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

PROJECT NAME	: Town of Barnstable Comprehensive Wastewater Management Plan
PROJECT MUNICIPALITY	: Barnstable
PROJECT WATERSHED	: Cape and Islands
EOEA NUMBER	: 14896
PROJECT PROPONENT	: Town of Barnstable
DATE NOTICED IN MONITOR	: May 9, 2012

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).

Project Overview

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

1) Evaluating and quantifying the Town of Barnstable' existing and future contributions to nitrogen loading of coastal embayments and phosphorous loading of freshwater ponds from anticipated future residential and commercial growth and development over the 20-year project planning period from 2015 to 2035;

2) Evaluating the feasibility of centralized and decentralized wastewater treatment technologies and disposal alternatives to meet the estimated 2035 wastewater management needs and nitrogen Total Maximum Daily Loads (TMDLs) established for the marine embayments surrounding Barnstable;

3) Evaluating the feasibility of non-structural and non-traditional nutrient management techniques to help reduce nutrient loading to the marine embayments surrounding Barnstable including growth neutral zoning, fertilizer management, estaurine inlet modifications, pond dredging and expanded shellfish aquaculture activities;

4) Evaluating the feasibility of regional wastewater treatment and disposal options involving the Towns of Barnstable, Mashpee, Sandwich and Yarmouth to reduce nutrient loading to the marine embayments shared by these towns; and,

5) Designing and implementing a comprehensive wastewater management plan to achieve reductions of nitrogen loading and meet nutrient Total Maximum Daily Loads (TMDLs) to the Town of Barnstable's coastal embayments and freshwater ponds for the 2035 design year.

Project History

The Town of Barnstable submitted an Environmental Notification Form (ENF) to the MEPA Office in September 1997 to extend sewers to Area 5 of the Town of Barnstable. The Secretary's Certificate on the ENF authorized the installation of the proposed sewers while the Town prepared an Environmental Impact Report (EIR) to address the need for a Sewer Master Plan, including options for improving the Hyannis Water Pollution Control Facility (WPCF). The Secretary's Certificate required the Town to limit connections to only those sites with documented failing on-site septic systems until the MEPA process was completed. The Town filed a Notice of Project Change (NPC) in March 1996 to expand the project to include the development of a comprehensive Town-wide wastewater facilities plan (WWFP) that would quantify the Town's long-term wastewater treatment and water supply protection needs and identify alternative approaches for meeting those needs through the 2014 planning period. A Special Review Procedure (SRP) was established for this project consisting of a Phase I - Needs Report, Phase II – Screening of Alternatives (Interim Report of the Wastewater Facilities Plan), and Phase III - Draft and Final Wastewater Facilities Plan/EIR. The Secretary's Certificate on the NPC (April 1996) adopted the Town's proposed scope for a Wastewater Facilities Plan/Environmental Impact Report (WWFP/EIR) and established a Citizens Advisory Committee (CAC) to provide input into the plan's development.

The Town filed a second Notice of Project Change (2nd NPC) in May 2003 to proceed with providing sewering and advanced nitrogen removal for those Areas of Concern (AOCs) located in close proximity to the Hyannis WPCF. As described in the 2nd NPC, the Town proposed to wait until the ongoing Massachusetts Estuaries Project (MEP) established appropriate nitrogen loading limits to determine appropriate treatment and discharge options for sewage flows from the western and southwestern sections of Barnstable.

In February 2005, the Town submitted a third Notice of Project Change (3rd NPC) to construct interim improvements to the Hyannis Water Pollution Control Facility (Hyannis

WPCF) to increase its wastewater treatment capacity from 2.7 million gallons per day (mgd) to 4.2 mgd. The facility improvements included the addition of a third aeration tank, replacement of the existing grit removal system, and installation of a Supervisory Control and Data Acquisition (SCADA) system. These facility modifications were constructed and resulted in approximately 6,000 sf of land alteration and approximately 8,000 square feet (sf) of new impervious surface area.

On October 25, 2006, the Town filed a fourth Notice of Project Change (4th NPC) to proceed with a number of sewer construction activities in advance of the completion and submittal of the Draft and Final Wastewater Facilities Plan/EIR including: 1) construction of an 18-inch effluent force main within the Route 132 right-of-way from the Hyannis WPCF to the Town's proposed remote treated wastewater discharge site (McManus site) located near Exit 6 off Route 6, and construction of a sewer main from the Cape Cod Community College to the Route 132 effluent force main; 2) construction of the proposed McManus discharge facility; and, 3) construction of two sewer extensions to limited areas in Hyannis (North Street, Pleasant Street). The proposed force main construction was designed with the capacity to convey 1.3 mgd of treated wastewater effluent from the Hyannis WPCF to the proposed McManus recharge site in Barnstable. The Town worked closely with the Department of Environmental Protection (MassDEP), the Massachusetts Department of Transportation (MassDOT) and others to coordinate its proposed effluent force main construction with the construction of the Route 132 Reconstruction Project (EEA #13526). A Secretary's Certificate on the Route 132 Reconstruction Project was issued in June 2005 and determined that no further MEPA review was required.

In October 2006, the fifth Notice of Project Change/Phase I Waiver Request (5th NPC) was filed with the MEPA Office to construct a new Main Street pump station and replace and existing force main to accommodate existing and projected future wastewater flows from the Old Colony Road pump station to the Hyannis WPCF. The Secretary's Certificate for this project was issued in February 2007 and determined that no further MEPA review was required.

