MEMORANDUM

TO: Brian Donahoe
Russ Isaac
FROM: Joe Costa
DATE: April 28, 1993
RE: nitrogen issues
cc: Jeff Benoit

As you know, tomorrow the two of you are coming down to Marion to meet with me, Bruce Rosinoff, and Dave Janik to discuss the DEP commitment in the Buzzards Bay CCMP to manage nitrogen inputs to Massachusetts' coastal waters. In particular, we hope to discuss how the management strategy outlined by the Buzzards Bay Project can help the state meet its management goals and how the Buzzards Bay Project can assist DEP in meeting our mutual goals. Below I summarize some of the points we will make.

Overview

There has been much discussion about how the state can manage non-point sources of nitrogen, and what role the Surface Water Quality Standards and Title 5 can play. It is apparent that controlling nitrogen inputs to drinking water supplies and coastal waters is a high priority management issue. Whatever our intent, nitrogen management remains a difficult issue for the state to tackle because of both technical issues and the regulatory framework in Massachusetts. The State agencies will continue to have difficulties managing cumulative impacts of non-point sources of nitrogen because of workload constraints, but more importantly, because most planning and land use decisions that cumulatively cause these impacts are made at the local level, with little state involvement. Despite these obstacles, there are many opportunities for the state to show leadership in nitrogen management. The Buzzards Bay Project has commented on many occasions to individuals throughout the agency on nitrogen issues. Below I summarize some of the points we have made in the past on the topic.

BBP nitrogen management strategy

In the Buzzards Bay Comprehensive Conservation and Management Plan (CCMP), the Buzzards Bay Project lays out an approach to manage nitrogen which we believe can be effective in tackling this problem. The three key elements of the nitrogen management strategy are:

❍ **adoption of sub-basins that identify the embayment's watershed**

The Buzzards Bay Project and Cape Cod Commission have already delineated the sub-basins to the major embayments in our management areas. These delineations have been entered into the Massachusetts GIS. Eventually MassBays will complete their delineations.

❍ **establishment of embayment specific annual nitrogen loading limits**

These limits should take into account embayment area, volume, and water turnover times. These annual nitrogen loading limits should either be the limits recommended in the CCMP which we believe reflect the best available scientific information, or in the case of embayments already impacted, loading rates that existed before the onset of undesirable water quality and living resource degradation would be used as the appropriate nitrogen loading limit. These limits can be adopted by both state and local authorities.

❍ **adoption of a mass loading approach**

This strategy is identical to that used to protect groundwater drinking supplies. A theoretical mass loading evaluation is used as the basis of management decisions rather than water quality conditions because of lags between groundwater nitrogen inputs and inputs into coastal waters, and other technical limitations.

Implementation strategy

Successful implementation of this management strategy requires both state and local participation (and coordination). Action by municipalities is critical if nitrogen from non-point sources is to be adequately managed since only the municipalities can change zoning, plan growth, procure open space, adopt locally specific health regulations, enforce loading limits on new development and subdivisions (embayment sub-basin specific lb of N/acre loading limits). Although we must depend on local action, there is much that the state can do to promote these and other changes by local government. State action is particularly important because only the more proactive and progressive communities may elect to manage nitrogen.

Actions by the state fall in two general areas:

1) The state needs to adopt either the nitrogen loading limits proposed by the Project or some other tiered system of limits in its Surface Water Quality Standards. The Surface Water Quality Standards would also need to define sub-basin boundaries or reference existing boundaries entered on the MassGIS. This would enable the state to review all permitted discharges, particularly sewage outfalls. (For the state to apply these limits it would have to require that the proponent or town conduct a build-out analysis of the sub-basin. This would allow calculation of an appropriate loading limit (# of N/acre) as a standard for that embayment's sub-basin). The adoption of loading limits in the Surface Water Quality Standards will provide important leadership to the communities and make them more accepting of loading limits to coastal embayments.

2) The state needs to amend Title 5 to:

a) Require lower development densities (i.e. lower N loading rates) in sensitive areas as a minimum level of protection.

b) Allow towns to require even lower densities of development if a build-out analysis shows they are necessary.

c) Include within Title 5 a process to enable towns to require nitrogen removal systems for existing **and** new development.

d) Allow DEP the authority to state the reasonable assumed amount of N-removal for each type of alternative nitrogen removal wastewater system.

With respect to lot size, there is no single limit that would be protective of all embayments (even 330 or 220 gpd/acre is too high for some areas), and the regulations must be written in a way to enable municipalities to require lower dosage requirements (the regulations should continue to be a **minimum** code). By amending Title 5 in this way, the state can bring along the municipalities that are lagging behind, but still enable other more progressive municipalities to adopt more stringent requirements when they feel it is warranted.

With respect to alternative systems, the state must define a process to rate the efficiency of all systems for nitrogen removal so that communities can make decisions regarding efficiency and the general public can make decisions regarding the cost effectiveness.

I hope you have found these comments useful, and I hope to discuss the matter further with you.