples taken from locations directly within the effluent plume from the old treatment plant, within residential areas serviced by septic systems, or within the probable plume from the landfill. These samples are not representative of nitrogen levels in the watershed at large, and they serve to exaggerate the estimate of nitrogen loading from all sources to Edgartown Great Pond.

Signed under the pains and penalties of perjury this 26th day of April, 2001.


William M. Wilcox
William M. Wilcox

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CERTIFICATE OF SERVICE

I, Lisa C., Goodheart, Esq., attorney for the Town of Edgartown Wastewater Commission, in this action, hereby certify that I served a copy of the foregoing **Prefiled Testimony of William M. Wilcox** upon all parties by sending a copy by first class mail on April 27, 2001, to the following:

<u>Representative</u>	<u>Party</u>
Ronald H. Rappaport, Esq. Reynolds, Rappaport & Kaplan, LLP 106 Cooke Street P.O. Box 2540 Edgartown, MA 02539	PERMITTEE Edgartown Wastewater Treatment Commission
Douglas H. Wilkins, Esq. Anderson & Kreiger LLP The Bulfinch Building 47 Thorndike Street Cambridge, MA 02141	PETITIONER Edgartown Residents Group (Docket #99-046)
Mr. Hugh B. Kaufman 1219 4th Street, S.W. Washington, DC 20024	PETITIONER Judith Fuller (Docket #99-047)
Michael S. Nuesse, Esq. 115 North Street, Suite 3 Hingham, MA 02043	PETITIONER Group of Ten Citizens (Docket #99-048)
Shaun P. Walsh, Esq. DEP -- Southeast Regional Office 20 Riverside Drive Lakeville, MA 02347	DEPARTMENT Department of Environmental Protection
Mr. Frank Mezzacappa DEP -- Southeast Regional Office 20 Riverside Drive Lakeville, MA 02347	DEPARTMENT Department of Environmental Protection


Lisa C. Goodheart

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Personal Data of William M. Wilcox

Home Address: RFD Box 477
Tisbury, MA
02568 - 508.693.4239

Office: Martha's Vineyard Commission
P. O. Box 1447
Oak Bluffs, MA 02557 - 508.693.3453

Date of Birth: 17 March 1949

Education:

BS 1970—University of Massachusetts; Major—Geology
Ph.M. 1973—Columbia University; Major—Sedimentology
Teaching Certification 1975—Bridgewater State College

Honors:

Phi Beta Kappa and Phi Kappa Phi Honor Societies—1970
Massachusetts Horticultural Society Certificate of Appreciation

Member: Geological Society of America

Work Experience:

1990 – Present: Extension Educator in Natural Resources and Environmental Conservation Program (UMass) and Water Resource Planner at the Martha's Vineyard Commission to provide water resource expertise.

- Wrote successful grant application to evaluate and recommend revisions to town bylaws to protect public supply wells in Edgartown, Tisbury and Oak Bluffs. 1992- 1993
- Developed plan of study for a coastal ponds water quality assessment; secured grant money and matching support; trained volunteers to collect samples and field data and completed the project including 500 samples analyzed for 17 parameters each. 1995- 1996
- Member of the Oak Bluffs Wastewater Planning Group. 1995- 1996
- Supervisor with the Dukes Conservation District. 1992- 2000
- Obtained funding, planned and completed watershed nutrient loading assessments for Tisbury Great Pond (1994), Edgartown Great Pond (1999) and Chilmark Pond, Squibnocket Pond and Menemsha (2000).
- Instructor for an Introductory Geology Course for the Nathan Mayhew Seminars and certified by Cape Cod Community College. 1993
- Chairman of the Katama Farm Committee. 1993
- Prepared a Section 301 Clean Water Act waiver for the Town of Gosnold.
- Prepared tidal flushing evaluations for Trapp's Pond, Farm Pond, Menemsha Pond, Squibnocket Pond and Chilmark Pond.
- Surveyed the stem density, biomass and health of eelgrass beds in Tashmoo Pond, Farm Pond and Sengekontacket Pond.
- Reviewed development proposals including golf courses and subdivisions to assure nitrogen load reductions to meet receiving water limitations by innovative approaches to sewage treatment, landscape choices and fertilizer selection.