In April 2007, the Town submitted the Final Wastewater Facilities Plan/FEIR to extend new municipal sewers to ten AOCs in Barnstable. These AOC sewer areas are located within or in close proximity to wellhead protection areas near to Lake Wequaquet, Long Pond, Red Lily Pond, Stewart's Creek, Hall's Creek, Willow Street, the Cape Cod Community College, and the Hyannis WPCF. The Final Wastewater Facilities Plan included a number of improvements to the Hyannis WPCF's buildings and piping, and sludge treatment processes that increased the treatment capacity of the Hyannis WPCF from 2.7 mgd to 4.2 mgd. The Town conducted a review of its groundwater modeling analysis subsequent to the issuance of the Secretary's Certificate on the 4th NPC, and concluded that the Hyannis WPCF site, together with the use of the 6.9-acre McManus site for groundwater discharge of up to 0.5 mgd, would accommodate up to 4.2 mgd of treated wastewater discharge to groundwater with no adverse effects on surrounding properties and groundwater resources. To date, the Town has completed the constructed of a portion of the proposed AOC sewer extensions. The Lake Wequaquet and

Stewart's Creek AOCs have not yet been sewered. According to the ENF, the construction of the proposed McManus discharge facility will coincide with the completion of new sewer construction for the remaining AOC areas.

The Town's Final Wastewater Facilities Plan included the design and implementation of an Adaptive Management Plan (AMP) to monitor the potential impacts to downgradient groundwater levels, water quality and private properties from the Hyannis WPCF's increased groundwater discharges. The AMP employs threshold groundwater elevations that will be used to trigger immediate corrective action alternatives to mitigate the high groundwater elevations resulting from the facility's increased groundwater recharge. The Town created a Technical Advisory Group (TAG) comprised of representatives from the Barnstable Department of Public works (DPW), MassDEP, the Cape Cod Commission (CCC), the School of Marine Science and Technology (SMSAT), and the United States Geologic Survey (USGS), to provide assistance to the Town to refine the scope of the AMP's groundwater monitoring plan and schedule. The TAG was tasked with the evaluation of existing monthly groundwater water level readings and water quality data, collected since the early 1990s from existing wells located downgradient of the Hyannis WPCF and in the area associated with the regional groundwater divide between Vineyard/Nantucket Sound and Cape Cod Bay. The TAG will make recommendations regarding groundwater monitoring well locations and monitoring frequency.

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 will 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 will require an Order of Conditions from the Barnstable Conservation Commission (and, on appeal only, a Superseding Order from MassDEP). The project should comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges from a construction site.

The Town anticipates applying for State Revolving Fund (SRF) loans for subsequent planning and construction of proposed sewer project. Because the Town is seeking Financial Assistance from the Commonwealth, 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.

REVIEW OF THE ENVIRONMENTAL NOTIFICATION FORM

The ENF contains a progress report and general discussion of the Town's CWMP planning process completed to date and includes a Needs Assessment Report and an Alternatives Screening Analysis Report. The Town's CWMP planning process began with the identification of the nutrient loading limits and nutrient Total Maximum Daily Loads (TMDLs) developed through the Massachusetts Estuaries Project (MEP) for coastal embayments located in Barnstable including Popponesset Bay, Rushy Marsh, Three Bay, Centerville River, Halls Bay, Lewis Bay and Barnstable Harbor. The Town then completed a Needs Assessment analysis to quantify the needed reductions of nitrogen to meet nutrient TMDLs to Barnstable's coastal embayments. The Town also completed an Alternatives Screening Analysis to evaluate alternative wastewater and nutrient management technologies and solutions and identified five potential alternative wastewater management plans for further evaluation. As described in the ENF, the Town will submit a Draft Environmental Impact Report (DEIR)/Draft CWMP to the MEPA Office that will include a detailed analysis of the environmental impacts and costs associated with each of these five alternative wastewater management plans. The DEIR will also include a detailed description of the Town's draft CWMP and a proposed implementation schedule for its construction of new and expanded wastewater management treatment, conveyance and discharge facilities, management structures, local regulations and funding requirements. Comments received from MassDEP, the CCC and others indicate support for the analysis and conclusions included in the ENF.

Nutrient Loading Limits

The Town continues to participate in the Massachusetts Estuaries Project to conduct water quality sampling and identify nutrient loading capacities 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 embayments and the septic system-based nitrogen removal needed to meet these TMDLs. To date, TMDLs have been established for nearly all of the Town's coastal embayments. The MEP Report identifying nutrient loading limits for Lewis Bay has been completed and is undergoing review by EPA to establish nutrient TMDLs for this embayment. The nutrient loading limits for Barnstable Harbor are currently under MEP study. As described in the ENF, the nitrogen loading to each of the embayments in Barnstable must be reduced to meet their individual nutrient TMDLs. The ENF identifies the percentage of nitrogen removal required for each of Barnstable's coastal embayments to meet their respective TMDLs.

Needs Analysis

The Town conducted a Needs Analysis to determine the nutrient loads generated by existing and future Build-out of residential and commercial development in Barnstable. In developing the Needs Analysis, the Town reviewed the total number of parcels located within each of the three watersheds for the marine embayments surrounding Barnstable and freshwater pond watersheds, and estimated the water use, wastewater flows and nutrient loading to be generated in the 2035 project design year. Existing and future development parcels were evaluated to determine the need for sewers to address the water quality requirements and TMDLs of the Town's marine and freshwater water resources. As described in the ENF, the estimated future build-out wastewater flows for residential development is 4.9 mgd and 2.9 mgd for commercial development. The Town estimates a total 2035 design year wastewater flow of 6.7 mgd for which 5.4 mgd is attributed to residential development and 1.3 mgd for commercial development. As described in the ENF, under the future Build-Out scenario, wastewater flows conveyed to the Hyannis WPCF for treatment and disposal will increase from 1.3 mgd to 2.6 mgd.

Wastewater Treatment Alternatives Analysis

The ENF includes a Wastewater Treatment Alternatives analysis that describes the Town's review and evaluation of centralized and decentralized wastewater treatment technologies, wastewater disposal alternatives, and non-wastewater management activities that may be used to meet TMDLs for the coastal embayments and freshwater ponds in Barnstable. Numerous wastewater management technologies were evaluated based on criteria including capital costs, operation and maintenance costs, effluent quality, regulatory requirements, energy use, and ease of implementation and operation. The Town has identified five comprehensive Town-wide wastewater management alternatives comprised of a mix of wastewater treatment technologies and non-wastewater management activities designed to meet nutrient TMDLs to Barnstable's coastal embayments for the 2035 design year. These five wastewater management alternatives contain a mix of innovative and alternative (I/A) technologies having MassDEP's General Use Approval, decentralized technologies capable of achieving enhanced nitrogen removal, technologies capable of achieving the removal of Total Organic Carbon (TOC) in compliance with MassDEP's groundwater discharge regulations, the construction of remote recharge sites for the discharge of treated wastewater, and a menu of non-wastewater nutrient mitigation projects and policies designed to reduce or attenuate nitrogen loading. Each alternative assumes that areas of town where nitrogen removal is not required will remain on Title 5 systems.

