Proposal to Cape Cod Water Protection Collaborative
Shared Watersheds, Shared Responsibilities Grant Program

Pleasant Bay Watershed Fertilizer Management Project

Proposal Contents

1. Completed Application Form
2. Letters of Support from Watershed Communities
3. Memorandum of Agreement forming the Pleasant Bay Resource Management Alliance

A. General Information

1. Name and address of the applicant(s)

Pleasant Bay Alliance
C/o Town of Chatham, fiscal agent
549 Main Street
Chatham, MA 02633

2. Project name

Watershed fertilizer management project

3. Project summary, including objectives

The purpose of this project is to develop a fertilizer management program to achieve a significant reduction in the 16% of controllable nitrogen load accounted for by fertilizer use in the Pleasant Bay watershed. The project has the following components: (1) research and validation of data and assumptions describing fertilizer use by different groups in the watershed; (2) development and prioritization of feasible nitrogen reduction targets for each fertilizer user group; (3) development of administrative tools, strategies and programs to achieve the targets for each user group; and (4) development of protocols for documenting and monitoring nitrogen reductions due to controls on fertilizer use. A report of findings and recommendations generated by the project will provide a basis for a significant public outreach effort, tied to implementation activities.

4. Requested funds

$40,000

B. Detailed Project Information

1. Project objectives

- *Determine the feasibility of achieving significant nitrogen reduction by managing watershed fertilizer use*
  According to the Massachusetts Estuaries Project (MEP) technical report, "[t]he second largest sources of watershed nitrogen loading is fertilized lawns and golf courses, with lawns being the predominant source within this category." Fertilizers account for 9 percent of the overall Pleasant Bay watershed nitrogen load and 16 percent of the controllable watershed nitrogen load. The project will determine whether it is feasible to reduce a significant portion of the 16 percent of controllable nitrogen load by managing fertilizer application by various users in the watershed. The project will identify specific strategies for achieving, documenting and monitoring reductions in nitrogen load from fertilizer among different user groups.

- *Validate data and assumptions regarding watershed fertilizer use and its nitrogen impact*

Several assumptions were built into the MEP technical analysis regarding fertilizer use for golf courses, municipal uses and residences. These include applications rates, coverage areas, and leaching rates. The study will incorporate a literature search and survey research with selected user groups to provide a comparative basis for reviewing these assumptions and either verifying their applicability or suggesting modifications. This step is necessary to confirm nitrogen loading impacts from fertilizer use by different groups, and thereby assess the feasibility of nitrogen reductions through administrative controls.

- *Identify specific non-structural or administrative measures that could be employed to achieve significant, measurable nitrogen reduction*
  Control of fertilizer use could result in significant nitrogen reduction benefits without incurring the cost and time required to design, build and maintain wastewater treatment facilities. Fertilizer controls would be implemented through administrative means such as adoption of use policies in public and private settings, local bylaws and regulatory controls, and public informational and training opportunities. A key challenge to be addressed by the project is to identify specific means by which nitrogen reductions from fertilizer use could be measured and verified over time. This will provide a crucial underpinning to determining how MassDEP will treat progress in reduction of fertilizer use in terms of compliance with TMDLs.

  Several models exist for reducing nitrogen- and phosphorous-based fertilizer use among various user groups. One such example is the Nitrogen Management Program instituted for golf courses in the watershed of the Peconic estuary on Long Island. In other regions, bylaws or education campaigns have been established to limit fertilizer use. This project will review the potential benefits and downsides of these existing approaches, and will refine them and develop new approaches to reduce fertilizer use in the Pleasant Bay watershed. What is currently lacking, and what this project will accomplish, is development of a comprehensive, feasible and effective fertilizer management program that has the benefit of input (though survey research and direct interviews) from various user groups including golf course managers, lawn care professionals, homeowners, scientists, and regulators, among others.

- *Bridge gap between MEP/TMDL and golf course, municipal, homeowner fertilizer practice*s
  The Pleasant Bay watershed hosts two municipal and two private golf courses, along with numerous public playing fields. In initial contacts with turf managers at area golf courses, questions were raised regarding the leaching rate and other data and assumptions underlying the assessment of fertilizer use contained in the MEP Technical report. This project would address and respond to questions about the data and assumptions and provide a solid foundation of information and assumptions to support on-going discussions and development of nitrogen reduction strategies with public and private turf managers, homeowners, and other user groups.

