RESPONSE TO COMMENTS
DRAFT TMDL REPORT FOR THE PHINNEYS HARBOR SYSTEM
(Report Dated October 14, 2006)

Thomas C. Cambareri, Water Resources Program Manager, Cape Cod Commission

Comment (1): In order to begin the MEP analysis of an estuary, three years worth of water quality data are necessary, but it is unclear at this point what sort of monitoring will be necessary to ensure TMDL compliance. We look to DEP's continued participation in local and regional discussions to develop appropriate monitoring compliance.

Response: **The Department is of the opinion that there are two forms of monitoring that are useful to determine progress towards achieving compliance with the TMDL keeping in mind that MassDEP's position is that implementation will be conducted in an iterative process where adjustments may be needed along the way. The two forms include 1) tracking implementation progress as approved in the Town CWMP plan and 2) monitoring ambient water quality conditions at the sentinel stations identified in the MEP Technical Report.**

As you are aware the CWMP will evaluate various options to achieve the goals set out in the TMDL and Technical Report. It will also make a final recommendation based on existing or additional modeling runs, set out required activities, and identify a schedule to achieve the most cost effective solution that will result in compliance with the TMDL. Once approved by the Department tracking progress on the agreed upon plan will, in effect, also be tracking progress towards water quality improvements in conformance with the TMDL.

Relative to water quality, the Department believes that an ambient monitoring program, much reduced from the data collection activities needed to properly assess conditions and to populate the model, will be important to determine actual compliance with water quality standards. Although the TMDL load values are not fixed, the target threshold nitrogen concentrations at the primary and sentinel stations are fixed. In addition, there are target threshold N concentrations that are provided for many other non-sentinel locations in subembayments to protect nearshore benthic habitat. These are the water quality targets, and a monitoring program should encompass these stations at a minimum. Through discussions amongst the MEP it is generally agreed that existing monitoring programs, which were designed to thoroughly assess conditions and populate water quality models, could be substantially reduced for compliance monitoring purposes. Although more specific details need to be developed the Department's current thinking is that about half the current effort (using the same data collection procedures) would be sufficient to monitor compliance over time and to observe trends in water quality changes. In addition, the benthic habitat and communities would require periodic monitoring on a frequency of about every 3-5 years. Finally, in addition to the above, existing monitoring conducted by MassDEP for eelgrass should continue into the future to observe any changes that may occur to eelgrass populations as a result of restoration efforts. It should be noted that the Department recognizes that any effort will be a financial burden to implement and as such we are seeking ways to help fund future monitoring activities.

The MEP will continue working with the Town to develop and refine monitoring plans that remain consistent with the goals of the TMDL. It must be recognized however that development and implementation of a monitoring plan will take some time but it is more important at this point to focus efforts on reducing existing watershed loads to achieve water quality goals.

Comment (2): Will additional state funding, either for monitoring and/or planning, be made available to Bourne to assist them with implementation once they have the final TMDLs?
Response: Towns that are addressing impairments identified in an approved TMDL receive increased priority points in the SRF Program. Presently no other funding is available, however MassDEP has requested additional funding under the Environmental Bond to support ongoing monitoring activities. Some monitoring (i.e. eelgrass) will be conducted under the MassDEP's eelgrass mapping program. Water quality monitoring will likely be the responsibility of the community while benthic infaunal monitoring may be a shared MassDEP/community endeavor.

Comment (3 The "Reasonable Assurances" section of the TMDL states that the daily loads "will not be used as an enforcement tool." As the daily loads cited in the TMDL are one example of how a community might meet the water quality thresholds, these loads could be used as an enforcement tool by a town or the region, especially in an interim period prior to a completed CWMP. Perhaps the more correct statement is that the daily loads will not be used "by DEP" as an enforcement tool.
Response: : The suggested change has been made in this and all other pending TMDL documents. MassDEP prefers to work cooperatively with communities to protect and restore impaired waters. This is especially true when pollution comes from nonpoint sources such as stormwater runoff and on-site wastewater disposal, and where solutions are less straightforward than additional treatment of a point source discharge.

