Town of Orleans

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George Meservey

Director of Planning & Community Development

March 11, 2011

Roger Putnam, Commissioner
Cape Cod Commission
P.O. Box 226
Barnstable, MA. 02630

RE: Orleans Comprehensive Wastewater Management Plan (CWMP), Response to comments at March 1 Public Hearing

Dear Mr. Putnam:

At the March 1, 2011 public hearing on the Orleans CWMP, several comments were made which warrant a response by the Town. This letter was prepared to provide the Subcommittee and Commission staff with information to support your review of the Orleans CWMP as a Development of Regional Impact. As we have done in previous letters, below are the issues that were raised along with a response to each.

Shellfish closure near site and high fecal coliform

Namskaket Creek, Little Namskaket Creek and Rock Harbor have been closed to shellfishing since the mid-1980s due to high counts of fecal coliform bacteria. Bacteria levels measured in Namskaket Creek are consistent with levels in salt marshes throughout Cape Cod Bay. The commencement of treatment activities at the Tri-town Septage Treatment Facility postdate the closure and therefore did not cause it. The most recent coliform counts by the MA Dept. of Marine Fisheries inside the creek in July 2009 showed levels of 40-80 coliforms/ 100 ml. These levels prohibit the taking of shellfish but are within the safe range for recreation and swimming, in accordance with DMF regulations.

Reclassify Rock Harbor under the MEP

Rock Harbor is the subject of a December 2008 report of the Massachusetts Estuaries Project which indicates 70% of the septic nitrogen load must be removed from the watershed to achieve the targeted water quality. The CWMP recommended plan includes connecting a sufficient number of parcels in this watershed to sewer to achieve this nitrogen removal target.

Some residents have asserted that the MEP Report recommendations will not result in habitat restoration of the harbor due to the poor flushing characteristics of the dredged harbor. These residents have suggested that the water quality classification for Rock Harbor be lowered. The Department of Environmental Protection has responded that the water quality target must be achieved to support a healthy water body.

Cedar Pond Treatment Options

The Town has applied for funding to conduct a study of management options for Cedar Pond, a brackish pond which empties into the upper portion of the salt marsh connected to Rock Harbor. This study is expected to be completed prior to or during the preliminary design phase of the project (~2013) and the results of the study will be incorporated into the CWMP as appropriate. Parts of the Rock Harbor groundwater basin, which reaches into the downtown area of Orleans, are planned for sewering in Phase 1, but the majority of the sewering in the groundwater basin will not occur until Phase 4 or later. Therefore, the phasing plan will allow for the CWMP to be adapted as new information becomes available.

George Hofe Conservation Land

One resident stated that treatment facility effluent would impact land under an existing conservation easement. Dr. Peter Weiskel of the United States Geological Survey (USGS) reported during the March 1 hearing that monitoring by USGS has not detected an increase in nitrogen. Dr. Weiskel also reported that other indicators of Namskaket Creek water quality degradation are not evident from the Tri-town plume. The Orleans CWMP proposes to collect wastewater, treat it to a high quality, and discharge it into rapid infiltration beds that are located at least 25 feet above the groundwater table. The proposed infiltration beds are located a minimum of 600 feet away from marine resources. Engineering reports from the USGS, MassDEP and the Town's Consultant Wright-Pierce indicate that the conversion of the Tri-town Septage Treatment Facility to sewage treatment facility will not have an adverse effect on conservation land in Namskaket Creek. A letter from the Orleans Conservation Trust dated March 1, 2011 indicated the organization has not taken a position on the Orleans CWMP. The letter was previously submitted to the Cape Cod Commission.

Namskaket Creek salinity change

Several residents commented that the proposed sewage treatment facility will alter the salinity of the salt marsh and impact its natural balance. Dr. Peter Weiskel indicated in his remarks that groundwater entering creek bottom water at low tide is already very low in salinity, in the range of 1-3 parts per thousand. He further stated that the infusion of freshwater is a defining characteristic of salt marsh systems and is natural. Wright-Pierce has supplied an evaluation of the potential for freshwater inputs to Namskaket Creek system from the proposed sewer facility, which is attached to this letter. The memo indicates that the freshwater inputs to the Creek system will increase from 1.5% of the tidal prism to 1.7% when the total volume of the Core Program is realized (~2032-2035).

Protection of Herring run

One resident commented that there is an historic herring run in Namskaket Creek and that the proposed sewage treatment facility and disposal beds will have a negative effect. Town of Orleans Harbormaster Dawson Farber has indicated that herring have not been observed in the creek, and that there is no historical record of a herring run within the resource area. An inventory of herring runs from the early 1900s listed two herring runs in Orleans, but not at Namskaket Creek.

Allocate Assimilative Capacity in Namskaket Marsh

A comment was made by a member of the Brewster Water Planning Committee suggesting that the assimilative capacity of Namskaket Creek should be allocated to the towns that abut the two sides of the creek. Response - When the full Core Plan of the Orleans CWMP has been implemented (2032-2035), the combined septic nitrogen load from Brewster and Orleans sources will be 37% of the estimated 37,000 pound assimilative capacity of the Namskaket system. It appears unnecessary to allocate that capacity. See March 9, 2011 memo from Wright-Pierce, attached to this letter.

