APPENDIX N

EOEAA Secretary's Certificate, July 10, 2009

Letter Response to Comments, December 9, 2010

The Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT GOVERNOR

Ian A. Bowles
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

July 10, 2009

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Town of Orleans Comprehensive Wastewater Management Plan
PROJECT MUNICIPALITY	: Town of Orleans
PROJECT WATERSHED	: Cape and Islands
EOEA NUMBER	: 14414
PROJECT PROPONENT	: Town of Orleans
DATE NOTICED IN MONITOR	: May 6, 2009

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and Section 11.03 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **requires** the preparation of an Environmental Impact Report (EIR).

In accordance with Section 11.05(7) of the MEPA regulations, the Town of Orleans (the Town) has submitted an Expanded Environmental Notification Form (EENF) with a request that I allow the Proponent to fulfill its EIR obligations under MEPA with a Single EIR (SEIR), rather than the usual process of a Draft and Final EIR. The EENF received an extended comment period pursuant to Section 11.06(8) of the MEPA regulations and the Town voluntarily extended the comment period an additional four weeks. The EENF includes clear descriptions of the project, a description of the extensive planning and alternatives analysis conducted to date, identifies potential environmental impacts associated with the project and provides commitments to mitigate impacts. Comments received from the Department of Environmental Protection (MassDEP), the Cape Cod Commission (CCC) and others indicate overwhelming support for the analysis and conclusions included in the EENF and that it is consistent with legal requirements. Based on a review of the EENF and after consultation with state agencies, I hereby find that the EENF meets the regulatory requirements and I am permitting the Proponent to file a SEIR in fulfillment of Section 11.03 of the MEPA regulations.

The Scope described below is intended to identify additional analysis and information necessary to complete MEPA review and ensure that impacts and issues are fully analyzed.

Project Overview

The Town of Orleans' comprehensive wastewater management process has been undertaken for the purposes of:

1) Evaluating and planning for the impacts to the Town's marine and freshwater water resources from anticipated future residential and commercial growth and development in the Town of Orleans over the 20-year project planning period (ending in 2030);

2) Evaluating and quantifying the Town of Orleans' existing and future contributions to nitrogen loading of coastal embayments and phosphorous loading of freshwater ponds from the Town's on-site septic systems over the 20-year project planning period;

3) Evaluating the feasibility of centralized and de-centralized municipal sewer options to meet the estimated 2030 nitrogen control needs and Total Maximum Daily Loads (TMDLs) established for the marine embayments surrounding Orleans;

4) Evaluating alternative methods for the disposal of treated wastewater including on-site and off-site groundwater disposal using rapid infiltration basins and wastewater reuse for landscape spray irrigation, with the intent of reducing groundwater discharges from the proposed Orleans Wastewater Treatment Facility (WWTF);

5) Evaluating the feasibility of non-structural and non-traditional nutrient management techniques to further reduce nutrient loading to the marine embayments surrounding Orleans; and,

6) Reviewing the long-term effectiveness of regional wastewater treatment and disposal options involving the Towns of Orleans, Eastham and Brewster.

The Town's draft comprehensive wastewater management plan (Draft CWMP) has been designed to achieve reductions of nitrogen loading and meet nutrient Total Maximum Daily Loads (TMDLs) to the Town of Orleans' coastal embayments including Pleasant Bay, Nauset Marsh/Town Cove, Cape Cod Bay, and to achieve reductions of phosphorous loading to protect the water quality associated with a number of fresh water ponds located in Orleans over the 20-year project implementation period.

I note that the Inner Cape Cod Bay and Pleasant Bay have been designated as Areas of Critical Environmental Concern (ACECs) and Outstanding Resource Waters (ORW) under the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Extensive areas of Priority and Estimated Habitat of rare wildlife have been mapped by the Natural Heritage and Endangered Species Program ("NHESP") within each of these ACECs.

The Town's core sewer construction plan (Core Program) involves the six phase construction of new sewers including a new wastewater treatment facility (Orleans WWTF) to be located at the existing Tri-Town Septage Treatment facility located near the intersection of Route 6 and Route 6A at 29 Overland Way in Orleans. The Core Program includes the construction of approximately 74 miles of new municipal sewer pipe, and approximately 63 sewer pump stations. Under the Core Program, 0.64 million gallons per day (MGD) of wastewater flow will be collected from 2,800 individual properties (approximately 53% percent of the Town) in the 2030 design year for treatment and on-site disposal. As currently designed, the Draft CWMP incorporates reserved treatment capacity to accommodate the projected future 2030 build-out of Orleans including reserving approximately 17,000 gallons per day (gpd) of capacity at the Orleans WWTF for anticipated future development in the Town's downtown Central District. Construction of Phase 1 of the Core Program is expected to be completed in 2015 and will include the construction of the new Orleans WWTF (to operate at 50% design capacity) and approximately 15 miles of new sewers and 7 pump stations located primarily throughout the downtown area of Orleans. Phase 2 will include the construction of approximately 11 miles of additional gravity sewers and five separate cluster wastewater treatment systems each with a design capacity of 10,000 gpd to be located at the headwaters of the Paw Wah, Lonnie's, Arey's, Baker's and Mill Ponds. As described in the EENF, these cluster systems will provide interim nitrogen and phosphorous removal in advance of the construction of the later Core Program sewer phases. The Town proposes to eventually convert and incorporate these cluster wastewater treatment systems to serve as pump stations for the Core Program municipal sewer system. The Phase 2 sewer construction work is expected to be completed in 2018. Construction of the remaining Core Program phases (Phases 3-6) is anticipated to be completed by 2030.

The Orleans WWTF will include a new septage receiving station to replace the existing Tri-Town Septage Treatment Facility and will be designed to receive, treat and dispose septage truck-transported from non-sewered areas in Orleans together with septage from the other Tri-Town District communities of Brewster and Eastham. The remaining sludge materials resulting from the Orleans WWTF's treatment of wastewater and septage will be dewatered and trucked off-site for suitable reuse and disposal. The Draft CWMP also incorporates a number of non-structural elements designed to reduce nutrient loading including proposed programs for controlling the use of fertilizer products on lawns, gardens and agricultural areas, stormwater management and water conservation.

The Town's Draft CWMP has been designed to also accommodate potential additional future wastewater flows from the remaining unsewered areas of Orleans (Extended Program) and/or the neighboring towns of Eastham and Brewster (Regional Program). However, as described in the EENF, additional wastewater disposal sites or reuse options may be required to support these potential future sewer expansion programs. The Orleans Draft CWMP also incorporates an Adaptive Management Plan (AMP) that outlines a process for reporting the results of the Town's ongoing annual groundwater quality and marine habitat monitoring program to identify the need for any adjustments or mid-course corrections to the phased construction of the Core Program to achieve compliance with TMDLs for the coastal embayments surrounding Orleans.

State Permits and Jurisdiction

The project is undergoing review pursuant to Sections 11.03(5)(a)(3) and (5)(b)(1) of the MEPA regulations, because the project will likely involve the construction of sewer mains ten or more miles in length and the development of a new wastewater treatment facility with a capacity of more than 1,000,000 gallons per day. The project will require a Groundwater Discharge Permit, a Chapter 91 License, and a 401 Water Quality Certificate from MassDEP. The project must be reviewed by the Natural Heritage Endangered Species Program (NHESP) and the Massachusetts Historical Commission (MHC) because portions of the project occur within Priority Habitat and within or adjacent to recorded archaeological sites and archaeologically sensitive areas, respectively. It may require Federal Consistency Review with the Massachusetts Coastal Zone Management (MCZM) Office. It may also require a Construction Access Permit from the Massachusetts Highway Department. The project may need to obtain a Section 404 Permit from the U.S. Army Corps of Engineers. The project should comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges from a construction site. It will also require an Order of Conditions from the Orleans Conservation Commission and on appeal only, a Superseding Order of Conditions from MassDEP.

The Town anticipates applying for State Revolving Fund (SRF) loans for subsequent planning and construction of proposed sewer project. Therefore, MEPA jurisdiction is broad and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

SCOPE

The Town should prepare the SEIR/Final CWMP in accordance with Section 11.07 of the MEPA regulations as modified by this Certificate. The SEIR should include a copy of this Certificate. The SEIR should also contain copies of the comments received. The Town should circulate the SEIR to those who commented on the EENF, and to any party required by regulation.

Project Description

The SEIR should include a detailed executive summary explaining what is being proposed under the Town's Core Program and potential future Expanded Program and Regional Program and why. It should identify significant environmental benefits and impacts, and measures that will be taken to avoid, minimize and mitigate adverse impacts. The SEIR should describe the proposed schedule for the remaining phases of project planning, design, environmental permitting and review, and construction. Detailed information should be provided for each area where construction of new sewers or cluster systems are proposed, including maps that show where sewer lines, cross-country easements, pumping stations, and other facilities will be located. The SEIR should provide the best information currently available for the six sewer construction phases proposed under the Core Program, and explain what additional information is proposed for later collection and analysis. The SEIR should discuss the state permitting process for this project and describe how it will meet applicable performance standards.

Needs Analysis

A Needs Analysis was conducted to determine the nutrient loads generated by existing and future development and their respective septic systems in the Town of Orleans and the types of wastewater treatment and disposal alternatives that would be required to meet published and expected TMDLs for the coastal embayments and freshwater ponds in Orleans. In developing the Draft CWMP, the Town reviewed the total number of parcels located within each of the three watersheds for the marine embayments surrounding Orleans and freshwater pond watersheds, and estimated the water use, wastewater flows and nutrient loading to be generated in the 2030 project design year. Existing and future development parcels were evaluated to determine the need for sewer to address the water quality requirements and TMDLs of the Town's marine and freshwater water resources. Both MassDEP and I generally concur with the findings of the Needs Analysis.

Alternatives Analysis

The EENF includes an evaluation of decentralized, community, and regional wastewater treatment and disposal alternatives to address the Town's identified wastewater treatment needs. The Town's Draft CWMP describes a Core Program of sewering that involves the phased construction of a centralized wastewater collection, treatment and disposal system to serve approximately 53% of the Town's existing developed properties.

The SEIR should include a detailed description of the Town's preferred site layout for the proposed Orleans WWTF that would maximize the reuse of the existing septage facility infrastructure and avoid fragmentation of undisturbed areas within the site and a 'take' of the Eastern Box Turtle. The SEIR should consider incorporating the sewering of the Cedar Pond watershed area as part of the Town's Phase 1 Core Program construction activities.
The SEIR should include a discussion of additional wastewater disposal or reuse alternatives that may be required to support the Extended or Regional Programs.

Wastewater Treatment and Water Quality

Orleans Wastewater Treatment Facility

As described in the EENF, the Town conducted a review of hydrogeological studies, hydraulic load testing and other groundwater modeling analyses pertaining to the 26-acre existing Tri-Town District Septage Treatment Facility site (Tri-Town site). The Tri-Town site is located within the Namskaket Marsh embayment that has been found to have excess capacity to accept additional nitrogen loading. According to the information provided in the EENF, the majority of the treated wastewater recharged at the Tri-Town site will mix with groundwater and recharge Namskaket Marsh. The Town has concluded that the on-site disposal and groundwater recharge of treated effluent from the Orleans WWTF will not impact local groundwater and surface water resources including existing water table mound height and nutrient loading to the Namskaket Marsh embayment. As currently designed, the Orleans WWTF will employ a 4-stage Bardenpho nitrogen removal process that will provide treatment levels capable of achieving nitrogen effluent concentrations of 3-5 parts per million (ppm) with a designed capacity to treat and dispose up to 0.64 MGD. The Draft CWMP includes a commitment to monitor groundwater resources around the periphery and down gradient of the Orleans WWTF site to identify the impacts on groundwater resources and embayments surrounding the Town of Orleans. This monitoring program is expected to be incorporated into a MassDEP groundwater discharge permit for the Orleans WWTF.