- *Augment a multi-town effort to address excessive nitrogen in a shared embayment*.

Through the Alliance, the Orleans, Chatham, Harwich and Brewster communities have a lengthy and productive history of cooperation in managing a cherished resource. Specifically, through the Alliance the four towns have sponsored the MEP technical analysis and resulting TMDL development, and are jointly pursuing watershed based implementation strategies and policies. This project will provide needed verifiable information to inform the involved communities about the likely impacts and benefits of a potential nitrogen management strategy that could mitigate a major nitrogen source in the Pleasant Bay system.

- *Provide replicable analytical framework, strategies and tools*
  Public and private fertilizer use is a significant nitrogen source in most estuarine watersheds. The project will provide specific information and strategies to help communities accurately assess nitrogen from fertilizers and the likely nitrogen reduction potential from different levels of control. It will also prescribe administrative measures (bylaws, regulations, polices) that would have direct applicability in other communities. Finally it will identify specific steps for monitoring and tracking nitrogen reduction from fertilizer use controls, to assess the efficacy of the administrative measures and tie those into the TMDL compliance standards being developed by MassDEP and participating communities.

2. Detailed project description

The project will consist of the following tasks:

Task 1. Quantify/characterize municipal and private (commercial and residential) fertilizer use in the watershed.

Task 2. Verify assumptions about leaching and loading:

a. How much nitrogen is coming from different user groups,
b. What is the appropriate leaching rate(s),
c. What are the important variables, ie, soil types, fertilizer types, application timing and methods, turf types, and
d. How much fertilizer gets into runoff from inappropriate application and "over-casting", etc.

Task 3. Prioritize sources/users in terms of:

a. Amount of nitrogen loading resulting from fertilizer use, and
b. Control/reduction potential.

Task 4. Estimate the benefit of reducing fertilizer use and determine targeted reduction amount for prioritized sources/users.

Task 5. Propose bylaws, regulations, incentives and programs to address/control nitrogen use from fertilizer. This would include identifying opportunities to build coalition(s) among user groups to encourage participation on recommended reduction programs or strategies.

Task 6. Develop verifiable methods for measuring progress/compliance and on-going monitoring.

3. Description of how the proposed project meets the eligibility criteria in the guidance

The project will enhance municipal efforts to better understand the management opportunities available to communities to manage nutrient loads from multiple communities.

Fertilizer use is one of the significant controllable sources of watershed nitrogen entering Pleasant Bay, and citizens often question why more is not being done to reduce fertilizer use before investing in expensive wastewater management facilities. While even a total reduction in fertilizer use would not be adequate to address nitrogen overloading, this controllable source does represent a significant opportunity. However, the towns currently do not have a systematic or comprehensive approach to achieving nitrogen reductions from this source. A comprehensive, effective and verifiable approach to achieve significant nitrogen load reductions from fertilizer use is needed for the Pleasant Bay watershed.

The project will address this need by (1) verifying and clarifying the communities' understanding of nitrogen load from public and private fertilizer user groups in the watershed; (2) identifying and prioritizing the nitrogen reduction potential that is likely to be achievable and verifiable over time from different user groups, (3) providing specific tools, such as bylaws, policies, incentives and voluntary programs, for achieving those reductions, and (4) identifying ways to monitor and measure nitrogen reduction from fertilizer controls in a manner consistent with TMDL compliance standards developed by MassDEP and participating communities.

The project will enhance municipal efforts to evaluate the merits and costs of different management scenarios involving more than one town.

Individual towns within the watershed have expressed a desire to address fertilizer load as an initial nutrient management strategy, ahead of installation of wastewater management facilities. The rational is that by addressing fertilizer load it may be possible to reduce the design capacity needed for wastewater management facilities. In addition, it is felt that load reductions from controlling fertilizer use could be accomplished more quickly than through development of facilities. The project will address these assumptions and provide a detailed assessment of what the feasible nitrogen reduction potential from fertilizer controls is, and provide a road map for achieving, measuring and documenting those reductions. The ability to record and document reductions will be an important consideration of MassDEP when reviewing local nitrogen management programs for compliance with established nitrogen reduction targets.

The project will enhance municipal efforts to evaluate/develop innovative approaches to intermunicipal cooperation.