Document Peak Traffic and Sight Distance

An attached memo from Wright-Pierce has calculated traffic volume at the Tri-town Septage Treatment Facility at less than 25 peak hour trips at present, with a projected ***decrease*** *of 13% in annual trips to the site. The proposed sewage treatment facility will result in less than 25 peak hour trips.*

Sight distance at the intersection Overland Way and Bay Ridge Lane was evaluated by Orleans Highway Manager Mark Budnick on March 9, 2011. Visibility to the right (toward Route 6A) is 350 feet+ with no obstructions. Visibility to the left is 235 feet. This visibility is partly obstructed by a large sign for the existing treatment plant. When the sewer facility is constructed, the sign will be replaced with a new sign that will be lower to the ground to improve visibility.

Based on information from the 2001 AASHTO Green Book, minimum sight distance for a 30 mph road is 140 feet, which the project intersection exceeds. It is noteworthy that beyond the Overland Way intersection, Bay Ridge Lane and Oak Ridge Lane are small dead end streets with very low traffic volumes and low speeds. In total, the roads provide access to 3 commercial properties and 7 residential properties.

The Town of Orleans has taken great care to develop a wastewater management plan to address the nutrient control needs of the community far into the future. The plan is responsible in its selection of collection, treatment and disposal technologies, and is the most cost-effective of the alternatives that were reviewed. Outside agencies at the state and federal level have reviewed aspects of the plan and agreed that the plan is appropriate for the community and Cape Cod. We hope that you will agree and approve the project as a DRI.

Town representatives are prepared to discuss any of the information contained herein with you at your convenience. We look forward to your deliberations on the Orleans CWMP.

Sincerely,

George Meservey
Planning Director

Cc: Town Administrator

ORLEANS CONSERVATION TRUST

Preserving Land Since 1970

March 1, 2011

To Whom It May Concern:

RE: Proposed Orleans Wastewater Treatment Project

The Orleans Conservation Trust has seen no reason to take a stand on this issue at this time. The Trust will continue to monitor the proposed project and its impact on Namskaket Marsh.

The Orleans Conservation Trust is making this statement at this time to preclude others from speaking on our behalf.

Linde MacLeod, President
Orleans Conservation Trust

WRIGHT-PIERCE
Engineering a Better Environment

MEMORANDUM

TO:	George Meservey, Orleans	DATE:	8 March 2011
FROM:	Mike Giggey, Ed Leonard	PROJECT NO.:	10645G
SUBJECT:	Orleans CWMP Namskaket System Salinity		

A number of questions were raised at the 1 March 2011 DRI Public Hearing regarding the impact of the increased freshwater discharge to the Namskaket System watershed on the salinity of Namskaket Creek.

According to the MEP Report, the Namskaket System has very good tidal exchange, with a typical residence time of 0.3 days and tide prism volume of 19,799,000 cubic feet (or 147.5 million gallons). The MEP Report identifies the salinity at the estuary boundary (outlet of Namskaket Creek) at 30.8 parts per thousand (ppt) and the average salinity at the upstream portion of the creek is estimated at 15 ppt.

The Core Plan will result in an additional 0.64-mgd of freshwater recharge to the Namskaket System by 2035, which represents a 9% increase over current conditions. (Note, the 6% increase in recharge presented at the DRI hearing was relative to the total Cape Cod Bay System, whereas the 9% increase in recharge is relative to just for the Namskaket System.) This additional volume also represents an increase from 1.5% of the tide prism under current conditions to 1.7% of the tide prism at the completion of the Core Plan. While salinity will be reduced, it is clear from these numbers that it would be a minor change. Given that the flora and fauna in an estuary with good tidal exchange will observe a range of salinity from approximately 0 ppt to ~30ppt twice per day, this minor reduction in average salinity does not appear significant.

WRIGHT-PIERCE
Engineering a Better Environment

MEMORANDUM

TO:	George Meservey, Orleans	DATE:	9 March 2011
FROM:	Mike Giggey	PROJECT NO.:	10634G
SUBJECT:	Orleans Comprehensive Wastewater Management Plan DRI Hearing: Allocation of Assimilative Capacity in Namskaket System		

At the DRI hearing on March 1, 2011, Brewster representatives raised the issue of allocating the assimilative capacity in the Namskaket system between the Towns of Brewster and Orleans. The purpose of this memo is to suggest an approach to deal with this comment. We believe that the following facts are important to this matter:

1. Current wastewater-related nitrogen loads to the Namskaket system are approximately 11,000 pounds per year. With the elimination of the Tri-Town Septage Treatment Facility and the construction of the recommended wastewater treatment facility, that load will not change appreciably. With growth in both Orleans and Brewster, that load will grow to about 14,000 pounds.
2. Watershed nitrogen loads associated with fertilization and stormwater disposal add about 3,000 pounds per year to the wastewater-related loads.
3. The total assimilative capacity in the Namskaket system has been estimated at 37,000 pounds per year by the MEP technical team (MEP Final Report, December 2008).
4. Wastewater loads represent about 30% (both current conditions and with new facility) to 37% (new facility with growth) of the assimilative capacity. When fertilizer and stormwater are included, the watershed loads represent 38% to 45% of the assimilative capacity.
5. The assimilation of nitrogen occurs largely in the creek channels that traverse the marsh. The main channel, Namskaket Creek, forms the boundary between Orleans and Brewster.
6. Today, 40% of the wastewater-related load comes from septic systems in Brewster. The remainder of the current load (60%) originates in Orleans, and includes septic systems and the Tri-Town discharge.