The SEIR should provide a detailed description of the Town's proposed groundwater quality monitoring plan for the Tri-Town site. The SEIR should evaluate the Tri-Town site's capacity to treat the additional estimated wastewater flows to be generated under the potential future Expanded and the Regional wastewater treatment alternatives.

Marine Embayments

The Town has continued to participate in the Massachusetts Estuaries Project (MEP) to conduct water quality sampling and identify nutrient loading problems for the Town's coastal embayments. MEP was created by MassDEP, and the University of Massachusetts School of marine Science and Technology (UMass SMAST) to define the nitrogen limits of coastal estuaries in southeastern Massachusetts. The Technical Reports produced by the MEP are used by MassDEP and the US Environmental Protection Agency (EPA) to establish Total Maximum Daily Loads (TMDLs) for nitrogen loading to these coastal emabyments and their tributaries. According to the comments received from MassDEP, CCC and others, the estimated nitrogen loading reductions resulting from the Town's proposed phased Core Program for municipal sewer construction are consistent with published or expected TMDLs for the watersheds and embayments surrounding the Town of Orleans.

The SEIR should incorporate the findings of the MEP Technical Reports and/or TMDLs established for the Northside Cape Cod Bay and the Nauset Marsh/Town Cove embayments. The Town should use the Linked Water Quality Model to confirm the Core Program's ability to provide the necessary reductions in nitrogen loading to embayments surrounding the Town of Orleans in compliance with published or expected TMDLs. The SEIR should evaluate the benefit of expanding the Phase 1 sewer construction area to include properties located in the Cedar Pond watershed.

Freshwater Ponds

The Draft CWMP/EENF includes an evaluation of the impacts of phosphorous groundwater loading from residential land use on the water quality of large freshwater ponds and lakes located in Orleans. Using water quality monitoring results collected as part of the Cape Cod Ponds and Lakes Stewardship (PALS), the Town has identified the need to sewer properties located around Bolands, Baker, Ice House, Shoal and Cedar Ponds, and Crystal and Pilgram Lake. As described elsewhere in this Certificate, Phase 2 of the Town's Core sewering program includes the construction of five separate cluster wastewater treatment systems that will each serve 40-50 existing developed properties located in areas upgradient of a number of impaired freshwater ponds in Orleans including the Paw Wah, Lonnie's, Arey's, Baker's and Mill Ponds.

According to the Town, the construction and operation of these cluster systems in advance of later phases of the proposed municipal sewer system will significantly reduce phosphorous to groundwater and phosphorous loading to these ponds.

The SEIR should provide a detailed discussion of the proposed cluster wastewater treatment systems including proposed sites for locating cluster wastewater treatment systems locations, areas to be served, system design capacity and treatment efficiency. This section of the SEIR should include an analysis of the benefits of cluster systems to provide nitrogen removal from the Pleasant Bay tributaries. The Town should consider cluster treatment systems with treatment efficiencies and nitrogen removal rates of 5 parts per million (ppm). The Town should also re-evaluate the merit of the proposed cluster wastewater treatment systems for Bakers Pond and Cedar Pond and consider incorporating the sewering of the Cedar Pond watershed area as part of the Town's Phase 1 Core Program construction activities.

Adaptive Management Plan

The Draft CWMP includes an Adaptive Management Plan (AMP) that will report to MassDEP the results of the Town's annual ground water monitoring of the Tri-Town site and monitoring of water quality and eel grass coverage in Orleans' coastal embayments to document the reductions in watershed nitrogen loads achieved from the Town's phased sewer construction program. The AMP will assist the Town to evaluate the Town's compliance with established TDMLs and identify the need for adjustments or mid-course corrections to subsequent phases of the structural and non-structural components of the Core Program.

The SEIR should provide a detailed description of the Town's proposed AMP and its water quality monitoring program for the Tri-Town site and the coastal embayments surrounding the Town of Orleans. I encourage the Town to consult with the Pleasant Bay Resource Management Alliance in designing the Town's water quality monitoring program. The SEIR should also include a discussion of the Town's commitment to continue its freshwater pond assessment and restoration activities. I ask that the Town expand the distribution of its annual water quality monitoring report to also include the CCC and the Pleasant Bay Resource Management Alliance.

Wetlands

The SEIR should delineate on a plan of reasonable scale all environmental resources areas located within areas proposed for sewering including; wetlands, water bodies, drinking water supplies, sensitive habitats, fisheries, designated Areas of Critical Environmental Concern (ACEC), Article 97 lands, historic resources, and agricultural lands.

The SEIR should analyze both direct and indirect impacts on wetlands and water bodies resulting from the project, and quantify the amount of direct wetland impact. The analysis should also discuss the consistency of any proposed drainage and stormwater management systems that are included in the project with the MassDEP Stormwater Management regulations and the Wetlands Protection Act performance standards. Proposed activities, including construction mitigation, erosion and sedimentation control, phased construction, and drainage discharges or overland flow into wetland areas, should be evaluated.

The SEIR should identify all parcels that are currently deemed unbuildable within the 100-year flood plain that would potentially become buildable as a result of a sewer installation. The SEIR should provide detailed plans, at a suitable scale, illustrating the proposed project's impacts to wetland resource areas. The SEIR should examine alternatives that avoid impacts to wetland resource areas, their associated buffer zones, riverfront protection areas and 100-year flood plain areas. Where it has been demonstrated that impacts are unavoidable, the SEIR should demonstrate that the impacts have been minimized, and that the project will be accomplished in a manner that is consistent with the Performance Standards of the Wetlands Regulations (310 CMR 10.00). The Town will need to provide wetlands replication at a ratio of at least 1:1 for any unavoidable impacts to wetlands. For any amount of required wetlands replication, a detailed wetlands replication plan should be provided in the SEIR that, at a minimum, includes: replication location(s), elevations, typical cross sections, groundwater elevations, the hydrology of areas to be altered and replicated, list of wetlands plant species of areas to be altered and the proposed wetland replication species, planned construction sequence, and a discussion of the required performance standards and monitoring.

Rare Species

As described in the EENF, the existing Tri-Town Septage Treatment Facility site is located within Priority Habitat for the Eastern Box Turtle (*Terrapene carolina*), the Diamond-backed Terrapin (*Malaclemys terrapin*), Salt Reedgrass (*Spartina cynosuroides*) and Mitchell's Sedge (*Carex mitchelliana*). The EENF includes an evaluation of four alternative site layouts (Alternatives A-D) for the new WWTF facility. According to NHESP's comments on the EENF, the construction of the Orleans WWTF will occur within mapped habitat for the Eastern Box Turtle (Terrapene carolina). NHESP has recommended that the Town identify a site layout alternative that will maximize the reuse of existing disturbed areas and avoid fragmentation of undisturbed areas within the proposed Orleans WWTF site to avoid a 'take' of the Eastern Box Turtle, and I have included this requirement in the Scope for an alternatives analysis provided above.

The SEIR should include a detailed description of the Town's preferred site layout alternative for the Orleans WWTF. If NHESP should subsequently find that the project will require a Conservation Permit pursuant to the Massachusetts Endangered Species Act (MESA), the SEIR should analyze the impacts to Eastern Box Turtle and evaluate avoidance/mitigation strategies. I ask that the Town continue to work closely with NHESP and consult with the Orleans Conservation Commission during the preparation of this section of the SEIR and the final project design to identify necessary project construction and post-construction conditions and commitments to avoid an adverse impact to resource area habitats of state-listed species located within and adjacent to the Orleans WWTF site. The SEIR should report on the results of the Town's consultations with NHESP.

Historical/Archeological Resources

The Town should provide the MHC with a US Geological Survey topographical map that locates the Town's phased project area and scaled project plans showing existing and proposed conditions. These plans should be submitted to MHC as early as possible during the design phase corresponding to each of the proposed project development phases. In comments submitted on the EENF, the Massachusetts Historical Commission (MHC) indicated that a number of proposed pump stations are located within and/or adjacent to recorded archeological sites and archaeologically sensitive areas. The Town to coordinate with MHC to ensure review of any potential historic impacts from the project and the SEIR should provide an update on the status of these discussions. If MHC deems the project to have an "adverse effect" on historic or archaeological resources, the SEIR should include a discussion of mitigation measures that the Town will undertake to address the adverse effect.

Greenhouse Gas Emissions (GHG) and Sustainable Development

The project requires an EIR and therefore is subject to the requirements of the MEPA Greenhouse Gas Emissions Policy and Protocol ("the Policy"): http://www.mass.gov/envir/mepa/downloads/GHGPolicyRev1108.pdf . The policy requires project proponents to quantify the direct and indirect CO_2 emissions from the proposed project, including CO_2 emissions associated with the buildings & plant operations, and to compare those emissions to the project baseline, which includes no-build conditions as well as an assessment of the emissions associated with the current effective building code ("base case"). In connection with this requirement, the MEPA Office and the Department of Energy Resources (DOER) routinely schedule pre-filing meetings to provide technical assistance to proponents in the development of GHG analyses. I strongly encourage the Town to request a pre-filing meeting as it prepares the SEIR.

The policy requires proponents to use energy modeling software to quantify projected energy usage from stationary sources and energy consumption. The policy allows the proponent to select a model but, DEP and DOER recommend using EQUEST for stationary source modeling for buildings and building systems.

The SEIR should include the modeling printout for the base case and for the preferred alternative case. The SEIR should also present an evaluation of the feasibility of each of the mitigation measures outlined below, as well as the GHG emissions reduction potential associated with each measure. The SEIR should explain, in reasonable detail, any measure not selected- either because it is not applicable to the project or is considered technically or financially infeasible- that would result in a significant reduction of GHG.

Building Design

DOER has identified several building design measures worthy of consideration in the SEIR, and adoption into the project, where feasible.

- Building Orientation- The SEIR needs to clearly describe how the buildings will be oriented, why, and the expected impacts on energy usage including solar gain, day-lighting and effect on proposed and future solar energy collection systems;

- Duct Insulation- Duct insulation is the baseline required by code. To enhance efficiency, the SEIR should note, and construction should reflect, that all ducts will be sealed with mastic, tested and then insulated, since duct leakage can be a major factor in energy losses;

- Roof and Wall Insulation- The SEIR should evaluate using the highest R-value insulation possible. In general, providing the best building envelope possible provides the greatest gains in energy savings for building operations and insulation is generally very cost effective;

- High-Albedo Roofing Materials – The SEIR should fully consider these roofing materials, which are highly reflective and reduce cooling requirements for buildings. For roofing, USGBC provides LEED credit for low-slope roofs with a minimum SRI of 78 and for steep-slope roofs with a minimum SRI of 29. To qualify for an Energy Star label, Low Slope roofs must have an initial solar reflectance of at least 0.65. After 3 years, the solar reflectance must be at least 0.50. Steep Slope roofs must have an initial solar reflectance of at least 0.25, and at least 0.15 after 3 years. In addition, the performance of solar PV systems is improved when mounted on high albedo roofs; and,

- On-site renewable energy – At a minimum, buildings should be oriented and roofs should be constructed to support the added weight of a solar photovoltaic (PV) system for potential installation during project construction or at a future date. It should be noted that a rooftop PV system operates even more efficiently, due to added reflectivity, when installed on a high-albedo roof.

  Considering the support of subsidies through the Commonwealth Solar and RPS programs, the SEIR should include a life-cycle cost analysis should be done to evaluate the installation of a PV system during project construction under two scenarios: 1) construction, ownership and operation of a PV system by the building owner; or 2) construction, ownership, and operation of a PV system by a third party that will then enter into a long-term power purchase agreement with the building owner for the electricity produced by the system. If neither of these scenarios is economically feasible at this time, the Town should continue to consider the opportunity for installing PV at a future date and state its willingness to host a third-party owned PV array under a favorable power purchase agreement. The following website provides information on the Commonwealth Solar program and tools for performing basic life cycle cost analyses: http://www.masstech.org/renewableenergy/commonwealth_solar/index.html#

Equipment Design

The Town should explore and present modeling results in this section of the SEIR related to the use of renewable and energy efficient equipment listed below when designing new or upgraded wastewater treatment facilities, pump stations and other components of the Town's comprehensive wastewater management system.