Briefly, the five CWMP project alternatives can be summarized as:

1. Decentralized Plan A: This plan relies on conventional Title 5 systems in areas not requiring nitrogen load removal and individual nitrogen removal systems where 25% or less nitrogen load removal is required. Satellite treatment systems and remote recharge sites would be required in areas requiring nitrogen load removal exceeds 25%. This plan includes the expansion of the current Hyannis WPCF's treatment capacity to provide

municipal sewer service to the eastern part of town and the development of remote wastewater recharge sites.

2. Decentralized Plan B: This plan incorporates continued use of Title 5 systems in areas not requiring nitrogen load removal and the construction of up to two (2) satellite facilities to serve the western part of Town along with associated sewer extensions and recharge sites. This plan includes the expansion of the current Hyannis WPCF's capacity to extend municipal sewer service throughout the eastern part of Town and the development of remote recharge sites.

3. Centralized Plan A: This plan incorporates continued use of Title 5 systems in areas not requiring nitrogen load removal, the expansion of the Hyannis WPCF and the extension of municipal sewers to all areas of Barnstable requiring nitrogen load removal. This plan also involves the development of remote wastewater recharge sites.

4. Centralized Plan B: This plan also incorporates the continued use of Title 5 systems in areas not requiring nitrogen load removal, the expansion of the Hyannis WPCF and the extension of municipal sewers to all areas of Barnstable requiring nitrogen load removal. This plan includes the development of an ocean outfall for the discharge of treated wastewater flows.

5. Alternative Plan #5 Development of New Public Water Supply Sites: Under this plan, a number of existing water supply wells corresponding Zone II water supply protection areas in Barnstable would be abandoned and relocated. The abandoned water supply sites and Zone II areas would be used for the recharge of treated wastewater. This plan also incorporates the continued use of Title 5 systems in areas not requiring nitrogen load removal and the construction of up to two satellite facilities to serve the western part of Town along with associated sewer extensions and recharge sites. Alternative Plan #5 includes the expansion of the existing Hyannis WPCF's capacity to extend municipal sewer service throughout the eastern part of town and the development of remote recharge sites.

The Town has also identified a number of non-wastewater nutrient management alternatives to be included as part of each of these four CWMP project alternatives described above, including:

- Fertilizer and pet waste management
- Stormwater management through best management practices (BMPs)
- Sediment removal at Mill Pond in Marstons Mills
- Inlet opening and maintenance at Rushy Marsh
- New zoning or land use regulations to address growth neutral requirements for 0% loans from the State Revolving Fund (SRF).
- Expanded use of aquaculture.

The Town will also incorporate the work completed for the Area 5 Sewers Project (EEA #6553, May 2007) into the draft CWMP including the construction of improvements to the Hyannis WPCF to increase its treatment capacity from 2.7 mgd to 4.2 mgd and the extension of new sewers to AOCs located in the eastern portion of Barnstable. These AOC sewer areas are located within or in close proximity to wellhead protection areas near to Lake Wequaquet, Long Pond, Red Lily Pond, Stewart's Creek, Hall's Creek, Willow Street, the Cape Cod Community College, and the Hyannis WPCF.

SCOPE FOR THE DRAFT EIR/DRAFT RECOMMENDED CWMP

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

Project Description

The DEIR should include a detailed description of the Town's draft CWMP plan to reduce nutrient loading to the marine embayments and freshwater ponds in Barnstable. Detailed information should be provided for each area in Barnstable where the construction of new I/A systems, satellite facilities and/or de-centralized wastewater management systems and/or non-wastewater nutrient mitigation alternatives are proposed, including maps that show where sewer lines, cross-country easements, pumping stations, and other facilities will be located. In preparing this section of the DEIR, the Town should review the provisions of Executive Order 181 and CZM Coastal Hazards Policy #3 to ensure that the Draft CWMP does not promote growth and development in high hazard areas designated in Flood Insurance Rate Maps (FIRMs) as V zones, AO zones and specific A zones that are accompanied by moderate wave action capable of structural damage (MoWa). CZM recommends that the Draft CWMP specifically consider areas located within mapped coastal flood zones and barrier beach and buffer areas including frontal dunes.

The DEIR should include a detailed description of the Town's preferred site layout for any proposed alteration and/or expansion of the Hyannis WPCF, including maps that show where new sewer lines, cross-country easements, pumping stations, and other facilities would be located. The DEIR should provide the best information currently available for any proposed construction phasing under the Town's Draft CWMP, and explain what additional information is proposed for later collection and analysis. The DEIR should identify the potential environmental impacts associated with the draft CWMP and measures that the Town's draft plan will include to avoid, minimize and mitigate adverse impacts. The DEIR should identify the estimated costs and potential environmental benefits associated with the Town's draft CWMP. The DEIR should

include a discussion of additional wastewater disposal or reuse alternatives that may be required to support any inter-municipal (regional) approaches to wastewater management. The Town should use the MEP's linked watershed embayment model and the CCC's watershed management tool (Watershed–MVP) to confirm the Draft CWMP plan's ability to provide the necessary reductions in nitrogen loading in compliance with published or expected TMDLs. The DEIR should incorporate the findings of the MEP Technical Reports and/or TMDLs established for the Lewis Bay embayment. The DEIR should describe the proposed schedule for project planning, design, environmental permitting and review, and construction, and discuss the state permitting process for this project and describe how it will meet applicable performance standards.