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1985 to 1990: Agricultural Development Specialist with UMass Extension.

- Obtained grant support and organized a trial farmers marketing cooperative (\$6500), an innovative dairy waste composting project (\$5000) and for a bio-control trial for *Ixodes dammini* (deer tick) using an encyrtid wasp (\$23000). The latter also involved raising public donations that equaled the grant total allowing support of a graduate student to carry out the project.
- Supervised on farm implementation of a county sweet corn Integrated Pest Management Program.
- Represented Extension in the initiation of water quality programming with the Soil Conservation Service and Massachusetts department of Environmental Protection.

1978 to 1985: Soil Conservationist and Agricultural Development Specialist for the Soil Conservation Service and UMass Extension.

- Planned and supervised a dune restoration project consisting of planting 10 acres of beach grass (*Ammophila*) and erecting 10,000 feet of sand fence. This project involved coordinating three local agencies with the Soil Conservation Service to complete this \$100,000 stabilization effort.
- Prepared numerous detailed farm, woodland and wildlife management plans based on landowner goals tempered by site limitations.

1975 to 1978: Project Director, Water Quality Management Program for the Martha's Vineyard Commission, a regional planning agency. Responsible for project definition to evaluate the surface and groundwater resource quality and to devise appropriate measures to protect the resources.

- Designed a ground and surface water-testing program to provide a resource database within budget.
- Gathered input from Town departments and boards to provide a broad basis for the detailed guidance document.
- Participated in the initial direction of the first years of the Commission, an innovative approach to land use management and resource protection.

Publications:

- 1977: Water Quality Management Plan for Martha's Vineyard; Martha's Vineyard Commission
- 1978: Water User's Guide; Martha's Vineyard Commission
- 1993: Water Resource Protection Planning Project; Martha's Vineyard Commission
- 1999: Island Coastal Ponds Water Quality Study; UMass Extension, MV Commission and MV Shellfish Group
- 1999: Edgartown Great Pond: Nutrient Loading and Recommended Management Plan; Martha's Vineyard Commission
- 2000: Chilmark, Menemsha and Squibnocket Ponds: Nutrient Loading and Recommended Management Plan; Martha's Vineyard Commission.

References: On Request.

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THE MARTHA'S VINEYARD COMMISSION