- The SEIR should specify premium class rated motors for any new or replacement pumps, fans, or other drives larger than 1 horsepower (HP), as well as any scheduled to be upgraded;

- The SEIR should specify the use of high efficiency models for new and replacement pumps, blowers, agitators, or other rotating equipment;

- The SEIR should consider Variable Frequency Drives (VFDs) for all motors larger than ten HP;

- The SEIR should include an analysis to determine the combination of pumps (both size

and type), controls and piping which will result in a system configuration which will operate at the highest average efficiency;

- The SEIR should fully consider the inclusion of renewable energy systems, such as photovoltaic panels, which could be ground mounted, to reduce the indirect CO_2 emissions due to the fossil fuel generated electricity which would otherwise be used;

- The SEIR should evaluate sizing, routing, and material selection for the extension of pumped sewer lines which will result in reducing the average pumping power required for the transfer of the sewer flow;

- The SEIR should include a detailed discussion of the design principles and measures which will result in reduced indirect GHG emissions that will be implemented should any of the satellite stations be constructed; and,

- The SEIR should include a description of the maintenance and replacement policies, activities and schedules related to equipment included in existing system pumping stations which will eventually bring them to a comparable standard of efficiency.

I note that MassDEP, in coordination with other state and local agencies has initiated a demonstration project to retrofit existing wastewater treatment plants and water treatment plants with energy efficient technology, **http://www.mass.gov/dep/water/wastewater/empilot.htm.** The costs of some of these improvements are eligible for funding through the SRF and other programs. I encourage the Town to consult with MassDEP regarding this demonstration project as it prepares the analysis required under this section.

Construction Impacts

Construction period impacts and mitigation measures should be described in the SEIR, including impacts from noise and dust, impacts on trees and other vegetation, and traffic impacts. Measures that will be taken to minimize and mitigate construction period impacts (in particular impacts on sensitive receptors or exceptional resources) should be detailed.

Sewering and Growth Management

The EENF/Draft CWMP includes a discussion of potential land use control mechanisms to limit unwanted secondary growth related to the construction of the Town's Core sewering project. The Town is proposing to implement a "checkerboard" sewer connection bylaw that will enable the Town to select specific lots that will be connected to the municipal sewer system and lots that do not need sewering and therefore will not be allowed to connect to the new sewer system. The Town is also proposing to implement a 'flow-neutral' nutrient control regulation, to be administered through the Orleans Board of Health, which would limit the redevelopment of existing properties by restricting the amount of additional wastewater flow/nitrogen load from the redeveloped property to the amount of wastewater flow the property is currently allowed under Title 5 and local zoning.

The SEIR should identify parcels located within the proposed sewer service areas and compare the potential secondary growth impacts, water use and increased wastewater flows that may be induced by public sewers and expected reductions of water use and wastewater flows with the Town's proposed growth management policies, regulations and bylaws. The SEIR should include copies of any new by-laws or regulations proposed by the Town for controlling new future development requesting municipal sewer service and located in areas outside of the proposed new sewer areas. The Town should consider adopting and implementing any proposed growth by-laws, regulations, and policies prior to the construction of any new sewers.

Costs to Homeowners

As described in the EENF/Draft CWMP, the Core Program will be constructed in six phases over 15-20 years and will cost an estimated $150,000,000. The estimated operation and maintenance costs for the proposed Core Program total approximately $1.4 million dollars. The Town proposes to recover 80% of the project debt service through user and non-user property taxation and 20% through betterment assessments to be paid by users of the sewer system. The EENF provides estimates for the average (capital and O&M) for households connected to the sewer system ($2,592.00) and households not connected to the sewer service area ($2,544.00).

The SEIR should include estimates for the costs of land acquisition associated with the proposed cluster treatment plants and corresponding groundwater disposal sites. The SEIR should document any assumptions concerning the probable cost of acquiring parcels for wastewater purposes. The Town should consult with MassDEP during the preparation of this section of the SEIR.

Future Sewer Expansion

The Town's Core Program has been designed to accommodate potential future expansion to serve the remaining unsewered areas of Orleans under the Expanded Program and/or additional wastewater flows from the neighboring towns of Eastham and Brewster under the Regional Program.

Expanded Program

The Expanded Program would provide town-wide sewers in Orleans and would cost an additional $95 million dollars. However, as described in the EENF and noted elsewhere in this Certificate, additional wastewater disposal sites or reuse options may be required to support the treatment and disposal of additional wastewater flows anticipated under the Expanded Program or the Regional Program described below. The SEIR should evaluate the Tri-Town site's capacity to treat the additional estimated wastewater flows to be generated under the Expanded and the Regional wastewater treatment alternatives.

Regional Program

I commend the Town for undertaking the Regional Economies of Scale study of potential regional approaches to address the wastewater treatment and disposal needs for the Towns of Orleans, Eastham and Brewster, and the regional issues pertaining to nutrient loading, wastewater treatment and disposal affecting the Nauset Marsh/Town Cove and Pleasant Bay coastal embayments. I ask the Town of Orleans, together with the Towns of Eastham to the north and Brewster to the south to work together with MassDEP, the Cape Cod Commission and others to continue the discussion of possible opportunities to integrate the Town of Orleans' wastewater treatment planning efforts with the planning efforts being undertaken by the Towns of Eastham and Brewster. In a separate section of the SEIR, the Town should include an update of the Regional Economies of Scale study to identify regional strategies for reducing the nutrient loading to coastal embayments and freshwater ponds in Orleans, Eastham and Brewster.

Public Participation

I note that the State's Revolving Fund (SRF) regulations require the proponent to conduct a minimum of one public meeting and one public hearing for this project. The SEIR should include a discussion of the Town's public participation program activities completed and proposed to date.

Mitigation/Section 61

The SEIR should include a separate chapter on mitigation measures. This chapter on mitigation should include Draft Section 61 Findings for all state agency actions. The Draft Section 61 Findings should contain a clear commitment to mitigation, an estimate of the individual costs of the proposed mitigation and the identification of the parties responsible for implementing the mitigation. A schedule for the implementation of mitigation should also be included. I ask the Town to continue to work closely with CCC, MassDEP, and the Pleasant Bay Resource Management Alliance to design and implement a sustainable Comprehensive Wastewater Facilities Plan and mitigation plan for the Town of Orleans that will help to offset the proposed project's municipal sewering impacts.

Comments

The SEIR/Final CWMP should respond to the comments received. I recommend that the Town use either an indexed response to comments format, or else direct narrative response. The SEIR should present any additional narrative or quantitative analysis necessary to respond fully to the comments received. This directive is not intended to, and shall not be construed to, enlarge the scope of the SEIR beyond what has been expressly identified in this Certificate.

Circulation

The Final SEIR/Final CWMP should be circulated in compliance with Section 11.16 of the MEPA regulations and copies should also be sent to the list of "comments received" below and to town officials from the Towns of Orleans, Eastham and Brewster. A copy of the SEIR should be made available for public review at the Orleans, Eastham and Brewster Public Libraries.

July 10, 2009
DATE

Ian A. Bowles, Secretary

Comments received: (continued on next page)

05/18/09 Massachusetts Historical Commission (MHC)

Comments received: (continued)

06/10/09 Cape Cod Commission (CCC)
05/21/09 Division of Marine Resources
06/08/09 Pleasant bay Resource Management Alliance
06/18/09 Town of Orleans
06/24/09 Natural Heritage & Endangered Species Program (NHESP)
06/29/09 Department of Conservation and Recreation (DCR)
06/30/09 MA Department of Environmental Protection (MassDEP) – SERO
07/01/09 Mary Hartley

EENF #14414
IAB/NCZ/ncz

WRIGHT-PIERCE
Engineering a Better Environment

Water
Wastewater
Infrastructure

December 9, 2010
W-P Proj. No. 10645H

Secretary Ian Bowles
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Subject: Orleans Comprehensive Wastewater Management Plan
MEPA File #: 14414
Response to Secretary Comments--EENF

Dear Secretary Bowles:

The Town of Orleans is submitting this Response to Comments as part of its commitment to fulfill its Environmental Impact Report (EIR) obligations under MEPA. The comments received in the review of the Expanded Environmental Notification Form are responded to herein.

Your EENF Certificate requires the Town to prepare an SEIR to include the Certificate and all EENF comments. These documents take the form of a final CWMP (Comprehensive Wastewater Management Plan) and will include materials in response to all comments documented herein.

The Environmental Monitor included a notice of this project on May 6, 2009 and set forth an extended comment period that opened on May 6, 2009 and closed on June 30, 2009. Your decision was issued on July 10, 2009.

COMMENTS AND RESPONSES RELATED TO THE SECRETARY:

Comment 1001:

A. *A. The SEIR should include a detailed executive summary explaining what is being proposed under the Town's Core Program and potential Expanded Program, and Regional Program and why.*

B. *SEIR should identify significant environmental impacts, and measures that will be taken to avoid, minimize and mitigate adverse impacts. The SEIR should describe the proposed schedule, for the remaining phases of project planning, design, environmental permitting and review, and construction.*

40 Shattuck Road, Suite 305
Andover, MA 01810 USA
Phone 978.416.8000 | Fax 978.470.3558

C. Detailed information should be provided for each area where construction of new sewers or cluster systems are proposed, including maps that show where sewer lines, cross-country easements, pumping stations, and other facilities will be located.

D. The SEIR should provide the best information currently available for the six sewer construction phases proposed under the Core Program, and explain what additional information is proposed for later collection and analysis.

E. The SEIR should discuss the state permitting process for this project and describe how it will meet applicable performance standards.

Response 1001:

A. See Executive Summary.
B. See Section 8 of the SEIR with respect to environmental impacts. The current project schedule is shown in Table 11-6.
C. See Response 1007 for mapping of the proposed areas of construction.
D. Section 11.9 of the SEIR describes the proposed 6-phase project (see Table 11-2). Section 11.6 presents the Adaptive Management Plan and describes the data that will be gathered during each project phase to help refine or redirect each subsequent phase (see Response 1006A).
E. The permitting process is summarized in Section 11.12.4 of the SEIR. Section 12 has been added to the SEIR to summarize the proposed mitigation measures as they relate to state permitting requirements.

Comment 1002:

A. The SEIR should include a detailed description of the Town's preferred site layout for the proposed Orleans WWTF that would maximize the reuse of the existing septage treatment facility infrastructure and avoid fragmentation of undisturbed areas within the site and a 'take' of the Eastern Box Turtle.

B. The SEIR should include a discussion of additional wastewater disposal or reuse alternatives that may be required to support the Extended or Regional Programs.

C. The SEIR should consider incorporating the sewering of the Cedar Pond watershed area as part of the Town's Phase 1 Core Program construction activities.

Response 1002:

A. The Town has selected a layout for the proposed WWTF which optimizes the use of currently disturbed area and should avoid a "take" of Eastern Box Turtle. The updated layout is shown in Figure 11-2. This layout concentrates the disturbance to accommodate the additional wastewater functions in the northeast corner of the site. This layout preserves a greater tract of undisturbed land to the south of the existing facility. In summary, the final layout keeps the newly disturbed area less than 5 acres and consolidates the undisturbed land to allow a better corridor for box turtles across the site.

B. The Core Plan has been fine-tuned to avoid a box turtle "take", as discussed above. Should the Town in the future choose to implement either the Extended Plan (full town sewering) or the Regional Plan (receipt of wastewater from Eastham and/or Brewster), then additional wastewater disposal area will be required. These future possibilities are not the subject of this MEPA

review; however, some broad statements can be made at this time. Response 1003 addresses the capability of the Tri-Town site for disposal of the additional effluent that would result from the Extended and Regional Plans. The future decision to use the Tri-Town site for disposal of that effluent would result from a thorough evaluation of options, including disposal on the Tri-Town site, disposal at other possible sites nearby, and an effluent reuse program. Each option would have it own set of environmental issues that would be reviewed through the appropriate MEPA procedures. It is clear that further use of the Tri-Town site beyond the Core Plan would result in a "take" of the Eastern Box Turtle that would necessitate appropriate mitigation, and those issues would be at the forefront of that future evaluation of options. In this regard, the Town has other locations for wastewater disposal or reuse that are, at this time viable on a conceptual level. Locations for disposal include the athletic fields at the elementary and middle schools, and several publically-owned sites near the Route 6/Route 6A interchange. The concept for a reclaimed water pipeline (reuse of the effluent) is shown in Figure 10-1 and discussed in Section 10 of the SEIR/CWMP.