As long as a plan is developed and actions are being taken at a reasonable pace to achieve the goals of the TMDL, MassDEP will use discretion in taking enforcement steps. However, in the event that reasonable progress is not being made, MassDEP can take enforcement action through the broad authority granted by the Massachusetts Clean Waters Act, the Massachusetts Water Quality Standards, and through point source discharge permits.

Comment (4): As currently stated, DEP will be implementing TMDL compliance through the Groundwater Discharge Permit program (for flows greater than 10,000 gpd) and through review of CWMPs. Given that most of Cape Cod relies on septic systems as the primary means of wastewater treatment, this means that most interim activities prior to the completion of a CWMP will continue to be the responsibility of Boards of Health. Will DEP be developing guidance to assist Boards of Health with issues to consider prior to the completion of a CWMP for estuaries with documented water quality problems?
Response: The implementation guidance document that the MassDEP issued in 2003 covers many aspects of nitrogen control, pertaining to all sources of nitrogen, and a wide variety of implementation processes that can serve as interim controls. This document, the "Massachusetts Estuaries Project Embayment Restoration and Guidance for Implementation Strategies, 2003" can be obtained on line at http://www.mass.gov/dep/water/resources/mamep.doc
Other than the implementation guidance document, MassDEP is not developing guidance to assist Boards of Health with issues to consider prior to the completion of a CWMP for estuaries with documented water quality problems. MassDEP however believes this is worth further discussion. MassDEP has however supported the concept of escrow accounts established under local or state consent orders to help address difficult Title 5 issues and will continue to support such initiatives.

Comment (5): A watershed map that matches the TMDLs segment names to the contributing watersheds should be included. This will help show the interaction of the whole systems, both watershed and estuary, and assist in implementation discussions.
Response: This map appears as Figure 5 on page 6 of the draft TMDL document that was sent out for public review.

Korrin N. Petersen, Esq., Advocacy Director, Coalition for Buzzards Bay

Comment (6): Phinneys Harbor - Impaired for Nutrients. During the development of this TMDL, Phinneys Harbor was determined to be impaired for nutrients. (Draft Phinneys Harbor Embayment System Total Maximum Daily Loads for Total Nitrogen 95-TMDL-2 CN#245.0 page i) The Coalition expects that Phinneys Harbor will now appear on the 2008 impaired waters list as impaired for nutrients pursuant to the requirements of section 30 3(d) of the Federal Clean Water Act.
Response: This segment will be listed in the 2008 Integrated List of waters in category 5, impaired for nutrients.

Comment (7): Implementation Plans. US EPA's guidance for developing nutrient TMDLs clearly requires States to include implementation plans for impaired waters. The Coalition agrees that the critical element in restoring water quality to Phinneys Harbor is through the town of Bourne actively working to implement this TMDL. That is why the Coalition requests that the language in this TMDL be amended on page 21 to require the local community to use this TMDL as a management tool as opposed to merely suggesting its use. Furthermore, the Coalition requests that the DEP retract its statement in this draft TMDL that the TMDL "will not be used as an enforcement tool, but may be used by local communities as a management tool." And replace it with the following: "As the towns implement this TMDL, the TMDL values (kg/day of nitrogen) may not be used as an enforcement tool, but must be used by local communities as a management tool." The DEP must be prepared to enforce this requirement and insure that towns move towards implementation of TMDLs in order to properly comply with the Federal Clean Water Act.
Response: MassDEP prefers to work cooperatively with communities to protect and restore impaired waters. This is especially true when pollution comes from nonpoint sources such as stormwater runoff and on-site wastewater disposal, and where solutions are less straightforward than additional treatment of a point source discharge.

As long as a plan is developed and actions are being taken at a reasonable pace to achieve the goals of the TMDL, MassDEP will use discretion in taking enforcement steps. However, in the event that reasonable progress is not being made, MassDEP can take enforcement action through the broad authority granted by the Massachusetts Clean Waters Act, the Massachusetts Water Quality Standards, and through point source discharge permits.

Finally, as a point of clarification EPA guidance does indeed encourage states to develop implementation plans as part of TMDL development however it is not a regulatory requirement that it must be included in the TMDL nor does EPA formally approve it.