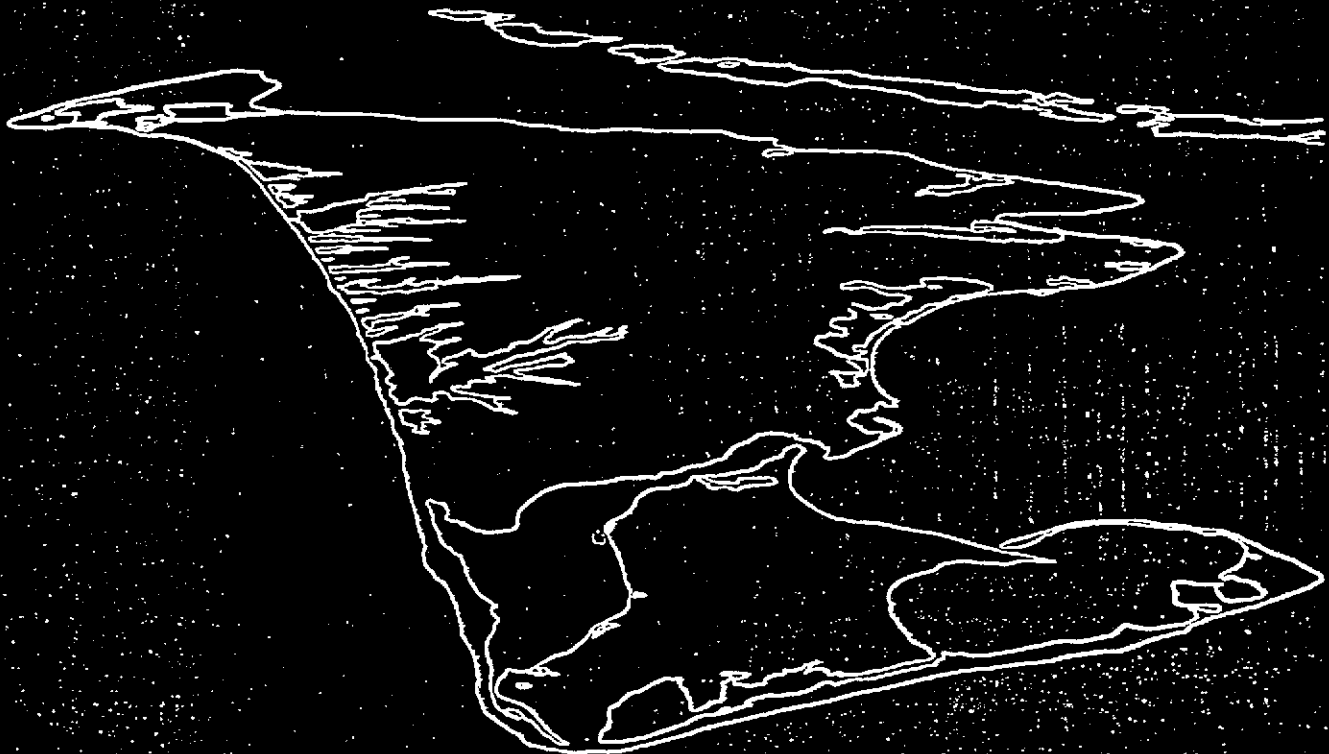
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Office Copy

EDGARTOWN GREAT POND:
NUTRIENT LOADING AND RECOMMENDED
MANAGEMENT PROGRAM

1996-1998

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OFFICE COPY

**EDGARTOWN GREAT POND:
NUTRIENT LOADING AND RECOMMENDED
MANAGEMENT PROGRAM**

1996-1998

PREPARED BY: MARTHA'S VINEYARD COMMISSION

PREPARED FOR:

**Massachusetts Department of Environmental Protection
Bureau of Resource Protection**

AND

**U. S. Environmental Protection Agency
Region I**

**Massachusetts Office of Environmental Affairs
Robert Durand, Secretary
Department of Environmental Protection
David Struhs, Commissioner
Bureau of Resource Protection
Arleen O'Donnell, Assistant Commissioner
Division of Municipal Services
Andrew Gottlieb, Director**

**Grant # 96-04/604
March 1999**

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THE MARTHA'S VINEYARD COMMISSION

OFFICERS:

Linda Sibley	Chair
Richard Toole	Vice-Chair
Jane A. Greene	Clerk-Treasurer
Michael Donaroma	Chair: Land Use Planning
John Early	Chair: Economic Development

STAFF:

Charles W. Clifford	Executive Director
Thomas G. Simmons	Administrator
Andrew Grant	Regional Planner
Melissa MacDonald	Regional Planner
Jo-Ann Taylor	Coastal Planner
David Wessling	Regional Planner
William M. Wilcox	Water Resource Planner
Steve Zeltzer	Regional Planner
Irene M. Fyler	Secretary/Paralegal

This Project was designed and carried out by William M. Wilcox through a contractual arrangement with the University of Massachusetts Cooperative Extension.

Acknowledgements:

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Tom Simmons handled accounting and administration of this grant. The Edgartown Assessor's Office helped clarify numerous points of confusion regarding land use categories. The Edgartown Planning Board and the Ponds District Advisory Committee offered valuable criticism and input to the document. Frank Mezzacappa, DEP, provided advice as project officer for this grant. Lenora Wilcox helped with preparation of land use maps and with data entry.

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