C. In the Core Plan, the watershed of Cedar Pond would be completely sewered through construction occurring in Phases 1, 4 and 6. The decision on the timing for the sewering of the Cedar Pond watershed has considered several factors. The Town intends that the phases of sewer construction will "fan out" from the treatment facility in a way that does not leave one major watershed significantly behind another in the rate at which TMDL compliance is achieved. Based primarily on the Town's geography, the trunk of the collection system is proposed to grow and branch to provide at least some nitrogen removal in all three major watersheds by the third phase. Due to the location of Cedar Pond, properties in that watershed could be sewered sooner, but at the detriment to TMDL compliance in another watershed. A step-wise approach to Cedar Pond is warranted, since studies are still underway to determine if it is to be considered a freshwater or brackish water body. If it is a brackish body, then the ultimate level of wastewater-nitrogen protection will be achieved (complete removal of septic nitrogen load) while also supporting the overall TMDL compliance of Rock Harbor. If the pond is managed as a fresh water body through water control structures, then the phosphorus associated with septic systems will also have been fully addressed upon completion of the Core Plan. In either case, at the end of the Core Plan, the entire Cedar Pond watershed will be sewered.

Comment 1003:

A. The SEIR should provide a detailed description of the Town's proposed groundwater quality monitoring plan for the Tri-Town site.

B. The SEIR should evaluate the Tri-Town site's capacity to treat the additional estimated wastewater flows to be generated under the potential future Expanded and Regional wastewater treatment alternatives.

Response 1003:

A. Additional detail on groundwater quality monitoring has been added to the SEIR/CWMP. This information is included as Section 11.7, as follows:

Section 11.7 Groundwater and Surface Water Monitoring Plan

One key element of this project is the proposed Groundwater and Surface Water Monitoring Plan. By careful and systematic monitoring, the Town can accomplish the following goals:

- Document compliance with permits;
- Establish or extend a database of environmental conditions from which to judge future actions;
- Document TMDL compliance;
- Watch for unexpected impacts;
- Continue the monitoring of the existing Tri-Town plume; and
- Establish a basis for adaptations in the plan.

Table 11-3 summarizes the elements of the proposed plan. It will involve monitoring at or near the treatment and disposal site, within sensitive coastal embayments and in selected freshwater ponds. It will include not only water quality parameters, but also the plants and animals that the project is intended to protect. It will be important that the results of this program be accurately and promptly reported, via the reporting mechanisms listed in Table 11-3 and discussed in Section 11. Coordination will occur with DEP, the Massachusetts Estuaries Project, the USGS (and its ongoing monitoring of Namskaket Marsh), embayment monitoring programs being conducted or coordinated by the Pleasant Bay Resource Management Alliance, and the pond monitoring program of the Orleans Ponds Coalition and the Orleans Marine and Fresh Water Quality Task Force. The program outlined in Table 11-3 will be expanded during the application for the Groundwater Discharge Permit for the wastewater treatment facility, and in the development of the annual TMDL compliance report discussed in Section 11. All of these activities will be coordinated with the Water Resources staff of the Cape Cod Commission, pursuant to an anticipated condition of the DRI review and approval.

B. The effluent disposal capacity at the Tri-Town site can be measured in several ways: the ability of the surficial soils to accept the effluent without ponding, the ability of the local groundwater to carry away the effluent without excessive mounding, etc. It is expected the surficial loading rate is the limiting factor. Based on extensive field investigations and most the most modern modeling simulations, the apparent surficial capacity is 1.78 mgd.

The following wording has been added to Section 11.11.4 (to compare the site's capacity with the effluent disposal needs of the Expanded and Regional Plans):

Table 11-5 shows how that apparent surficial capacity compares with the effluent quantities associated with various development scenarios. The Core Plan (all six phases) will require about 60% of the site's capacity. The Regional Plan, assuming both Eastham and Brewster participate, would require about 90% of the site capacity. If the Town chooses to sewer all of Orleans (the Extended Plan), then the Tri-Town site would not be adequate. The development of the Tri-Town site for additional effluent disposal capacity is a good example of adaptive management. The true capacity of the site will only be known when more of the site is investigated (some of the potential disposal beds are below 20 feet or more of overburden and cannot be tested by conventional means until Phase 1 is complete) and when full-scale application of effluent occurs. If the site is shown to have more capacity than is currently estimated, then it is possible that the Extended Plan can be accommodated. Conversely, the Core Plan may consume more of the site's capacity than is now estimated, making a second disposal site necessary for even the Regional Plan. The phased

development of this project allows these uncertainties to be addressed in early project phases and allows modification in later phases accordingly.

As noted in Response 1002, development of the Tri-Town site beyond the Core Plan will likely result in a "take" of Eastern Box Turtle, and all viable alternatives must be considered at that time.

Comment 1004:

A. *The SEIR should incorporate the findings of the MEP Technical Reports and/or TMDLs established for the Northside Cape Cod Bay and the Nauset Marsh/Town Cove embayments. The Town should use the Linked Water Quality Model to confirm the Core Program's ability to provide the necessary reductions in nitrogen loading to embayments surrounding the Town of Orleans in compliance with published or expected TMDLs.*

B. *The SEIR should evaluate the benefit of expanding the Phase I sewer construction area to include properties located in the Cedar Pond watershed.*

Response 1004:

A. Response 1203 describes the rationale for completing the CWMP/SEIR prior to the issuance of the MEP Technical Report for the Nauset system. For those MEP Technical Reports available at the time of issuance of the CWMP/SEIR, the Town has incorporated the executive summary of each report (See CWMP Appendix G). Those reports include Pleasant Bay, Rock Harbor, Namskaket Creek and Little Namskaket Creek**.** The system of sewers in each project phase has been laid out to precisely match the septic nitrogen removal percentages contained in the pertinent MEP Technical Reports. For example, 65% septic nitrogen removal in the Pochet Neck sub-watershed will be accomplished by eliminating septic systems that represent 65% of the current septic nitrogen load in that sub-watershed. If confirmatory modeling were conducted, it would be merely a precise repetition of the model run that produced the MEP recommendation. Therefore the Town believes that the confirmatory modeling, in this circumstance, is unnecessary. If there are benefits to confirmatory modeling, even with this precise match, that the Town has not considered (such as modeling to track progress in water quality improvement), then the Town would of course reconsider its position. If confirmatory modeling is warranted, it would be most cost-effectively accomplished if it were conducted all at once, for all watersheds impacted by land uses in Orleans. Thus the Town views this as a future task, to be scheduled and budgeted for the design phase of the project. The funds will then be available to address any yet-to-be-determined benefits, and in case the septic removal percentage for the Nauset system is found to be measurably different than the current estimate.

B. In general, any impaired water body would benefit from the earliest sewering possible. The rationale to include only a portion of the Cedar Pond watershed in Phase 1, leaving the rest of the watershed sewering to Phases 4 and 6, is detailed in Response 1002.

Comment 1005:

The SEIR should provide a detailed discussion of the proposed cluster wastewater treatment systems including proposed sites for locating cluster wastewater treatment systems locations, areas to be served, system design capacity and treatment efficiency. This section of the SEIR should include an analysis of the benefits of cluster systems to provide nitrogen removal from the Pleasant Bay tributaries. The Town should consider cluster treatment systems with treatment efficiencies and nitrogen removal rates of 5

parts per million (ppm). The Town should also re-evaluate the merit of the proposed cluster wastewater treatment systems for Bakers Pond and Cedar Pond and consider incorporating the sewering of the Cedar Pond watershed area as part of the Town's Phase 1 Core Program construction activities.

Response 1005:
Consideration of the timeline for sewering Cedar Pond is included in Response 1002. For clarification, there is no cluster system proposed for Cedar Pond as part of the Recommended Plan.

Part of Phase 2 of the Core Plan involves the construction of five small wastewater treatment systems, called cluster systems. MEPA has made several comments related to these systems, some of which echo comments received by other agencies. Response 1005 addresses all such comments, and appropriate references to this response are located in other places in this letter. Greater detail on the topics of cluster location, technical description, service area, and degree of nitrogen removal can be found in Appendix I.

The Core Plan of public sewers is primarily aimed at controlling nitrogen loading in the watersheds of poorly flushed coastal embayments. In developing the Core Plan, the Town also sought to protect or improve water quality in freshwater ponds. The layout of the proposed sewer system allows for control of phosphorus loading to Pilgrim Lake, Crystal Lake and Boland's Pond, whose water quality should be improved by elimination of septic phosphorus loading. The Town also wishes to protect the good water quality in Bakers Pond which is not readily served by the proposed sewer system. Therefore, a Title 5 cluster system is proposed for the Baker Pond watershed, with the goal of significantly reducing phosphorus loading there to forestall the degradation that has occurred in other ponds. See Section 11.4.6 and Appendix I.

Comment 1006:

A. *The SEIR should provide a detailed description of the Town's proposed AMP (Adaptive Management Plan) and its water quality monitoring program for the Tri-Town site and the coastal embayments surrounding the Town of Orleans. I encourage the Town to consult with the Pleasant Bay Resource Management Alliance in designing the Town's water quality monitoring program.*

B. *The SEIR should also include a discussion of the Town's commitment to continue its freshwater pond assessment and restoration activities. I ask that the Town expand the distribution of its annual water quality monitoring report to also include the CCC and the Pleasant Bay Resource Management Alliance.*

Response 1006:

A. New paragraphs have been added to Section 11.6 of the SEIR, entitled Adaptive Management Plan, that bring together elements from other portions of this section. That new material is as follows:

   In dealing with complex environmental problems, precisely determining the optimum solution can take many years and require very extensive study. At some point, sufficient information is available to embark on a solution, even though all aspects of the best solution have not been determined. At that point, the risk of inaction is greater than the cost of implementing a non-optimum solution. Adaptive management is the formulation and implementation of a plan that begins to solve the problem while further information is gained to guide later phases toward the best overall solution. The basic elements of a successful adaptive management plan are:

- A solution that can be implemented in phases over time;
- Acquisition of data to show the effectiveness of the early phases of the solution; and
- A mechanism to re-assess the plan and adjust it to reflect the information gathered.

The Orleans Recommended Plan is adjustable in its content and timing so that mid-course corrections do not have large impact on overall cost. The data acquisition program must be directed at answering the question: "What information is needed about the impacts of Phases 1 and 2 (for example) so that Phases 3 and 4 can be modified if necessary?" The re-assessment of the program must be well planned to be accomplished quickly, and with results that are approvable by the regulatory agencies.