Targeted Wastewater Nutrient Management

According to the comments received from the CCC, the Town's CWMP should initially target critically impaired waters to get the greatest amount of nutrient removal in the shortest time frame. The CCC recommends that in the initial years of CWMP program implementation, the Town should implement components included in the Decentralized Alternatives A and B involving the construction of local wastewater management facilities capable of removing 75% or more nitrogen from the headwaters of critically impaired sub-watersheds. I note that a similar targeted approach to wastewater management was incorporated into the Town of Orlean's CWMP (EEA #14414, January 28, 2011). The Orleans CWMP includes the construction of five separate below-ground cluster wastewater treatment systems to serve neighborhoods located in the watersheds of a number of significantly impacted coastal embayments and freshwater ponds. These cluster systems were designed to provide interim nitrogen and phosphorous removal to these impacted surface water bodies in the early construction phases of the Orleans CWMP. The Orleans CWMP includes provisions that would allow for the future incorporation of these cluster wastewater treatment systems into a centralized wastewater treatment system.

The DEIR should include a discussion of the potential benefits associated with the implementation of a targeted and incremental approach to wastewater nutrient management in Barnstable. This discussion should evaluate the feasibility for initially constructing cluster wastewater treatment systems to serve neighborhoods located in the sub-watersheds of the most significantly impacted coastal embayments and freshwater ponds in Barnstable. The Town should consult with MassDEP and the CCC during the preparation of this section of the DEIR.

Wastewater Treatment Alternatives

As noted above, the Town completed the construction of improvements to the Hyannis WPCF that enabled the Town to increase the facility's treatment capacity from 2.7 mgd to 4.2 mgd. These facility improvements included the addition of a third aeration tank, replacement of the existing grit removal system and installation of a Supervisory Control and Data Acquisition (SCADA) system. As noted elsewhere in this Certificate, the construction of the proposed McManus discharge facility will coincide with the completion of new sewer construction for the

remaining AOC sewer areas. As described in the ENF, the Town has identified two CWMP project alternatives (Centralized Plan A, Centralized Plan B) involving the expansion of the existing Hyannis WPCF's treatment capacity to serve all of Barnstable's future design year wastewater flows. Each of these two centralized project alternatives involves the construction of additional treatment technologies for the Hyannis WPCF to accommodate future additional wastewater flows and needed nitrogen and TOC removal efficiencies. The CCC has provided very thoughtful and detailed comments on the Town's proposed centralized project alternatives and the menu of additional technologies the Town has identified in the ENF to upgrade the existing Hyannis WPCF's treatment capacity to accommodate the design year wastewater flows. The DEIR should provide a detailed response to CCC's comments. The Town should expand the existing Hyannis Growth Incentive Zone (GIZ) computer model to include the entire existing sewer collection system to determine its existing capacity and ability to accommodate future additional flows. The DEIR should include the results of the Town's hydraulic loading tests to be conducted on the Hyannis WPCF's sand infiltration beds to better determine their groundwater discharge capacity. The DEIR should include the results of the Town's updated GIZ analysis. The DEIR should also include a discussion of how the Town's Draft CWMP will comply with MassDEP's Groundwater Discharge Regulations.

The DEIR should provide a detailed discussion of individual I/A systems and cluster wastewater management systems to be included in the Town's Draft CWMP. The DEIR should re-evaluate the use of I/A systems throughout Barnstable and not limit their proposed use those areas in Barnstable where the percentage of nitrogen removal required is less than 25%. The DEIR should identify the proposed sites for locating cluster wastewater treatment systems, areas to be served, system design capacity, and treatment efficiency. This section of the DEIR should include an analysis of the benefits of cluster systems to provide targeted and incremental nitrogen removal from the more stressed sub-watersheds in Barnstable. The DEIR should consider those wastewater management technologies with MassDEP's Provisional Approval that have been shown to have very good treatment performance. According to the CCC, the wastewater management technology currently used by the Brackett Road affordable housing project in Eastham has MassDEP's Provisional Approval but is achieving very promising nitrogen removals. The DEIR should include a discussion of the opportunities and obstacles for using technologies with MassDEP's Provisional Approval in the Draft CWMP.

Wastewater Disposal

According to the ENF, wastewater effluent from existing individual septic systems and the Hyannis WPCF and the Marstons Mills Wastewater Treatment Facility (Marstons Mills WWTF) is currently discharged in areas that contribute groundwater to public water supply wells (Zone II areas). In March 2009, MassDEP revised its Groundwater Discharge Regulations (314 CMR 5.00) to limit the amount of carbon-based compounds and contaminants typically found in pharmaceuticals and personal care products (Contaminants of Emerging Concern (CEC) in treated wastewater flows discharged in Zone II areas. I note that MassDEP's TOC regulations are intended to provide increased protection of groundwater resources by limiting naturally

occurring and man-made forms of organic carbon present in treated wastewater. MassDEP's groundwater discharge regulations establish a low limit (3 milligrams per liter (mg/L)) for Total Organic Carbon (TOC) in wastewater effluent discharged to Zone II areas. According to the ENF, wastewater samples from the Hyannis WPCF have been collected and analyzed since October 2009 and were found to have a 7.1 mg/L average TOC concentration.