This project will strengthen intermunicipal efforts to reduce nitrogen load in the Pleasant Bay watershed. It will do this by addressing fertilizer use on a watershed—rather than town-by-town—basis, and developing information, strategies and tools that can be implemented consistently in each of the four towns.

4. Detailed timeline for the project, including an explanation of any need to extend the completion date beyond one year

A time line of project tasks follows:

Month 1 Review and refine scope of the project to encompass tasks 1-6 above.

Month 2 Issue an RFP and select qualified firm(s).

Month 2-5 Selected consultants will accomplish tasks 1-6, working in consultation with the Alliance, and will develop a report of findings and recommended actions.

Month 6 Internal review and comment by Alliance and consultants re: report of findings and recommendations.

Month 8 Final project report from consultants.

Month 9-10 Public dissemination of findings.

Month 11 Project report to CCWPC.

5. Detailed description of the inter-municipal cooperation expected as part of this project (include letters of support for project from participating communities)

This project will be managed and implemented by the Pleasant Bay Resource Management Alliance (Alliance). The Alliance is an inter-municipal organization formed by a Memorandum of Agreement signed by the Boards of Selectmen of the four watershed towns: Orleans, Chatham, Harwich and Brewster. The Alliance was formed in 1998 to implement the locally and state approved resource management plan for the Pleasant Bay Area of Critical Environmental Concern (ACEC) and the watershed. The original resource management plan was updated in 2003 and will be again in 2008. In approving the plan, the Secretary of the Executive Office of Environmental Affairs cited the Alliance as "a model of coordinated municipal and regional planning and management of sensitive resources that other ACECs and communities across the Commonwealth can use as an example."

The Alliance is governed by a Steering Committee made up of representatives of each member town appointed by their respective Selectmen. The Steering Committee is supported by a Technical Resource Committee (TRC) consisting of municipal officials involved in various areas of resource management. Liaisons to the TRC are provided by the Cape Cod Commission, Coastal Zone Management, Cape Cod National Seashore and Massachusetts DCR. The Alliance manages several on-going work groups to facilitate progress on resource management issues and plan recommendations. Wastewater management issues are the focus of our Watershed Work Group. Participants in this work group include the municipal employees and consultants involved in developing Comprehensive Wastewater Management Plans, as well as other TRC and Steering Committee members. Representatives of MassDEP and the MEP attend meetings regularly. This work group reviewed the progress through the MEP and TMDL development, and will provide strategic oversight to the proposed project. The Alliance's professional Coordinator provides day-to-day management of the Alliance, its committees and work groups. The Coordinator will be the person responsible for managing this grant-funded project.

A copy of the Memorandum of Agreement forming the Alliance, and letters of support from the Boards of Selectmen of the four watershed communities, are attached to this application.

6. Detailed project budget, including a description of all sources of project funding and local match funds

The $40,000 requested will be matched by $11,200 (28%) in professional staff and volunteer time applied in developing, managing and reporting on work products. Staff time was calculated using a rate of $44/hour, and volunteer time was calculated using a rate of $20/hour. A budget follows:

Task	Local Match	Grant Funds	Totals
Data collection on use, leaching rates, etc.	800	2,500	3,300
Analysis of fertilizer use and nitrogen loading impact from user groups; Identify and prioritize nitrogen reduction potential that is likely to be achievable and verifiable over time from different user group.	900	12,500	13,400
Research/recommend tools and strategies for achieving targeted fertilizer reductions.	900	12,500	13,400
Develop/recommend monitoring plan to track and measure nitrogen reduction from recommended tools and strategies, consistent with MassDEP compliance standards.	900	10,000	10,900
Outreach to stakeholders	4,200	2,500	6,700
Grant administration & reporting	3,500	--	3,500
Totals	11,200	40,000	51,200

7. Describe how the grant funds will move the towns closer to improving water quality

The project directly addressed nutrient loading in a nitrogen sensitive embayment. The project will provide detailed information on the potential for achieving nitrogen reductions through fertilizer controls, as well as feasible strategies for achieving those reductions. Assuming that fertilizer reductions are achievable across the watershed, the loading reductions would provide a water quality benefit through out the Pleasant Bay system, resulting in improved water quality and associated habitat conditions. Even where fertilizer use and associated load reductions are localized, the benefits would be system wide due to the interconnectedness and water exchanged among subembayments. To the extent that the fertilizer reduction strategies are able to reduce nitrogen loading and achieve progress toward TMDLs, the project will have the indirect benefit of potentially freeing up other capital and human resources to direct toward implementation of other appropriately scaled management strategies.