Orleans' Adaptive Management Plan addresses the following uncertainties:

1. How does the reduction in watershed nitrogen loading actually improve the water column nitrogen concentration in the impacted embayment? Is the water column concentration more or less sensitive to watershed load than predicted by the MEP model?
2. How does the eelgrass or benthic community respond to the reduction in water column nitrogen concentration? Are those communities more or less sensitive to water column nitrogen concentration than predicted in the MEP model?
3. The municipal sewer system will lead to a wastewater treatment facility outside the nitrogen-sensitive watersheds. How much nitrogen is removed from those watersheds by sewering the targeted neighborhoods? Are the occupancy and per-capita load assumptions used in the CWMP accurate in comparison with the nitrogen load actually collected?
4. The sewer system will be subject to some infiltration and inflow. How much wastewater is actually received at the treatment facility and how does the facility's capacity compare with the assumptions in the CWMP?
5. With respect to effluent disposal, does the full-scale application of effluent match the expected loading rates, and might additional disposal capacity be needed sooner than expected?
6. Does community growth follow the progression expected through the planning horizon, or might more capacity be needed sooner (or later) than planned?
7. Are non-structural components of the CWMP more or less effective than assumed?
8. For multi-town watersheds (Nauset, Rock Harbor and Pleasant Bay), should one town accelerate or delay phases of its program to match progress in the other towns? Similarly, does progress in other towns allow Orleans to defer or eliminate one phase of the Orleans program?
9. When will neighboring towns be ready to participate in regional solutions? Can the Pleasant Bay Alliance facilitate a multi-town solution for Pleasant Bay?
10. Does new research provide the basis for an expansion of the wastewater needs assessment to address contaminants of emerging concern?
11. Have new, DEP-approved, advanced on-site treatment systems become available and should they be applied in less densely developed neighborhoods in Orleans?
12. Have pilot programs for non-traditional and/or non-structural measures conducted in Orleans produced results which should be applied full-scale in Orleans?
13. Have pilot programs for non-traditional and/or non-structural measures conducted in other communities in the County produced results which could be applied in Orleans?

Table 11-2 outlines the facilities that are proposed to be built in each of the six project phases. This table also shows the information needed before the implementation of each phase. The Town will use the TMDL Compliance Report (discussed in Section 11.8) as a vehicle to document annually its findings in each of these critical areas. The Groundwater and Surface Water Monitoring Program (Section 11.7) will provide key data to support the TMDL Compliance Report. The Board of Water and Sewer Commissioners will be the responsible Town entity for overseeing the Adaptive Management Plan and coordinating it within the Town and with neighboring towns and review agencies.

B. Responsibility for monitoring the water quality in freshwater lakes and ponds lies with the Orleans Marine and Fresh Water Quality Task Force. It is recommended that the Orleans Board of Selectmen charge that entity with establishing a long-term program of continued monitoring and assessment and that the Board of Selectmen take the steps necessary to ensure its funding. These tasks have been added to the Implementation Plan set forth in Section 11 of the SEIR. As with the Adaptive Management Plan, close coordination with regulatory and review agencies is warranted, along with other towns and watershed groups such as the Pleasant Bay Resource Management Alliance.

Comment 1007:

A. *The SEIR should delineate on a plan of reasonable scale all environmental resources areas located within areas proposed for sewering including; wetlands, water bodies, drinking water supplies, sensitive habitats, fisheries, designated Areas of Critical Environmental Concern (ACEC), Article 97 lands, historic resources, and agricultural lands.*

B. *The SEIR should analyze both direct and indirect impacts on wetlands and water bodies resulting from the project, and quantify the amount of direct wetland impact. The analysis should also discuss the consistency of any proposed drainage and stormwater management systems that are included in the project with MassDEP Stormwater Management regulations and the Wetlands Protection Act performance standards. Proposed activities, including construction mitigation, erosion and sedimentation control, phased construction, and drainage discharges or overland flow into wetland areas, should be evaluated.*

C. *The SEIR should identify all parcels that are currently deemed unbuildable within the 100-year flood plain that would potentially become buildable as a result of a sewer installation. The SEIR should provide detailed plans, at a suitable scale, illustrating the proposed project's impacts to wetland resource areas. The SEIR should examine alternatives that avoid impacts to wetland resource areas, their associated buffer zones, riverfront protection areas and 100-year flood plain areas. Where it has been demonstrated that impacts are unavoidable, the SEIR should demonstrate that the impacts have been minimized, and that the project will be accomplished in a manner that is consistent with the Performance Standards of the Wetlands Regulations (310 CMR 10.00). The Town will need to provide wetlands replication at a ratio of at least 1:1 for any unavoidable impacts to wetlands. For any amount of required wetlands replication, a detailed wetlands replication plan should be provided in the SEIR that, at a minimum, includes: replication location(s), elevations, typical cross sections, groundwater elevations, the hydrology of areas to be altered and replicated, list of wetlands plant species of areas to be altered and the proposed wetland replication species, planned construction sequence, and a discussion of the required performance standards and monitoring.*

Response 1007:

A. The Town has provided additional detail related to environmental resources in Figures D-7 through D-9 contained in Appendix D of the SEIR, see attached.

B. See Response C below.

C. The current plan will be "flow neutral"; that is, it will allow no more flow to the public sewer than would be allowed under all other existing land use and public health requirements. Owners of land that is unbuildable for any reason would therefore not be allowed any flow to the public sewer. Tools to ensure "flow neutrality" are included in Appendix L; namely the Board of Health Nutrient Management Regulation, local adoption of Section 1A of MGL Chapter 83, and a draft paragraph for future inclusion in the Sewer Use Regulations. See further discussion in Response 1012.

   Currently, none of the major project components is sited in a manner that would infringe on wetlands. However, some minor pump stations will need to be located near wetlands; however, their exact location has not been determined during the planning phase. During the design phase, all efforts will be made to locate components outside delineated wetland areas. If construction within wetland delineated areas is determined to be unavoidable, then wetlands replication plans will be provided for all such locations and they will be reviewed by the applicable agencies. A construction sequence and monitoring plan would be agreed to by all parties at such time.

   The final design will ensure the consistency of any of the project's proposed drainage and stormwater management systems with MassDEP Stormwater Management regulations and the Wetlands Protection Act performance standards. Final design will address construction mitigation, erosion and sedimentation control, phased construction, and drainage discharges or overland flow into wetland areas, among other issues.

Comment 1008:
As described in the EENF, the existing Tri-Town Septage Treatment Facility site is located within Priority Habitat for the Eastern Box Turtle (Terrapene Carolina), The Diamond-backed Terrapin (Malaclemys terrapin), Salt Reedgrass (Spartina Cynosuroides) and Mitchell's Sedge (Carex mitchelliana). The EENF includes an evaluation of four alternative site layouts (Alternatives A-D) for the new WWTF facility. According to NHESP's comments on the EENF, the construction of the Orleans WWTF will occur within mapped habitat for the Eastern Box Turtle (Terrapene carolina) NHESP has recommended that the Town identify a site layout alternative that will maximize the reuse of existing disturbed areas and avoid fragmentation of undisturbed areas within the proposed Orleans WWTF site to avoid a 'take' of the Eastern Box Turtle, and I have included this requirement in the Scope for an alternatives analysis provided above.

The SEIR should include a detailed description of the Town's preferred site layout alternative for the Orleans WWTF. If NHESP should subsequently find that the project will require a Conservation Permit pursuant to the Massachusetts Endangered Species Act (MESA), the SEIR should analyze the impacts to Eastern Box Turtle and evaluate avoidance/mitigation strategies. I ask that the Town continue to work closely with NHESP and consult with the Orleans Conservation Commission during the preparation of this section of the SEIR and the final project design to identify necessary project construction and post-construction conditions and commitments to avoid an adverse impact to resource area habitats of state-

listed species located within and adjacent to the Orleans WWTF site. The SEIR should report on the results of the Town's consultations with NHESP.

Response 1008:
The draft CWMP evaluated four alternative layouts for the treatment and disposal facilities at the Tri-Town site. Based on consultation with NHESP staff, a fifth option was developed; see Figure 11-2. This new layout meets the preferences of NHESP with respect to both reuse of existing disturbed area and continuity of remaining undisturbed area. This layout includes concentrating the disturbance to accommodate the additional wastewater functions in the northeast corner of the site. This layout also preserves a greater tract of undisturbed land to the south of the existing facility. The Town has adopted this new layout as the Preferred Alternative as part of the Recommended Plan. Because the Preferred Alternative involves less than 5 acres of habitat disturbance, it should avoid a "take" of Eastern Box Turtle and makes unnecessary a Conservation & Management Permit.

The CWMP/SEIR lists the measures the Town will take to minimize and mitigate impacts related to Eastern Box Turtle habitat; see Section 11.4.7 and Appendix H (proposed additions to Appendix H are attached) These measures have been reviewed with the Orleans Conservation Commission during its meeting on September 14, 2010, and will be formally filed at the point of permitting.

Comment 1009:
The Town should provide the MHC with a US Geological Survey topographical map that locates the Town's phased project area and scaled project plans showing existing and proposed conditions. These plans should be submitted to MHC as early as possible during the design phase corresponding to each of the proposed project development phases. In comments submitted on the EENF, the Massachusetts Historical Commission (MHC) indicated that a number of proposed pump stations are located within and/or adjacent to recorded archeological sites and archaeologically sensitive areas. The Town {is asked} to coordinate with MHC to ensure review of any potential historic impacts from the project and the SEIR should provide an update on the status of these discussions. If MHC deems the project to have an "adverse effect" on historic or archaeological resources, the SEIR should include a discussion of mitigation measures that the Town will undertake to address the adverse effect.

Response 1009:
The CWMP/SEIR depicts preliminary information on proposed pump station and sewer line locations, and the MHC staff has reviewed the conceptual plans for the wastewater collection system and the cluster systems. MHC staff noted that archeological resources are not present at the Tri-Town site. Each of the sites identified for wastewater facilities have been reviewed by the Massachusetts Historical Commission. Based on a review by MHC, undisturbed portions of the cluster sites are either within, or proximate to, areas where archaeological resources could be present. The archaeological sensitivity is primarily due to the environmental setting (proximity to water and in level areas with well-drained soils). A reconnaissance archaeological survey will be conducted to assess all of the cluster sites. The Town has committed to this work and set a budget in its capital plan for surveys during the design phase of the project. A detailed review of the collection system placement by MHC will be warranted during the design phase. As a general rule, the Town is prepared to select locations and layouts for all wastewater-related infrastructure that will avoid construction in currently undisturbed areas. The current preliminary design keeps all sewer lines in developed rights-of-way, and includes no cross-country segments. To the extent that final design of this infrastructure does not allow complete avoidance of those undisturbed areas (it is possible that some new facilities will encroach on undeveloped areas adjacent to road rights-of-way), the Town will undertake all appropriate surveys, including the requested

reconnaissance archaeological surveys. During the design phase of the project, specific locations will be selected and then reviewed with MHC, with the goal of selecting the best technically and financially feasible location that has the least impact on sensitive areas.

Comment 1010:
The SEIR should quantify the direct and indirect CO_2 emissions from the proposed project. The SEIR should include the modeling printout for the base case and for the preferred alternative case. The SEIR should also present an evaluation of the feasibility of each of the mitigation measures outlined below, as well as the GHG emissions reduction potential associated with each measure. The SEIR should explain, in reasonable detail, any measure not selected- either because it is not applicable to the project or is considered technically or financially infeasible- that would result in a significant reduction of GHG.

DOER has identified several building design measures worthy of consideration in the SEIR, and adoption into the project, where feasible; including building orientation, duct insulation, roof and wall insulation, high-albedo roofing materials, on-site renewable energy and include a life-cycle cost analysis.

The Town should explore and present modeling results in this section of the SEIR related to the use of renewable and energy efficient equipment listed below when designing new or upgraded wastewater treatment facilities, pump stations and other components of the Town's comprehensive wastewater management system.

Response 1010:
The analysis of Greenhouse Gas Emissions is presented in Appendix J.

Comment 1011:
Construction period impacts and mitigation measures should be described in the SEIR, including the impacts from noise and dust, impacts on trees and other vegetation, and traffic impacts. Measures that will be taken to minimize and mitigate construction period impacts (in particular impacts on sensitive receptors or exceptional resources) should be detailed.

Response 1011:
Construction impacts and mitigation measures are discussed in Section 8 for all three plans that were considered. This section describes all facets of the project. Below are the items related to construction impacts, see Section 8.5.

Construction related impacts:
8.5.9 Traffic
8.5.10 Air Quality
8.5.11 Noise

[Sections 8.5.12, 8.5.13 and 8.5.14 are new report sections, excerpted below]

8.5.12 Erosion Control
During construction, temporary erosion control measures will be warranted to avoid sediment migration. This is commonly achieved with the use of hay bales, siltation fencing, and geotextile materials. Storm events and construction dewatering would warrant the use of these controls. During the design process, detailed drawings and specifications will outline the controls required to

be used by the construction contractor. Drawings and specifications will meet with regulatory standards such as the National Pollution Discharge Elimination System (NPDES) and Storm Water Pollution Prevention Plans (SWPPP).