David B. Mason, RS, CHO, Health Agent, Town of Sandwich

Comment (8): The Town of Sandwich as defined by Town Lines is determined to be within the watershed for Phinneys Harbor based on a review of Figure 5 Sub Watershed and Town Boundaries on Page 6. A review of the report specifically states that the Town of Sandwich is within the Phinneys Harbor Watershed.

The specific comment and requested insert is that the report fails to mention the Massachusetts Military Reservation (MMR), which is located within the Town of Sandwich and that the MMR controls the land that is within the watershed of Phinneys Harbor. The MMR should be identified in the report as a participant in this process and as the responsible party for that portion of land within the Phinneys Harbor Watershed that is within the Town of Sandwich.

Response: The need for protection of the entire watershed of the Phinneys Harbor system, including the portions in Bourne, Sandwich, and the Military Reservation, has been added to the TMDL document on pages 5 and 12.

George Seaver, Ph.D., P.E., Cataumet, MA

Comment (9): The land-based TMDL's are essentially for nitrate (septic systems, road run-off), whereas the measurement in the estuaries is of total nitrogen. However, there are many other causes of "total nitrogen" in estuaries. This amount is determined by nutrients (nitrate), as well as estuary depth, temperature, zooplankton, currents, etc.).
Response: The MEP "process" includes the measuring and modeling of all species of nitrogen that, when added together, are presented as the total concentration of all species, or forms, of nitrogen. This approach assures that all the different forms of nitrogen, from all possible sources, are included in the development of an accurate view of the existing conditions as well as the best estimate of what reductions are needed to restore the waters.

Comment (10): There are perhaps 12 known causes of loss of eel grass (CZM, 2007); there are also many instances where eel grass has disappeared with no "shading" from plant growth. Stating that loss of eel grass proves nitrogen loading results in a circular argument. Finally, Dr. Howes was asked at the May 31st presentation of the TMDL's if there were any known cases where a reduction in total nitrogen resulted in a restoration of Eel Grass. Dr. Howes' answer was "no".
Response: The problems resulting from excess N are well-documented; they include algae blooms, low dissolved oxygen, decreased diversity of estuarine animals, loss of eelgrass, increased macro-algae, and fish kills (in extreme cases). Coastal scientists have been able to determine, to varying degrees, the ranges of N concentrations that lead to these various impacts. A minimum of 3 years of sampling have shown that the N concentrations in Phinneys Harbor have recently exceeded "safe" levels of N, and reductions are recommended in order to restore and protect the harbor. Because of the demonstrated link between eelgrass distribution and the concentration of N, historic eelgrass presence is used as a means of setting restoration targets. Based on known science, the marine environment will not be restored with the concentrations of N that presently exist in the system. It is recognized that other factors such as circulation, light penetration, and other factors also play a role in the establishment of eelgrass and may limit the extent of eelgrass coverage in some areas of the harbor. However, unless nitrogen concentrations are reduced to the indicated levels further eelgrass degradation will continue. Eelgrass loss has been observed since 1951 and has been correlated with an increase in nitrogen not only in Phinney's Harbor but throughout Cape Cod. It is the goal of this TMDL to reduce nitrogen concentrations so these areas can be reestablished.

Comment (11): Since the 1996 initiation of secondary treatment at the New Bedford sewage treatment plant, nitrate levels throughout Buzzards Bay have dramatically decreased and continue to do so (Turner, 2001). Also, the Estuaries Project data for Phinneys Harbor, station C4, from 1994 to 2005 shows a decrease for total nitrogen (regression slope = -.007 mg/l-yr). These improving trend results are supported by the EPA's *National Coastal Condition Report, Northeast Coastal Condition* (January 2005), and by the National Atmospheric Deposition Program trends for nitrate precipitation on Cape Cod between 1984 and 2007.
Response: Even though the concentrations of N in Buzzards Bay may have decreased in recent years, the concentrations in many embayments in southeastern Massachusetts remain high enough to cause nutrient-related problems, to some extent, in many of the estuaries in that region.