Both towns now use the Namskaket assimilative capacity. Looking into the future, there is no proposed or anticipated source of nitrogen that will cause the watershed load to exceed even 50% of that assimilative capacity. Therefore, there appears to be no need to allocate that capacity.

When Orleans applies for its groundwater discharge permit, more will be known about the movement of the Tri-Town plume, and Brewster should have completed its CWMP. That document should quantify the likely growth in the Brewster portion of the watershed and identify any new nitrogen loads that Brewster may propose. Perhaps these loading estimates could be revisited at that time, and if appropriate, the towns could initiate further discussions on how to allocate the assimilative capacity. Given that the towns have equal shoreline along the Creek, and that 60% of current loads originate in Orleans, it seems unlikely that such discussions, if needed at all, would result in a situation where the planning for the proposed Orleans wastewater facility would be impacted. Regardless of our projections today, the completion of the Brewster CWMP should produce valuable information that can be addressed as part of Orleans' application for a groundwater discharge permit.

WRIGHT-PIERCE
Engineering a Better Environment

MEMORANDUM

TO:	George Meservey, Orleans	DATE:	8 March 2011
FROM:	Heather Merriman, Mike Giggey	PROJECT NO.:	10645G
SUBJECT:	Orleans Comprehensive Wastewater Management Plan MEPA-DRI Response to CCC Comments on Vehicle Traffic Impacts		

The Cape Cod Commission (CCC) has asked that we provide greater detail to our estimate of truck traffic as part of the Development of Regional Impact review. The material included in the CWMP was discussed in detail in our letter to you dated April 10, 2008. Our previous analysis of this topic dealt with the annual number of trips associated with the current and future use of the Tri-Town property. The CCC staff has asked that we address the number of peak hour trips that will be generated as part of the project.

Vehicle trips in excess of 25 trips per hour trigger a traffic impact threshold that requires a transportation traffic study. We believe that wastewater facility will not generate this many trips, and therefore additional analysis is not needed. This memorandum provides the requested data on daily and peak hour trips at the current septage facility.

The vehicle trips generated by the project are one of many environmental impacts evaluated as part of our analysis. The activities related to the proposed wastewater treatment facility as compared to the existing septage treatment facility will result in a net decrease in vehicle trips. This is due to the mode of wastewater collection. The 2,600 properties once tied into the collection system will no longer require septic tank pumping, thus avoiding septage hauling to Tri-Town.

As a refresher on our past work, recall the types of trips that are generated by a septage or wastewater treatment facility. First, consider regular trips in and out of the facility: septage or liquid sludge trucks, sludge cake disposal, and facility staff. Second, infrequent trips: chemical deliveries, visitors (District managers, public, consultants), and miscellaneous trips (such FedEx deliveries, maintenance trips, etc.).

Infrequent trips vary with respect to time of day and only make up 10% of the annual number of trips. The frequent trips (90% of total trips), of which 10% is sludge cake hauling and 90% septage or liquid sludge transport, can be classified as follows. Sludge cake averages one trip per day. The receiving operators note that weekdays in the summer are the busiest. Summer-time hauling translates to 30 round-trip septage deliveries per day. Septage or liquid sludge deliveries are at their peak between 8 a.m. and 10 a.m. during the week. This window can account for half of the daily septage deliveries. On a busy summer day that could be 15 deliveries in a 2-hour span. Or, said another way, 15 one-way trips in an hour. If a package is dropped off or a visitor arrives, this would generate 2 to 3 more one-way trips in that hour. This would total 17 or 18 trips during the busiest summer hour.

Is it possible to conceive a situation where a greater number of trips could occur during the peak hour? The following conditions could probably add 5 or 6 additional one-way trips. The summer traffic congestion plays a role in the speed at which septage haulers can reach the facility. If a no-congestion summer traffic day occurred, both septage bays were accepting trucks, and haulers were unloading in those bays in a staggered fashion, theoretically, 5 or 6 more one-way trips could be squeezed into the busiest hour of the morning. This would result in 22 one-way trips per hour.

Our analysis of trips to the proposed wastewater facility concluded a 13% annual reduction in trips compared to the current rate (trips generated by the septage-only facility), and will translate to some reduction in the current peak.

It is our conclusion that the current peak hour traffic is most likely 18 trips/hour in the summer and perhaps as high as 22 trips/hour on the extreme day. This confirms that the peak hour traffic at the proposed wastewater facility will not surpass the 25 trips/hour threshold that warrants more detailed traffic analysis.

We believe this information will adequately satisfy the request for additional information made the DRI review committee. Please do not hesitate to contact us, or have CCC staff contact us directly with questions or comments.