8.5.13 Waste Material
During the construction process a stream of waste material will be generated. Brush, spoil material, and scraps of wood, metal, and plastics will be collected and removed from the construction sites by the construction contractor at periodic intervals. Storage between removal days will be in a designated area. Collection and removal of such material must be by authorized individuals.

8.5.14 Existing Vegetation
During the construction process portions of the site will be cleared to make room for new wastewater structures, and leave adequate space for construction vehicle access and lay-down area. To preserve the remaining vegetation other measures will be in place to limit dust and other debris from damaging the vegetation slated to remain. See previous sections. Some of these areas will be re-vegetated with the same or similar species that were initially present. In some cases different species will be selected to provide better visual or noise buffers for adjacent properties.

Comment 1012:
Sewering and Growth Management
The SEIR should identify parcels located within the proposed sewer service areas and compare the potential secondary growth impacts, water use and increased wastewater flows that may be induced by public sewers and expected reductions of water use and wastewater flows with the Town's proposed growth management policies, regulations and bylaws. The SEIR should include copies of any new by-laws or regulations proposed by the Town for controlling new future development requesting municipal sewer service and located in areas outside of the proposed new sewer areas. The Town should consider adopting and implementing any proposed growth by-laws, regulations, and policies prior to the construction of any new sewers.

Response 1012:
Quantification of the secondary growth impacts of the project is not necessary. The Town has already put in place, or is prepared to enact controls to constrain the generation of wastewater in the public system. A Board of Health regulation has been adopted, the Town has accepted Section 1A of MGL Chapter 83, and a provision has been drafted for inclusion in new sewer use regulations. Taken together, these steps will make the wastewater project "flow neutral". These documents are presented in Appendix L of the SEIR.

The Board of Health's Nutrient Management Regulation was adopted in 2008. It restricts wastewater flow to 110 gpd per 10,000 square feet of lot area, for new development or expanded uses of existing development. The proposed sewer use regulation will limit flow to the sewer system from a given property to that flow which is allowed under all other state and local regulations. For properties subject to the Board of Health Nutrient Management Regulation, that provision of the sewer use regulations will keep sewered flow less than 110 gpd per 10,000 square feet. For all other properties, the sewered flow will be no more than what is allowed under Title 5. The sewer use regulations will be put in place prior to the imitation of construction in Phase 1.

By accepting Section 1A of MGL Chapter 83, the Town has confirmed its intentions to install public wastewater infrastructure to control nutrient loading, and it can now take advantage of the "checkerboard sewering" concept that is provided for in Sections 1B and 1C of MGL Chapter 83.

Comment 1013:
Cost to Homeowners
The SEIR should include estimates for the costs of land acquisition associated with the proposed cluster treatment plants and corresponding groundwater disposal sites. The SEIR should document any assumptions concerning the probable cost of acquiring parcels for wastewater purposes. The Town should consult with MassDEP during the preparation of this section of the SEIR.

Response 1013:
The capital costs presented in Table 11-7 include estimates of the costs for all land purchases, including cluster treatment and disposal sites. The text associated with that table has been expanded to note that the land cost line item includes $0.9M for pump station site acquisition, $0.8M for easements, and $2.5M for cluster treatment and disposal sites. These estimates have been reviewed with DEP.

Comment 1014:
The Town's Core Program has been designed to accommodate potential future expansion to serve the remaining unsewered areas of Orleans under the Expanded Program and/or additional wastewater flows from the neighboring towns of Eastham and Brewster under the Regional Program.

A. *The Expanded Program would provide town-wide sewers in Orleans and would cost an additional $95 million dollars. However, as described in the EENF and noted elsewhere in this Certificate, additional wastewater disposal sites or reuse options may be required to support the treatment and disposal of additional wastewater flows anticipated under the Expanded Program or the Regional Program described below. The SEIR should evaluate the Tri-Town site's capacity to treat the additional estimated wastewater flows to be generated under the Expanded and the Regional wastewater treatment alternatives.*

B. *I ask the Town of Orleans, together with the Towns of Eastham to the north and Brewster to the south to work together with MassDEP, the Cape Cod Commission and others to continue the discussion of possible opportunities.*

Response 1014:

A. See Response 1003 related to effluent disposal/reuse needs associated with the Expanded and Regional Plans.
B. The Orleans Selectmen met with their counterparts from Eastham and Brewster on January 29, 2009, September 10, 2009 and October 12, 2010 to discuss wastewater and septage regionalization issues. While no solid agreement to move forward on regional wastewater management were reached, all towns are still open to the concept. Eastham and Brewster are have made less progress in the planning process. The Cape Cod Water Protection Collaborative has offered its assistance in facilitating these discussions. Orleans and Eastham have begun discussions on the possible transport of drinking water from Orleans to Eastham.

Comment 1015:
I note that the State's Revolving Fund (SRF) regulations require the proponent to conduct a minimum of one public meeting and one public hearing for this project. The SEIR should include a discussion of the Town's public participation program activities completed and proposed to date.

Response 1015:
The Town of Orleans has held 3 public meetings, one special town meeting and several community workshops to encourage public consultation and participation in the crafting of the comprehensive wastewater management plan. A summary of these focused public activities is included in Appendix C and includes statistics on the number of attendees and the results of questionnaires soliciting feedback on specific components of each of the three plans that were evaluated in detail.

Comment 1016:
The SEIR should include a separate chapter on mitigation measures. This chapter on mitigation should include Draft Section 61 Findings for all state agency actions. The Draft Section 61 Findings should contain a clear commitment to mitigation, an estimate of the individual costs of the proposed mitigation and the identification of the parties responsible for implementing the mitigation. A schedule for the implementation of mitigation should also be included. I ask the Town to continue to work closely with CCC, MassDEP, and the Pleasant Bay Resource Management Alliance to design and implement a sustainable Comprehensive Wastewater Facilities Plan and mitigation plan for the Town of Orleans that will help to offset the proposed project's municipal sewering impacts.

Response 1016:
Discussion of mitigation measures and Draft Section 61 Findings are contained in Section 12. Costs for individual mitigation measures have been included in contingencies for individual project elements. See Section 12.

COMMENTS AND RESPONSE RELATED TO MASSACHUSETTS HISTORICAL COMMISSION (MHC):

Comment 1101:
Multiple proposed pump station locations and portions of unimproved roadways shown on the preliminary maps are within and/or adjacent to recorded archaeological sites and within archaeologically sensitive areas.

MHC requests that a reconnaissance archaeological survey (950 CMR 70) be conducted for the project. The purpose of the survey is to conduct an archaeological sensitivity assessment of the proposed impact areas and recommendations for intensive (locational) archaeological survey, if warranted, in order to locate and identify any significant historic or archaeological resources that may be affected by the project.

Response 1101:
The CWMP/SEIR depicts preliminary information on proposed pump station and sewer line locations, and the MHC staff has reviewed the conceptual plans for the wastewater collection system and cluster systems. As a general rule, the Town is prepared to select locations and layouts for all wastewater-related infrastructure that will avoid construction in currently undisturbed areas. The current preliminary design keeps all sewer lines in developed rights-of-way, and includes no cross-country segments. To the

extent that final design of this infrastructure does not allow complete avoidance of those undisturbed areas (it is possible that some new facilities will encroach on undeveloped areas adjacent to road rights-of-way), the Town will undertake all appropriate surveys, including the requested reconnaissance archaeological surveys. During the design phase of the project, specific locations for cluster systems and pump stations will be selected and then reviewed with MHC, with the goal of selecting the best technically and financially feasible location that has the least impact on sensitive areas. Also, see Responses 1009 and 1906 for related material.

COMMENTS AND RESPONSES RELATED TO CAPE COD COMMISSION (CCC):

Comment 1201:
Natural Resources Recommendations

A. *Avoid impacts to Eastern box turtle by consolidation of the developed areas within and adjacent to existing developed footprints, and to reuse existing facilities.*
B. *Site new sewer mains and pump stations within or adjacent to existing roadways*
C. *Avoid impacts to 100-foot buffers to wetlands.*

Response 1201:

A. The Town has selected a preferred layout at the Tri-Town site that will avoid a "take" of the Eastern Box Turtle (refer to Responses 1002 and 1008 for greater detail).
B. The CWMP includes all sewer mains sited within road right-of-way. The majority of pump stations can also be sited within the Town rights-of-way. The largest pump stations will likely require easements or land purchase to accommodate their footprint, in these few cases, siting within the road right-of-way is unlikely.
C. There may be some construction work that will be unavoidable within 100-foot buffers to wetlands. Construction activities will conform to the appropriate Conservation Commission recommendations for the avoidance and mitigation impact in the wetland. See Response 1007.

Comment 1202:
Historic and Archaeological Resources Recommendations
Prior to construction, conduct a reconnaissance archaeological survey for the project to locate and identify any significant historic archaeological resources that may be affected by the project.

Response 1202:
Some of the infrastructure shown on CWMP figures has only been generally located during the planning phase. Specific locations will be selected and reviewed with MHC during the design phase of the project to determine if surveys are applicable, and to that end, alternative sites will be discussed if they would avoid disturbing sensitive areas. See Response 1101.

Comment 1203:
Water Resources Recommendations

A. *Incorporate Final MEP technical documents into the FEIR*
B. *Evaluate and provide more detail on the extent and timing of phased sewer expansions*
C. *Provide additional detail on the site capacity and monitoring program for the selected treatment and effluent disposal facility at the Tri-Town Site*
D. *Expand annual reporting to include the Cape Cod Commission for TMDL compliance with the Regional Policy Plan*

E. Proceed with local negotiations on regional wastewater management opportunities and provide an update and status.
F. Provide additional evaluation of the interim benefit of proposed cluster systems
G. Participate in a regional assessment of planned sewering in the Pleasant Bay watershed to project the progress of improved water quality.

Response 1203:

A. The executive summaries for all available and pertinent MEP reports have been incorporated in the SEIR. For those reports currently available see Appendix G. The completion of the MEP studies of the Nauset system has been significantly delayed, and no firm schedule exists to give the Town confidence that the MEP Technical Report for Nauset will be issued any time soon. The CWMP is based on a placeholder value of 55% septic nitrogen removal within the Nauset watershed, a figure that has been reviewed by the MEP staff and found to be appropriate. Given the uncertainty associated with completion of the Nauset Technical Report, the Town has elected to complete the CWMP/SEIR using this placeholder value, with the full understanding that the plan will be updated during the design phase of the project to reflect the precise MEP finding once it is available.
B. Several phasing alternatives (extent and timing of the 6-phase program) were discussed between the Town and Consultant. Phase 1 is the most critical and well-defined phase to date in the planning process. Changes to the timing and extent of later phases would be addressed as part of adaptive management as the Town solidifies each pending phase. See Response 1002-C.
C. Details on the effluent capacity available at the Tri-Town site is provided in Response 1003, along with an outline plan for surface water and groundwater monitoring.
D. The Town is committed to expanding the distribution of annual reporting to include the CCC.
E. The Town intends to pursue regional opportunities as neighboring communities make progress on their comprehensive wastewater planning. See Response 1014 and CWMP Sections 11.12.6 and Appendix K.
F. See Response 1005, related to the proposed cluster systems.
G. The Town participates in the Watershed Work Group of the Pleasant Bay Alliance, the most currently able body for monitoring the progress of improved water quality across the entire watershed. The Town plans to continue participation in the group, which monitors Pleasant Bay waters several times each summer.

Comment 1204:
Land Use Recommendations

A. Include copies of the flow-neutral regulations or policies that have been adopted or proposed to be adopted related to a "flow neutral" approach to development of a wastewater treatment facility and sewers and identify how the flow-neutral sewer regulations will be implemented.
B. Consider increasing the sewer allocation to downtown Orleans to accommodate more growth in this area than just through Chapter 40B development.