8. **Describe how the project fits in with the overall approach to reducing nutrient loading and/or improving water quality**

This project will take information about nitrogen load generated by the MEP technical report and TMDL report, and will develop watershed-based strategies to reduce that load. These strategies can then be incorporated in each community's comprehensive wastewater management plan and help further shape nitrogen management policies and actions. The anticipated effects of implementing strategies to achieve this nitrogen reduction potential would be an improvement in water quality and associated habitats in Pleasant Bay.

9. Describe how the project has a high likelihood of success

The project has a clear focus and expected outcome, and lends itself to procurement of a professional research team for completion. There will be staff assigned to monitor the project on an ongoing basis, and incorporate the involvement of municipal and regional resource management professionals, as well as key fertilizer users such as golf courses and professional lawn care companies.

10. Describe plans for reporting the project findings

Early involvement of user groups and stakeholders in the development of the project report and findings will engender interest in the project findings and recommendations. An outreach plan to disseminate information generated by the project will be developed and implemented by the Alliance. The plan will identify targeted audiences, and will tailor strategies to convey information to each audience. It is anticipated that the final project report will be summarized in a press release, and will be available on the Alliance's website. It is also anticipated that the outreach plan will include briefings to the four towns' respective Boards of Selectmen,

Conservation Commissions, and Boards of Health, as well as MassDEP. A briefing will also be provided for key user groups, including golf course managers, professional lawn care companies, landscapers, and homeowners.

The report of findings and recommendations for managing fertilizer use in the watershed will be forwarded to the CCWCP with a cover memo explaining the implications of the work, and any resulting next steps. It is anticipated that the report of recommendations and findings will provide a springboard for additional public outreach and education activities associated with implementation efforts.

MEMORANDUM OF AGREEMENT
Between the Towns of Orleans, Chatham, Harwich and Brewster
TO ESTABLISH THE PLEASANT BAY RESOURCE MANAGEMENT ALLIANCE

Article I. Recitals

WHEREAS, the estuary known as Pleasant Bay lies within the municipal boundaries of Orleans, Chatham, Harwich and Brewster, and

WHEREAS, in 1995 the four towns entered into an agreement to develop a resource management plan ("plan") to protect the vast natural resources of the Bay, and

WHEREAS, the agreement established as a goal of the plan to have the towns adopt uniform polices and regulations for the management of the Bay, and

WHEREAS, the plan developed in accordance with the agreement provides management recommendations concerning the towns' policies and regulations relative to water quality, wetlands, wildlife, fisheries, boating, shorelines structures, and public access, and

WHEREAS, the Towns of Harwich, Orleans, Chatham and Brewster have approved the plan and the five-year plan update;

NOW THEREFORE, the undersigned towns, in consideration of the mutual covenants contained herein, hereby agree as follows:

Article II. Policy and Purpose

1. This agreement forms the Pleasant Bay Resource Management Alliance ("Alliance"). Through participation in the Alliance the undersigned towns agree to implement the plan recommendations, acting by and through their designated officers, employees or agents. The towns also agree to seek funding through Town Meeting for implementation of the plan in accordance with the terms of this agreement.
2. Each town participating in the Alliance shall retain authority over the resources and activities within its jurisdiction. The Alliance shall coordinate, and not duplicate or compete with, the functions of existing regulatory and planning organizations in each of the undersigned towns as they pertain to the Pleasant Bay Resource Management Plan.

Article III: Steering Committee

1. A Steering Committee shall be created, with one member appointed by the Board of Selectmen of each undersigned town.
2. The Board of Selectmen of each undersigned town may appoint an alternate Steering Committee member. Such alternate shall not have voting privileges unless authorized

by the appointed Steering Committee member for the town to vote as proxy for said member.