As described the ENF, the construction of the necessary treatment upgrades to the existing Hyannis WPCF to meet MassDEP's TOC regulations will significantly increase the Town's anticipated capitol and operation and management costs for the Hyannis WPCF for each of the five CWMP project alternatives presented in the ENF. The Town's Alternative Plan #5 includes the abandonment and relocation of one or more existing public water supply wells in Barnstable and re-using the abandoned Zone II areas for the discharge of treated wastewater. This alternative has been designed in an effort to eliminate discharges of treated wastewater in Zone II areas and to avoid the need to construct costly wastewater treatment upgrades to meet MassDEP's TOC wastewater discharge requirements. In its comments, the CCC recommends the Town conduct additional analysis of the potential impacts of wastewater discharges from the Hyannis WPCF and individual septic systems on groundwater in the Hyannis area. The DEIR should provide additional information and analysis of the potential impacts to existing public water supplies from wastewater discharged to Zone II areas from private septic systems and the Hyannis WPCF under existing and anticipated 2035 wastewater flow rates. This analysis should include a summary of existing public water supply quality in Barnstable including the presence of sodium, volatile organic compounds and the occurrence of CEC, and the distances of wastewater discharge sites from Zone II areas. The DEIR should identify any extenuating circumstances that would allow the groundwater discharges from the Hyannis WPCF to exceed effluent limitations for TOC pursuant to MassDEP's Groundwater Discharge Regulations (314 CMR 5.10). The DEIR should compare the potential TOC removal to be achieved from the Town's sewering of Zone II areas and the construction of additional TOC treatment technologies at the Hyannis WPCF. The Town should consult with MassDEP, the CCC and the CCWPC during the preparation of this section of the DEIR, and report on the results of these consultations. This section of the DEIR should include a summary of the results of the Town's review and evaluation of potential wastewater discharge sites located throughout Barnstable.

The DEIR should identify any potential new water supply sites in Barnstable and the feasibility of their development as for future water supplies. The DEIR should include an evaluation of the benefits and feasibility of consolidating Barnstable's four existing water supply entities (Barnstable Fire District Water Department, the Centerville Osterville Marstons Mills (COMM) Fire District Water Department and the Cotuit Water District).

Ocean Outfall Discharge

The Town's Centralized Plan B alternative involves the expansion of the Hyannis WPCF's treatment capacity, extension of new municipal sewers throughout Barnstable and the construction of an ocean outfall in Cape Cod Bay, a designated Ocean Sanctuary, for the

discharge of treated wastewater flows from the expanded Hyannis WPCF. As described in the comments received from the Office of Coastal Zone Management (CZM), the Massachusetts Oceans Sanctuaries Act of 2008 (MGL 132A(15)) identifies those activities allowed in ocean sanctuaries. CZM's comments indicate that the OSA (MGL 132A(16)(b-f) and its implementing regulations (302 CMR 5.10) contain provisions and specific conditions for MassDEP to issue a Variance to allow the relocation and discharge of a municipality's existing treated wastewater effluent to the Cape Cod Bay Ocean Sanctuary. This ocean outfall alternative will require further discussion among local authorities, regional agencies, MassDEP, CZM, state legislators and various federal agencies. The DEIR should include a detailed discussion of the statutory and permitting challenges that must be addressed if the Town selects this alternative as its Draft recommended CWMP plan. This section of the DEIR should include information and analysis to support MassDEP's Variance application process. I encourage the Town to consult with MassDEP during the preparation of this section of the DEIR.

Non-Wastewater Nutrient Mitigation Alternatives

As described in the ENF, the Town's Draft CWMP will include a menu of non-wastewater nutrient management projects and programs to help reduce nitrogen loading to the embayments in Barnstable, including the dredging of Mill Pond in the Marston Mills section of Barnstable. The ENF describes research conducted by SMAST and the MEP that documents the ability of various wetlands resource areas and ponds to attenuate significant amounts of nitrogen from groundwater. According to the ENF, SMAST's research indicates that the deepening of ponds and increasing tidal flushing of wetlands can increase nitrogen attenuation and reduce nitrogen loading to groundwater and downgradient water bodies

The DEIR should describe how non-wastewater nutrient management alternatives will be incorporated in the Town's CWMP to meet nutrient TMDLs to the Town of Barnstable' coastal embayments. Specifically, the DEIR should provide a detailed discussion of how sediment removal from Mill Pond and inlet opening at Rushy Marsh will reduce nitrogen loading to the Three Bay and Rushy Marsh coastal embayments, respectively. The DEIR should include a discussion of the estimated increased nitrogen attenuation to be achieved from sediment removal from Mill Pond and reductions in nitrogen loading from the inlet opening at Rushy Marsh. The DEIR should describe how existing and proposed water quality studies and water quality monitoring activities will be used to quantify the potential estimated nitrogen attenuation and reduction benefits to be realized by these projects. The DEIR should include a summary of the proposed Mill Pond dredging and Rushy Marsh inlet modification processes, including a discussion of the proposed methods for excavation, dewatering, erosion and sediment control and sediment disposal. The DEIR should provide information sufficient to understand the projects' potential environmental impacts to resources areas. The DEIR should also include a discussion of the Town's commitment to implement the recommended actions for pond assessment and restoration activities listed in the *Action Plan for the Barnstable Ponds, December 2009*.

Adaptive Management Plan

The Town's Area 5 Sewers Project (April, 2007) included the implementation of an Adaptive Management Plan (AMP) to assist the Town in evaluating its compliance with established TDMLs and to document the reductions in watershed nitrogen loads achieved from the its sewer construction program. The Town currently uses the AMP to identify the need for adjustments or mid-course corrections to subsequent phases of the structural and non-structural components of the Town's sewer construction and expansion program in the eastern half of Barnstable. The AMP includes a commitment to provide an annual report to be circulated to MassDEP, CCC and others that includes the result of the Town's annual groundwater monitoring of the Hyannis WPCF site and monitoring of water quality and eel grass coverage in coastal embayments.

The DEIR for the Town's Draft CWMP should provide a discussion of any proposed AMP and water quality monitoring program to accommodate the Draft CWMP. This AMP should include a detailed description of proposed monitoring of groundwater, embayment and pond water quality and related habitat areas. The AMP should outline the process for reporting the results of the Town's ongoing annual groundwater quality and habitat monitoring activities to identify the need for any adjustments or mid-course corrections to the construction of the CWMP to achieve compliance with TMDLs for coastal embayments. I encourage the Town to consult with the MassDEP, the Cape Cod Commission and others in designing the Town's AMP.