Response 1204:

A. Included in Appendix L are copies of adopted and proposed regulations related to the implementation of the CWMP. See Response 1012.

B. The Town evaluated in detail the potential for growth in the downtown area, and the build-out analysis includes both new commercial development and the redevelopment of commercial property, in addition to residential development. After accounting for commercial and

residential build-out potential, the Orleans Planning Board advised that the Town should plan for an additional 200 small apartment units within the Village Center District in the future. This added growth allowance (above the growth potential that already exists) is considered to be sufficient, based in part on the significant growth that is already possible in the downtown area as accounted for in the build-out analysis. This increase represents about 25% of the expected future growth. See Section 3.6 Economic Development. Opportunities exist to review this decision (and increase this allowance) during the design phase of the project, and prior to the initiation of each project phase.

Comment 1205:
Energy Resources Recommendations

A. *Consider whether a renewable energy system could be built into the treatment plant's design as a future source for the energy needs.*
B. *Select energy efficient processes and equipment.*

Response 1205:

A. The Town plans to investigate renewable energy systems during the preliminary design of the treatment facility. Future input from the CCC and DEP will be requested at that juncture. An on-site wind turbine and photovoltaics are considered in the GHG emissions analysis; see Appendix J. See also Response 1010.

B. A cost-benefit analysis of energy efficient equipment is presented in the GHG Analysis (see Appendix J) and will be elaborated upon in the preliminary design. See also Response 1010.

COMMENTS AND RESPONSES RELATED TO MASSACHUSETTS DIVISION OF MARINE FISHERIES:

Comment 1301:
After review, Marine Fisheries has no recommendations for this project at this time.

Response 1301:
The Town will keep the Division of Marine Fisheries apprised of the project at the appropriate junctions in the future.

COMMENTS AND RESPONSES RELATED TO PLEASANT BAY RESOURCE MANAGEMENT ALLIANCE:

Comment 1401:
Consequently, the proposed phasing in the Orleans DCWMP may afford opportunities for revised phasing through adaptive management based on changing conditions as plans in other {Pleasant Bay} watershed towns {Chatham, Harwich and Brewster} evolve. In this regard we strongly encourage Orleans to continue discussion with the towns of Brewster, Harwich and Chatham regarding a possible regional treatment facility to be located in South Orleans or Brewster.

Response 1401:
Two of the important reasons for Orleans to adopt a phased wastewater plan are the acknowledged benefits of regionalization and the recognition that Brewster and Harwich (two potential regional partners) are in the early stages of comprehensive wastewater management planning. At the end of each phase of the Orleans project, it is intended that the Town will reassess the then-current situation in Orleans and in neighboring towns and evaluate the identified opportunity for a regional facility in South Orleans. Section 11.12.6 of the CWMP/SEIR has been expanded to provide additional emphasis on the potential South Orleans option.

Comment 1402:
To compensate for the later phasing of sewering in the Pleasant Bay watershed, the preferred plan calls for installation of on-site package plants with de-nitrification to 15 mg/l at three sites located at the headwaters of Paw Wah, Lonnie's and Arey's Ponds, respectively....Given the severity of nutrient loading in these water bodies we encourage the Town to invest in the best technology feasible at the plants to achieve a level of de-nitrification below 15 mg/l if at all possible.

Response 1402:
The degree of nitrogen removal provided at the cluster systems was re-evaluated to strike a balance between cost and water quality improvement. A consensus was reached at a meeting with DEP and the CCC that small-scale systems could reach effluent nitrogen concentrations of 5 or 10 mg/l. Accordingly, target effluent concentrations for the cluster systems have been set in this range. Cluster system characteristics are provided in Appendix I and include information about expected facility performance. See Response to Comment 1005.

Comment 1403:
Growth Management
We commend the Town's Board of Health for recently adopting nutrient management regulations to limit wastewater flows from new development town-wide. These regulations are significant as interim measures that will limit nutrient loading prior to the installation of sewers. The regulations also will continue to provide critical nutrient management protection to the one-half of parcels in town that will remain on on-site septic systems. Finally, the regulations could provide a baseline for establishing flow neutral sewer connection regulations. This would ensure that growth that may be influenced by sewering is not inconsistent with broader community growth management objectives.

We encourage the Town to adopt the newly created provisions of Chapter 83A and to evaluate the need for additional growth management through zoning, conservation or other means to ensure that sewers facilitate and do not undermine desired growth patterns.

Response 1403:
The Town adopted Section 1A of MGL Chapter 83A at its Annual Town Meeting on May 11, 2009. A copy of the approved article is included in Appendix L. Consideration of additional growth management will occur as part of the adaptive management plan (see Response 1006).

Comment 1404:
The continued availability of adequate facilities to meet regional septage handling needs is of regional concern. We encourage Orleans and all towns to identify their anticipated septage treatment needs to ensure that potential changes in septage handling requirements at any facility can be considered and

that figure septage treatment needs not slow efforts to provide sewer expansions to the Pleasant Bay watershed.

Response 1404:
The Town of Orleans has provided for regional septage management in the Recommended Plan; see Table 11-1 of the CWMP/SEIR. The proposed 50,000 gallons per day of summer capacity for septage should be sufficient to serve those Orleans properties that will not be connected to the public sewer, plus all unsewered development in Eastham and Brewster (Orleans' current partners in the Tri-Town district). This septage capacity should be sufficient for the expected growth in the three communities and Orleans would allow other towns to use that capacity in the early years of the project.

COMMENTS AND RESPONSE RELATED TO TOWN OF ORLEANS

Comment 1501:
There are three items discussed in the CWMP that are not intended to be the subject of the current MEPA review:

1. *The extended sewer plan…*
2. *Regional Wastewater Facilities….*
3. *Cluster wastewater treatment systems……*

Response 1501:
The Town of Orleans wrote to Secretary Bowles on June 18, 2009 (during the MEPA public comment period) to clarify its intent with respect to certain features of the proposed wastewater management plan. That letter stated that three aspects of the plan were not intended for MEPA review at this time and would be the subject of Notices of Project Change if and when the Town decided to proceed with them. Such is still the case for regional wastewater facilities and for the extended sewer plan. However, subsequent discussions with MEPA staff led to the decision to include the cluster systems in this review. Consequently, additional information on the cluster systems is provided in Appendix I of the CWMP/SEIR, as noted in Response to Comment 1005.

COMMENTS AND RESPONSE RELATED TO NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM (NHESP) OF THE MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE:

Comment 1601:
It is the opinion of the NHESP that alternatives that result in the least amount of direct and indirect (e.g. fragmentation of habitat) impacts to state-listed species habitat are preferred for the proposed wastewater treatment and disposal facilities. Therefore the NHESP prefers Alternative B over the other alternatives. New alternative designs that maximize reuse of existing disturbed areas and avoid fragmentation of remaining undisturbed habitat are also likely to be preferred by the NHESP.

If an alternative design for the proposed wastewater treatment and disposal facilities located at the Tri-Town site is selected and this alternative does not minimize both direct and indirect impacts to state-listed species habitat, this project may result in a "take" of the Eastern Box Turtle. Projects resulting in a "take" of state-listed species may only proceed if they meet the performance standards for issuance of a MESA Conservation & Management Permit pursuant to 321 CMR 10.23. In order to qualify for a

Conservation & Management Permit, the proponent will need to minimize and avoid impacts to the Eastern Box turtle to the greatest extent practicable and produce a Net Benefit for this species.

Response 1601:
Based on the alternatives in the draft CWMP, the Town worked with NHESP to develop a new option that would preserve greater tracts of land for the Eastern Box Turtle and should avoid a "take" of species habitat. Please see Response 1008.

The CWMP/SEIR lists the measures the Town will take to minimize and mitigate impacts related to Eastern Box Turtle habitat; see Appendix H.

COMMENTS AND RESPONSE RELATED TO DEPARTMENT OF CONSERVATION AND RECREATION (DCR):

Comment 1701:
The ACEC Program supports the Project goals of improving water quality and reducing nitrogen and phosphorus loading within the Cape Cod Bay, Nauset and Pleasant Bay watersheds and several freshwater ponds. The ACEC Program also supports:

1. *The "growth neutral" concept…*
2. *The project phasing and associated adaptive management and long-term monitoring strategy…*
3. *The evaluation of regional wastewater treatment and disposal options…and*
4. *The non-structural aspects of the plan……*

In the EIR, the ACEC Program encourages a rigorous evaluation of the site design layout alternatives through continued consultation with NHESP to minimize and mitigate for unavoidable impacts to Eastern Box turtle habitat and other listed species. The ACEC Program also supports the MHC's comments requesting that a reconnaissance archaeological survey (950 CMR 70) be conducted to locate and identify any significant historic or archaeological resources that may be affected by the Project and to avoid, minimize or mitigate for any adverse effects to such resources.

Response 1701:
The Town has conducted a rigorous evaluation of site layout alternatives through continued consultation with NHESP and has selected a preferred layout at the Tri-Town site that aligns with the requests of NHESP. See Responses 1008 and 1601.

During the design phase of the project, the Town will review with MHC specific locations for infrastructure installation if those sites are not within existing developed rights-of-way, and undertake surveys as applicable. See Response 1101.

COMMENTS AND RESPONSES RELATED TO MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MassDEP):

Comment 1801:
The project construction activities may disturb one or more acres of land and therefore, may require a NPDES Stormwater Permit for Construction Activities. The proponent can access information regarding the NPDES Stormwater requirements and an application for the Construction General Permit at the EPA website: http//cfpub.epa.gov/npdes/stormwater/cgp.cfm

Response 1801:
Section 11.11.4 (Permitting) of the CWMP/SEIR has been amended to include the NPDES Stormwater Permit on the list of permits required to implement the project. It is the intention of the Town of Orleans to incorporate stormwater management plans in each construction contract for this project and to file a Notice of Intent with EPA for each project prior to the start of construction activity in each project phase.

Comment 1802:
In considering the need for upgrading the infrastructure in town, the assessment should include the potential for encountering contamination associated with waste sites (both known and unidentified) throughout town if excavation is necessary for the installation of the collection system or distribution systems. The filing of a Utility Release Abatement Plan would be required to excavate in contaminated areas. The location of known sites should be taken into consideration when conducting the assessment to upgrade the infrastructure.

The Project Proponent is advised that, if oil and/or hazardous material is identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) may be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary or prudent if contamination is present. The BWSC may be contacted for guidance if questions regarding cleanup arise.

Response 1802:
During the design phase of the project, known contamination sites will be identified, and provisions will be incorporated into the construction specifications to ensure that all appropriate issues are addressed for both known and unidentified contamination sites. If necessary, Utility Release Abatement Plans will be filed at the end of the design phase, prior to construction, and appropriate notification will be provided to the Massachusetts Contingency Plan. Section 11.12.4 (Permitting) of the CWMP/SEIR has been amended to expand the list of required permits to include Utility Release Abatement Plans and Contingency Plan notification if warranted.

Comment 1803:
The project requires an EIR and will receive financial assistance from the Commonwealth {and} therefore is subject to the requirements of the MEPA Greenhouse Gas Emissions Policy and Protocol. The policy requires project proponents to quantify the direct and indirect CO2 emissions from the project site's current status and compare it to a set of scenarios that compares the CO2 emissions associated with the buildings & plant operations associated with the plan.

Response 1803:
The appropriate scope for the Greenhouse Gas (GHG) emissions estimate was negotiated with the MEPA office and the Massachusetts Office of Energy Resources. That scope was carried out and the resulting GHG emission analysis is included as Appendix J in the CWMP/SEIR. A summary of that analysis is reported in Section 11.12.8. Guidance from MassDEP (as contained in Comment 1803) was used in the completion of that analysis.

COMMENTS AND RESPONSES RELATED TO MARY HARTLEY

Comment 1901:
The Friends of Namskaket Marsh do not believe that Oak Ridge and Namskaket Marsh are safe, or appropriate areas for a centralized sewer project and discharge of wastewater.