3. The members of the Steering Committee shall serve at the pleasure of the Board of Selectmen of the Town by whom they were appointed.
4. Provided there is a quorum of three-quarters of the members or designated alternates present, the Steering Committee shall act by majority vote.
5. The Steering Committee shall elect a Chairman, Vice-Chairman, and Treasurer/Secretary.
6. During any fiscal year for which a Town Meeting in one or more of the undersigned towns fails to appropriate funds in accordance with the provisions of Article IV of this agreement, the Steering Committee member from such town shall serve as an ex officio member and shall not vote.
7. The Steering Committee shall be authorized to expend funds, subject to the conditions contained herein, from the Pleasant Bay Resource Management Alliance Account. The Steering Committee shall have no authority to contract for services or expend funds in excess of the amount available in said account. All contracts shall be in writing and no contract shall be entered into without a certification of the Town of Chatham Director of Finance.
8. The Steering Committee shall have overall responsibility and accountability for coordinating with officers, employees or agents of the undersigned towns to implement the plan.

Article IV: Technical Resource Committee

1. A Technical Resource Committee shall be created, with four members from each of the undersigned towns. The Committee members may include the harbormaster, shellfish constable, conservation agent, town planner, (or their equivalent as determined by the town's Board of Selectmen), of each undersigned town.
2. The members of the Technical Resource Committee representing each town shall be appointed annually by their respective Board of Selectmen. Appointments to the Technical Resource Committee by each of the Boards of Selectmen of the undersigned towns should be made by June 30th for the following fiscal year.
3. The Technical Resource Committee shall provide technical assistance, advice, and recommendations to the Steering Committee in the implementation of the plan.

Article V: Alliance Account

1. An account shall be established under the jurisdiction of the Town of Chatham Director of Finance to be known as the Pleasant Bay Resource Management Alliance Account ("Alliance Account").
2. The Alliance Account shall be the depository for all non-municipal funds and municipal appropriations made for the implementation of the plan.
3. Expenditures from the Alliance Account shall be authorized by a majority vote of the Steering Committee as provided herein. Any expenditure so authorized shall be

subject to the customary and ordinary requirements for the expenditure of funds in the Town of Chatham.

4. The Steering Committee is authorized to release funds from the Alliance Account for consultant services, or other goods and services related to the Pleasant Bay Resource Management Plan's implementation.

Article VI: Budgeting and Reporting

1. The Steering Committee shall prepare a proposed annual budget and operating plan for the coming fiscal year.
2. The proposed annual budget and operating plan shall be presented to the Boards of Selectmen of the undersigned towns per each town annual budget schedule.
3. The proposed annual budget shall indicate the amount of funds requested from the Towns of Orleans, Chatham, Harwich and Brewster for the coming fiscal year, as well as the amount and source of all non-municipal funds. The total amount of funds requested from the Towns of Orleans, Chatham, Harwich and Brewster, shall be apportioned as follows: thirty-five (35) percent to Orleans, thirty-five (35) percent to Chatham, eighteen (18) percent to Harwich, and twelve (12) percent to Brewster. In accord with current practice, all participating towns shall include their share of funds as a line item in their annual town budget.
4. The proposed annual budget shall present the expenditures planned for the coming year.
5. At the end of each fiscal year the Steering Committee shall submit a financial statement and a report of activities to the Boards of Selectmen of the undersigned towns to be publicized in annual town reports.
6. Funds in the Alliance Account not expended by the end of the current fiscal year shall remain in said account and applied toward approved expenditures related to the implementation of the Pleasant Bay Resource Management Plan in the following fiscal year.

Article VII: Renewal and Termination

1. The approved plan shall be reviewed and updated as necessary every five years. Any proposed amendments to the approved plan shall be submitted to the Board of Selectmen in each of the undersigned towns for review and may be submitted to Town Meetings in the undersigned towns for approval.
2. This agreement shall expire December 1, 2008 unless prior to that date the undersigned towns take action either to extend or terminate the agreement.
3. Upon termination of the Alliance, the assets remaining in the Alliance Account after all outstanding obligations have been paid shall be returned to the source of funds. If the source of funds is not discernible, then remaining funds shall be distributed among the undersigned towns in accordance with Article IV. Section 3 of this agreement.
4. This agreement shall be subject to the applicable provisions of General Laws, Chapter 40, Section 4A governing contracts between municipalities except such provisions of

Chapter 40, Section 4A requiring Town Meeting approval in which case each town's process shall be governed by applicable provisions of that town's Home Rule Charter.

Executed this day of , 2007 by

_____	_____
Chatham Board of Selectmen	Harwich Board of Selectmen
_____	_____
Orleans Board of Selectmen	Brewster Board of Selectmen