Regional Approaches to Nutrient Reduction and Wastewater Management

As discussed in the ENF, the Town is also exploring opportunities for shared regional approaches to achieve reductions of wastewater nitrogen loading and meet nutrient TMDLs to those coastal embayments shared by Barnstable, Mashpee, Sandwich and Yarmouth including Poppnesset Bay, Three Bay System, Lewis Bay and Barnstable Harbor. As discussed in the ENF, additional wastewater disposal sites or reuse options may be required to support these potential shared regional approaches to reduce wastewater nitrogen loading and meet nutrient TMDLs to shared coastal embayments. According to the comments received from MassDEP and CCC, the Town should continue to actively explore opportunities to establish regional solutions for reducing nitrogen loads to shared coastal embayments. In its comments, MassDEP indicated that strategically located wastewater recharge could help return lost habitat to a more natural condition. MassDEP notes that treated wastewater flows from the Hyannis WPCF could be used to recharge and help reestablish base flow in the cranberry bogs near Cape Cod Hospital in the Town of Yarmouth. This wastewater recharge scenario may allow Barnstable to treat wastewater flows from Yarmouth in exchange for wastewater recharge in Yarmouth. Additionally, the subsurface discharge of wastewater flows from the Hyannis WPCF to a location further upstream near Route 28 could provide an opportunity to reestablish base flow for the dry creek bed in that area.

I ask the Town of Barnstable, together with the Towns of Mashpee and Sandwich and Yarmouth to work together with MassDEP, the CCC and others to continue the discussion of

possible opportunities to integrate the Town's wastewater treatment planning efforts with the planning efforts being undertaken by the Towns of Mashpee, Sandwich and Yarmouth. The DEIR should include an update of the Town's ongoing efforts to identify regional strategies and opportunities for reducing the nutrient loading to coastal embayments.

Wetlands

Activities planned as part of one or more project alternatives will likely trigger jurisdiction under the Wetlands Protection Act. These activities include sewer collection piping and pump stations, sewer extensions, expansion of the Hyannis WPCF, construction of one or more new satellite wastewater treatment facilities and the construction of new wastewater discharge locations. For the Draft CWMP, the DEIR should identify the location of these activities, describe potential wetlands and watershed impacts, and measures to avoid and minimize or mitigate impacts. The DEIR should delineate on a plan of reasonable scale all environmental resources and resource areas located within those areas proposed for sewering including: wetlands, drinking water supplies, fisheries, water bodies, sensitive habitats, parklands, recreational resources, historic resources, and agricultural lands. All resource area boundaries, riverfront areas, applicable buffer zones, and 100-year flood elevations should be included on this plan. Each wetland resource area and riverfront area should be characterized according to 310 CMR 10.00. The DEIR should explain whether the Barnstable Conservation Commission has accepted the resource area boundaries and any disputed boundary should be identified. The DEIR should analyze both direct and indirect (i.e. changes in drainage patterns) impacts on wetlands resulting from the project, and quantify the amount of direct wetland impacts. The analysis should also include a drainage plan, and should discuss the consistency of the drainage and stormwater management system with the MassDEP Stormwater Management Act regulations and guidelines and the Wetlands Protection Act regulations and performance standards.

The proposed drainage and stormwater management system should be shown on a reasonably scaled plan with appropriate text and should include the location and function of all existing drainage structures. Proposed activities, including construction mitigation, erosion and sedimentation control, phased construction, and drainage discharges or overland flow into wetland areas, should be evaluated. The Commonwealth has endorsed a "No Net Loss Policy" that requires that all feasible means to avoid and reduce the extent of wetland alteration be considered and implemented. The DEIR 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 DEIR 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 must provide wetlands replication at a ratio of 1:1 for any unavoidable impacts to wetlands.

Stormwater and Drainage

The DEIR should clarify the amount of new impervious area associated with the construction of the Town's Draft CWMP. The DEIR should describe how the Town's proposed stormwater management system will be designed and constructed to be consistent with MassDEP's stormwater management regulations and policy standards and avoid and minimize adverse impacts associated with any new impervious area. The DEIR should describe proposed measures to manage stormwater during project construction.

Rare Species

According to the Natural Heritage & Endangered Species Program (NHESP), a number of Priority and Estimated Habitat areas are located within the Town of Barnstable. The DEIR should include a site inventory to determine which areas, if any, of the Town's Draft CWMP project area might constitute suitable habitat for the rare species known to exist in Barnstable. The DEIR should include a detailed description of the Town's preferred site layout alternative for the Draft CWMP. The DEIR should analyze the potential impacts to Priority Habitat and evaluate avoidance/mitigation strategies. The Town should continue to work closely with NHESP and consult with the Barnstable Conservation Commission during the preparation of this section of the DEIR 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 rare species located within and adjacent to the project site. The DEIR should report on the results of the Town's consultations with NHESP.

Historical/Archeological Resources

The Town should provide the Massachusetts Historical Commission (MHC) with a U.S. Geological Survey topographical map that locates the 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 ENF, the MHC indicates that the project area contains historic districts listed in the State and National Registers of Historic Places. It is likely that various components of the Town's Draft CWMP may be located within and/or adjacent to recorded archeological sites and archaeologically sensitive areas. The Town should continue to consult the Inventory of Historic and Archeological Assets of the Commonwealth during the planning and design process. The Town should coordinate with MHC to ensure review of any potential historic impacts from the project and the DEIR should provide an update on the status of these discussions. If MHC determines that the project will have an "adverse effect" on historic or archaeological resources, the DEIR should include a discussion of proposed mitigation measures the Town will undertake to address the adverse effect.

Greenhouse Gas Emissions (GHG) and Sustainable Development

The project is subject to the MEPA Greenhouse Gas Emissions Policy and Protocol ("the Policy"). The Policy requires projects to quantify carbon dioxide (CO_2) emissions and identify measures to avoid, minimize or mitigate such emissions. The Town will be required to quantify the direct and/or indirect CO_2 emissions associated with the project's stationary source energy usage (e.g., building energy use, process-related energy use) and transportation-related emissions (mobile sources), if applicable. To facilitate this evaluation, the GHG analysis should include a comparison of CO_2 emissions associated with an established project baseline to estimated CO_2 emissions associated with a final build condition that incorporates feasible mitigation measures to reduce CO_2 emissions. Unlike many projects reviewed under the Policy, wastewater treatment process energy loads and subsequent CO_2 emissions play a large role in the overall project's GHG emissions rather than the buildings that contain the facilities themselves. As outlined below, the Department of Energy Resources (DOER) has provided guidance to assist the Town in making a good faith effort to quantify project-related GHG emissions.