Response 1901:
The Town of Orleans undertook an extensive screening of potential sites for facilities related to wastewater treatment and disposal. Numerous sites conducive to these activities were evaluated as part of three preliminary plans. The protection of surrounding properties and receiving waters was one of the major considerations in the determination of acceptable activities at each site, and in the preliminary layouts for structures on each parcel. All three plans are viable with respect to safety and siting. Based on extensive input from citizens all across Orleans, one of the three plans was selected as the preferred plan by the overwhelming majority of surveyed residents. That plan includes the property known as the Tri-Town Septage Treatment Facility located adjacent to Oak Ridge, and proximate to Namskaket Marsh. The recommended plan that is described in the CWMP/SEIR includes the appropriate design features to protect the surrounding environment (from the discharge of effluent) and to minimize the impact of facility operation on neighboring properties. None of the state environmental agencies that have reviewed the CWMP/EENF has raised any questions or requested any further information in regard to the safety and appropriateness of the selected site for these activities.

Comment 1902:
In conclusion, the addition of 500,000 - 750,000 gpd, (app. one billion gallons every 4 to 5 years) discharged from the proposed wastewater facility on Oak Ridge to the Namskaket and Cape Cod Bay Embayment would destroy the natural fresh/salt water balance that sustains marine and other aquatic life.

Response 1902:
The CWMP/SEIR presents a water balance for each of the major watershed systems in Orleans, comparing the natural precipitation recharge with the recharge associated with effluent disposal. The recharge from effluent disposal includes both the current volumes discharged from on-site septic systems and the volumes that would be discharged from new wastewater treatment facilities. This analysis (see Table 7-1 and Section 7.2) shows that the proposed discharge at the Tri-Town site, coupled with some sewering in the watershed, and would increase the recharge to Cape Cod Bay by approximately 6% over what occurs today. Such a small change is not expected to appreciably alter the freshwater/saltwater balance in the Bay. This issue will be evaluated in more detail as part of the Town's application for a groundwater discharge permit for this project. The agencies that review that application are charged with investigating potential negative impacts of new wastewater discharges and will not issue that permit if such concerns are not adequately addressed.

Comment 1903:
In the WHOI REPORT, Dr. Teal also implies potential problems resulting from unknown quantities of leachate and nutrients from wastewater from the LEA sewer project in 1983 and says that: "The concept of "marsh engineering" ought to be considered in the event control of the delivery, distribution and/or standing level of wastewater in the wetland becomes desirable."

A potential breakout of wastewater in the Marsh and need to "engineer" the Marsh to distribute and/or control wastewater flows, the need to remove decaying biomass from the Marsh to prevent eutrophic conditions, mosquito infestation in standing water, and other negative impacts from discharging wastewater in coastal wetlands and Cape Cod Bay, would require a complete evaluation and cost analysis. The ultimate effects on the health, and economic and aesthetic wellbeing of homeowners, who live on or near Namskaket; or the thousands of tourists who visit Skaket Beach or travel on the Bike Trail, wildlife habitat, and scenic woodlands and marshes, are unknown.

Response 1903:
This comment apparently refers to an analysis from 1983, when the potential environmental impacts of the then-proposed septage treatment facility were being debated. In the development of the draft CWMP/EEIR, Wright-Pierce analyzed information on subsurface conditions compiled over many years, (including substantial data collected by U.S.G.S.) and supplemented that data with new information gathered from subsurface explorations designed to address the current wastewater disposal plan. The more recent exploration results are summarized in Appendix E and Appendix F of the CWMP/SEIR. These reports cover several types of soil investigations, hydraulic load testing and computer modeling of the projected groundwater contours that would result from sustained disposal of effluent at this site. These investigations support the proposed plan to infiltrate highly treated effluent at this site, with effluent-impacted groundwater eventually recharging coastal marshes and Cape Cod Bay. A direct discharge of effluent to surface waters is not proposed. The Town will seek confirmatory modeling of the recommended plan by the Massachusetts Estuaries Project during the design phase of the project and that modeling will address the potential for some of the impacts the commenter has suggested.

Comment 1904:
The plume from the proposed sewer project would be 15 - 25 times greater than the septage-only plume and could breakout in the salt marsh, bogs, streets, yards, basement, or septic systems of hundreds of residents in the area on its course to Cape Cod Bay. Recent predictions by Wright-Pierce are that the plume will discharge "several hundred feet off the shoreline" at Skaket Beach. (WMSC 8/7/08)

Response 1904:
As noted in Response 1903, the hydrogeology of the Tri-Town site has been investigated with specific reference to the site's capacity for effluent disposal and the ultimate fate of effluent-impacted groundwater. The studies in Appendix E and Appendix F of the CWMP/SEIR present data that show that the commenter's concerns are unwarranted over the possibility of an elevated groundwater table impacting nearby septic systems, or flooding local basements, yards and streets. (For example, Section 7 of Appendix F discusses the groundwater simulations, and page 7-2 states that "the highest predicted groundwater level is…more than 10 feet below the ground surface at the homes north of the Tri-Town Site", including Ms. Hartley's home.) This Appendix also presents maps that depict the areas where effluent-impacted groundwater is expected to reach coastal waters. As with other groundwater-related impacts, this issue will be evaluated in more detail as part of the Town's application for a groundwater discharge permit for this project. The agencies that review that application are charged with investigating potential negative impacts of new wastewater discharges and will not issue that permit if such concerns are not adequately addressed.

Comment 1905:
Wright Pierce has introduced the concept of "allocating Assimilative Capacity" of nitrate (TMDLs) from Pleasant Bay, alleged to be "nitrogen sensitive" to Namskaket and Cape Cod Bay, described as "less nitrogen sensitive." (Wright Pierce 8/20/07) There is no scientific data anywhere which proves that Namskaket and Cape Cod Bay are any more, or less, nitrogen sensitive than any other coastal location in Orleans.

Response 1905:
The Massachusetts Estuaries Project (MEP) has investigated the nitrogen sensitivity of coastal waters impacted by activities in Orleans. Current nitrogen loads in the watersheds of Pleasant Bay and Rock Harbor have been shown to exceed the estimated assimilative capacity of those embayments. Yet-to-be-published data for the Nauset system is expected to document similar nitrogen overloading in its watershed. In contrast, the current (and projected future) loads in the watersheds of Namskaket Marsh and Little Namskaket Marsh are below the estimated assimilative capacities of those natural systems (significantly below in the case of Namskaket Marsh). These very well researched MEP studies show that Namskaket and Little Namskaket Marshes are less nitrogen sensitive than Pleasant Bay, the Nauset system and Rock Harbor. Executive summaries of all available MEP reports are presented in Appendix G of the CWMP/SEIR. The full reports are available at the Orleans Town Office and on the MEP website.

Comment 1906:
Orleans voters rejected the LEA sewer project in November, 1983 and selected the septage-only version. Linenthal, Eisenberg, and Anderson (LEA), State and Federal agencies, and the Museum of Afro American History, Roxbury, MA, coordinated the excavation, removal, and classification of artifacts from the site. Except for Loparto, an Orleans resident, no other Orleans voters, that I know of, were informed of the significance of the land they purchased in May, 1982. They were not invited to the dig, to examine any of the ancient artifacts taken from our Town, or make other plans for the site. EPA funded the removal of artifacts from about 4 acres. 22 acres remain at Oak Ridge and which may contain more material. The Namskaket site was determined to not contain significant artifacts, but, information may be withheld today to not jeopardize the $150 - $300 million dollar sewer project discharging to Namskaket.

Response 1906:
The Town of Orleans asked the Massachusetts Historical Commission (MHC) to review its files concerning past archaeological investigations and to determine what additional steps are needed to properly protect archaeological and historical resources on the 26-acre Tri-Town site. In its letter dated April 10, 2009, the MHC stated that "the alternatives for expansion of the facility as presently proposed will occur within areas previously disturbed by original facility construction and are unlikely to contain intact significant archaeological resources". No additional investigations have been requested by MHC related to further development of the Tri-Town property.

Comment 1907:
The ridge (Oak Ridge) is 79' high and acts as a buffer at this time from activities at Tri-Town for West Road commercial and residential development. Skaket Landing and Landings Edge Condos, Cape Cod Five Operations Center, restaurants, The Liquor Loft, Booksmith, CVS, a Photo Shop, Radio Shack, Olympia Sports are within 600 - 900 feet of Tri-Town and the RIBs. Removal of the hill and the woodlands for the construction of the Centralized Sewer Project will expose the project to West Road

between Skaket Corners and Old Colony Way. Prevailing SW winds will blow odors from sewage, septage, sludge, and liquid sludge throughout the area. Oak Ridge also abuts the Bike Trail.

Response 1907:
Preliminary layouts of proposed wastewater facilities at the Tri-Town site have been based on generally accepted practices for minimizing impacts on nearby development. The site will be developed with buffer zones of both naturally occurring and planted vegetation. Equipment and tanks that have the potential to release odors will be covered and subject to state-of-the-art odor control facilities. The exiting septage treatment facility has a good track record of controlling site noise and odor, and the new facility should perform even better.

Comment 1908:
The rapid transfer of sewage from Orleans and the region, would move freshwater recharge from other watersheds in the region (interwatershed transfer) to the densely populated Namskaket Marsh and Cape Cod Bay Shore. The transfer of vast quantities or freshwater to coastal wetlands and the ocean will inevitably lower the water table inland, and raise the water table between Namskaket River and Little Namskaket Creek. The ultimate effects of such a radical plan on the health, economic, and aesthetic well being of residents, tourists, and the whole environment of the West side are unknown.

Response 1908:
As noted in Response 1902, and presented in Section 7.2 of the CWMP/SEIR, water balances have been estimated for all watersheds in Orleans. Town-wide, groundwater recharge from septic systems is about 2% of the recharge from precipitation. Removing a portion of the septic system recharge from some areas in Orleans to a different watershed (Namskaket) will indeed result in a slight lowering of the water table those areas. The change in recharge will be no more than 4%, which is quite small, considering the normal variation year-to-year in precipitation. It must be recognized, however, that the water tables in most areas of Orleans are slightly higher that they were before the construction of the municipal water supply system, which distributed groundwater all across town. Response 1904 deals with concerns about elevated groundwater levels near the Tri-Town site.

Comment 1909:
A publication in 1989 by Massachusetts Audubon, "Buffer Zones: The Environment's last Defense", says, "The viability and transport of viruses are causing greater concern since many are difficult to detect. Currently there is no method used by Federal and State Agencies to monitor virus contamination in wastewater effluent, or the receiving waters of the effluent. Scientists have shown that viruses travel as far as 1,300 feet horizontally in groundwater from sewage infiltration basins."(p. 17)

Response 1909:
The proposed wastewater treatment facility will provide a very high degree of wastewater treatment. Following treatment for the removal of organic compounds, solids and nitrogen, an ultraviolet disinfection system will provide high removals of pathogenic material, including bacteria and viruses. The groundwater discharge permit for the facility will stipulate the maximum concentrations of contaminants that DEP believes should not be exceeded to protect the groundwater down-gradient from the discharge location. Except in cases involving the direct reuse of wastewater effluent, DEP has typically not set limits on effluent viruses, because the passage of effluent-impacted groundwater through the soil affords sufficient viral kill to protect down-gradient users. If the permitting process determines that there are down-gradient users of groundwater that demand a higher degree of virus removal, then DEP will set appropriate limits in Orleans' permit. In that public drinking water is

available to all properties down-gradient from the Tri-Town site, it is quite unlikely that higher-than-normal control of viruses is needed or will be required.

[End of comments]

We believe that the material in this summary, coupled with information added to the CWMP/SEIR, provide a fair, thorough and appropriate response to issues raised during the MEPA review. Please do not hesitate to contact us if any aspect of the response requires clarification or elaboration.

Very truly yours,

WRIGHT-PIERCE

Michael D. Giggey, P.E.
Senior Vice President

cc: George Meservey, Town of Orleans

Attachments
mdg/hbm