Linda Zuern, concerned citizen, Board of Selectmen
Comment (12): Several people who have been life-long residents of Bourne have told me that they remember eel grass growing in Eel Pond or around the edges of the pond. Why does the draft report state that

there is no indication of eel grass ever being in that area? How was that conclusion determined? Did anyone from the DEP interview residents?
Response: A search of credible scientific evidence of historic eelgrass distribution served as the basis for setting restoration targets for this system. MassDEP believes that the restoration targets set for this system will result in achievement of water quality standards and restoration of all uses of these waters, including healthy benthic habitat in Eel pond. Our laws allow for municipalities to set limits more stringent than those set by State and Federal regulations. Therefore Bourne can set more rigorous restoration targets by lowering the N concentrations beyond those required by this TMDL. Remember, this is document sets the maximum loading of N that will maintain water quality standards.

Comment (13): I have been told that eel grass in Eel Pond has disappeared and come back again in cycles over the past fifty years. Therefore, how was it determined that the loss of eel grass in Phinney's Harbor is due to nitrogen loading?
Response: Please see the response to comment #10 above.

Comment (14): Were the effect of boats in the harbor and the paint used on boats considered as causes of the loss of grass?
Response: Please see the response to comment #10 above. Boats can certainly impact the establishment of eelgrass, particularly in shallow areas, because of increased turbidity followed by a decrease in light attenuation. It is unclear what if any impacts to eelgrass are caused by boat paint.

Comment (15): Were the streams and wetlands that flow into Back River looked at as possible sources of nitrogen? I have been told that streams as far as Bourne Village near the apartments on Sandwich Road contribute to Back River, along with streams around Shaker Drive, Brookside and the Brookside Golf Course. Were those areas considered or researched as sources? If, not, why not?
Response: The loadings of N from all surface and groundwater sources within the entire contributing watershed were determined for the analyses presented in the accompanying technical report.

Comment (16): I don't agree that hooking the houses along Clay Pond Road all the way up to Valley Bars Road to a sewer system with a waste water treatment plant is going to solve any problems. The area in Monument Beach where that water is discharging is being flushed by the tides, according to the modeling system that was presented at the public meetings. I'm also not convinced that there are no other sources contributing to the nitrogen levels in this area than from Clay Pond Road, and probably contributing much higher levels of nitrogen than Clay Pond Road.
Response: Additional modeling runs will be conducted to fine tune the estimates of sewering strategies that will result in the most cost-effective means of reducing N loadings in the most critical areas. These model runs will be conducted with input from local authorities, their consultants, and citizens, who have full knowledge of local conditions that will impact the desired reductions.

Comment (17): According to the EPA's reports of the Cape Cod area's nitrogen levels, the water is at a good level and improving. Why then are expensive treatment plants being pushed onto the municipalities by the DEP and EPA?
Response: Please see answer to comment #11 above.

Comment (18): Back River and Eel Pond apparently had an abundance of shellfish at one time. Since shellfish thrive on nitrogen, wouldn't a more balanced, natural solution of returning shellfish to this area be a more desirable, logical way to solve the problem?
Response: The N concentration targets were set for Back River and Eel Pond expressly for the purpose of restoring the benthic community, which includes shellfish.

Comment (19): I hope the DEP will work more closely with the municipalities in solving problems and be more open to natural alternatives. Suggesting that the town of Bourne have a treatment plant for Clay Pond Road is not a viable solution fiscally, nor would it truly bring down the levels of nitrogen in Back River or Eel Pond if there are other contributing sources.
Response: SMAST will have ample opportunity to conduct additional model runs, at the behest of the Town, to fine tune the loading scenarios that will result in the most cost-effective means of lowering N concentrations in order to restore and protect the estuary.

Comment (20): It was said at the public meetings that the DEP is looking at the "source" of the nitrogen. I don't believe the true sources have been addressed and hope they will be indicated in the DEP's final report so that the town of Bourne can address the real problems if there are any.
Response: All the known sources of N into the embayment system have been monitored and modeled as part of the MEP process. There has been, and will continue to be, ample opportunity for residents to participate in the process, including pointing out sources that the SMAST scientists, the Cape Cod Commission, and Town officials might have missed.