The ENF contained descriptions of five project alternatives that include either modification of existing wastewater management systems including wastewater treatment facilities, conveyances systems, pump stations and discharge facilities and/or the construction of new ones. As noted above, these systems and facilities represent potential direct and indirect sources of GHG emissions due to related electrical and thermal loads. The Policy directs proponents to use applicable building codes to establish a project emissions baseline that is "code-compliant." However, as stated by DOER, there is no building energy code equivalent that applies specifically to WWTFs. Furthermore, there is no readily available energy use model (such as eQUEST) to estimate the projected energy use of the WWTF processing energy loads. According to DOER, requiring Towns to estimate energy consumption, particularly by process equipment, would involve a detailed design and selection of systems and equipment well in advance of the conceptual CWMP project planning information that is typically included in ENFs and DEIRs submitted for MEPA review. Therefore, DOER's comment letter provided an alternative method to estimate GHG emissions from the proposed WWTF. This analysis should be provided in the DEIR, including supporting data, graphics and narrative to demonstrate that GHG emissions have been avoided, minimized and mitigated to the extent feasible. The Town should arrange a meeting with representatives from MassDEP, DOER and the MEPA Office prior to preparing the analysis to confirm the proposed methodology and to discuss any questions the Proponent may have with regard to the content of the comment letters.

The Town should use the EPA's Energy Star Portfolio Manager (ESPM) computer modeling program to quantify the energy usage associated with wastewater treatment technologies included in its Draft CWMP. Using EPA's ESPM will allow the Town to rank the estimated energy use of the proposed facilities included in the Draft CWMP and to compare this ranking with the energy usage of other wastewater management facilities that have similar fundamental operating parameters and are located in similar climate zones.

Use of the EPA's ESPM program for WWTFs requires the input of specific facility information that is typically decided and readily available at the conceptual CWMP project planning process currently under MEPA review including:

- Average Influent Flow (MGD);
- Design Flow (MGD);
- Average Influent Biological Demand (BOD) Concentration (mg/l);
- Average Effluent Biological Demand (BOD) Concentration (mg/l);
- Fixed Film Trickle Filtration Process: Yes or No;
- Nutrient Removal: Yes or No;
- Fuels to be used (e.g. electricity, natural gas, heating oil, etc); and
- Facility Zip Code

The Town should use the ESPM program together with the guidance and methodology cited specifically in the DOER comment letter to prepare a GHG analysis that demonstrates the Town's Draft CWMP's consistency with the Policy. The DEIR should clearly identify potential GHG reduction mitigation measures that will be adopted by the Town, or, those mitigation measures that will continue to be evaluated as project design advances. The Town may wish to consider committing to minimum equipment performance standards as a method to meet GHG reduction goals at this stage of the project design. I also encourage the Town to consider the use of energy audits to assist in the identification of potential energy reduction measures that could be implemented into the existing portions of the wastewater treatment system.

Secondly, the Town should use the energy use models indentified in the Policy (such as eQUEST) to perform stationary source modeling for WWTF-related buildings included in its Draft CWMP. Following the Policy, the DEIR should include a GHG emissions analysis that calculates and compares GHG emissions associated with two alternatives as required by the Policy including 1) a Base Case corresponding to the current edition of the Massachusetts State Building Code with all associated amendments and 2) a Preferred Alternative which includes energy efficiency design measures. The DEIR should clearly state the types of modeling software used, the Building Code in effect at the time of the modeling, and emissions factors applied to GHG calculations. The DEIR should state modeling assumptions and explicitly note which GHG reduction measures have been modeled and those that cannot be modeled due to the constraints of the modeling software. The DEIR should include a clear and complete listing of modeling inputs (e.g., R-values, U-values, efficiencies, lighting power density, etc.) for items such as equipment, walls, ceilings, windows, lighting, HVAC units, etc. for both the Base Case and Preferred Alternative. The DEIR 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 emissions.

The DEIR should include a feasibility study of installation of renewable energy on-site (e.g., solar (photovoltaic (PV)), wind, geothermal). Installation of PV systems on municipal buildings or on municipal properties may achieve cost-savings beneficial to the community and offset ongoing operational costs. The DEIR should include a separate analysis to determine if PV

systems (either ground-mounted or building-mounted) are feasible in association with this project. This feasibility analysis should use online DOER resources to calculate potential project cost, payback periods and returns on investment. The Town should consider both first-party and third-party ownership/lease scenarios. The DEIR should state assumptions with regard to available area for PV equipment, efficiencies, etc. If feasible, I encourage the Town to commit to the use of PV systems at their facilities. At a minimum, buildings should be "solar ready" to facilitate future installation of PV systems.

The DEIR should also clarify if the project will include measurable transportation-related CO_2 emissions in the form of delivery of septic sludge/waste from septic haulers for treatment at the facility. The Town should consult with the MEPA Office prior to preparation of the GHG analysis to discuss a potential methodology to calculate these GHG emissions if applicable.

The Town should commit to continue to work closely with MassDEP and DOER during future final WWTF design and permitting to identify and incorporate appropriate energy efficiency measures into the buildings, treatment processes and operations for the Barnstable WWTF. It is anticipated that MassDEP will work with the Town to incorporate proposed GHG reduction measures into project design through its project financing and permitting authority. Upon completion of the construction of the Barnstable WWTF, the Town will be required to provide a certification to the MEPA Office signed by an appropriate professional (e.g., engineer, architect, general contractor) indicating that the all of the GHG mitigation measures committed to by the Town as described in the Final EIR, or as modified as part of the MassDEP permitting process, have been incorporated into the project. This certification will need to be supported by as-built plans. For those measures that are operational in nature the Town will be required to provide an updated plan identifying the measures, the schedule for implementation and how progress towards achieving the measures will be obtained. The proposed draft Section 61 Findings in the DEIR should include this self-certification requirement.

Construction Impacts

The construction period will be the major source of impacts from the project, including impacts from earth moving, impacts to vegetation, potential impacts from erosion and sedimentation, traffic impacts on adjacent roadways, and impacts to adjacent land uses. The DEIR should evaluate construction period impacts and should include a discussion of the Town's plans to reseed and replant those portions of the construction corridor located adjacent to wetland resource areas, endangered species habitats, Article 97 lands, and residential properties with appropriate native species of grasses, woody shrubs and trees. The Town may wish to consult with the Barnstable Conservation Commission, MassDEP and abutting property owners in the development and scheduling of re-seeding and re-planting activities. I strongly encourage the Town to commit to using lower emission equipment in addition to requiring its contractors to retrofit diesel-powered equipment with emissions controls, such as particulate filters or traps, and use low-sulfur diesel fuel. The Town should require its contractors to use On-Road Low Sulfur Diesel (LSD) fuel in their off-road construction equipment which can increase the removal of

particulate matter (PM) by approximately 25% beyond that which can be removed by retrofitting diesel-powered equipment. All construction-related refueling and equipment maintenance activities should be conducted under cover on impervious surface areas with containment, and outside of any wetlands resource areas, endangered species habitat areas, residential areas and wellhead protection areas.

Sewering and Growth Management

Executive Order #385 requires that state and local agencies engage in protective and coordinated planning oriented towards resource protection and sustainable economic development. For reasons of both environmental protection and fiscal prudence, investments in public infrastructure should be carefully targeted toward those areas for which clear existing needs have been established and for areas where denser development is appropriate, thereby relieving development pressures on open space, agricultural lands, and other valuable natural resources. As part of the Town's Area 5 Sewers Project, the Town committed to update its current Local Comprehensive Plan (LCP) to include a "sewer neutral" policy and to adopt appropriate regulations (similar to the Town of Chatham's Regulation of Sewer Flow, Article II, May 9, 2005) for controlling new future development requesting municipal sewer service and located in areas inside of the AOCs and the proposed new sewer areas. The Town comitted to implement a "checkerboard" sewer connection bylaw to 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 also comitted to implement a 'flow-neutral' nutrient control regulation, to be administered through the Barnstable 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 DEIR should include a detailed discussion of potential land use control mechanisms to limit unwanted secondary growth related to the construction of the Town's Draft CWMP. The DEIR should provide an update of the Town's efforts to implement these land use control mechanisms associated with the construction of the Town's Area 5 Sewer Project and their applicability to the Town's Draft CWMP. The DEIR 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 DEIR should include any new proposed by-laws or regulations for controlling future development requesting municipal sewer service and located in areas outside of the new CWMP 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. I encourage the Town to consult with MassDEP and CCC in developing growth-neutral policies and a strategy to prohibit and/or discourage future new development requesting municipal sewer service and located in areas outside the AOCs and the proposed new sewer areas.

Costs to Homeowners

Although economic considerations are not ordinarily within MEPA jurisdiction, for the purpose of providing full information to reviewers, I encourage the Town to provide cost estimates (both capital and operating) for the Draft CWMP, a projection of the impact on local sewer rates, and a comparison of the resulting local sewer rates to Massachusetts Water Resources Authority (MWRA) and statewide averages. The DEIR should include estimates for the costs of land acquisition associated with the location of new wastewater management facilities and groundwater discharge sites. Cost evaluations for groundwater discharge sites should only include the land acquisition costs for the needed acreage for recharge beds, plus a reasonable buffer zone (as opposed to the entire parcel). The Town should not presume market rate acquisition costs for all parcels identified as potential groundwater discharge sites, especially those parcels that may be owned by the Commonwealth or non-profit organizations.

Public Participation

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

Mitigation/Draft Section 61 Findings

The DEIR should include a separate chapter on mitigation measures that includes Draft Section 61 Findings for all state agency actions. The Draft Section 61 Findings should contain a clear commitment to implement mitigation measures, 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. The Town should continue to work closely with CCC, MassDEP, and the CCWPC and others to design and implement a sustainable Comprehensive Wastewater Facilities Plan and mitigation plan for the Town of Barnstable that will help to offset the proposed project's municipal sewering impacts.

Responses to Comments

The DEIR 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 DEIR 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 DEIR beyond what has been expressly identified in this Certificate.

Circulation

The DEIR 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 local officials from the Towns of Barnstable, Eastham and Brewster. A copy of the DEIR should be made available for public review at the Barnstable, Mashpee, Sandwich and Yarmouth Public Libraries.

July 20, 2012
DATE

Richard K. Sullivan Jr., Secretary

Comments received:

05/22/2012	Massachusetts Historical Commission (MHC)
06/06/2012	Cape Cod Commission (CCC)
06/22/2012	Division of Marine Fisheries
06/22/2012	Haley and Ward, Inc.
06/25/2012	Board of Underwater Archaeological Resources (BUAR)
06/26/2012	Department of Environmental Protection (MassDEP) – Southeast Regional Office
06/26/2012	Department of Energy Resources (DOER)
06/07/2012	Natural Heritage & Endangered Species Program (NHESP)
06/10/2012	Office of Coastal Zone Management (CZM)

ENF #14896
RKS/NCZ/ncz

14896 N2

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

May 18, 2012

Nathan C. Weeks
GHD Inc.
1545 Iyannough Road
Hyannis, MA 02601

RE: Town of Barnstable Comprehensive Wastewater Management Plan, Barnstable, MA.
MHC # RC.52494.

Dear Mr. Weeks:

Staff of the Massachusetts Historical Commission have reviewed the Environmental Notification Form (ENF), received May 10, 2012, for the project referenced above and have the following comments.

MHC proposes to review phased water supply, wastewater and stormwater management projects as they are designed. Project planners should submit scaled project plans showing existing and proposed conditions to the MHC for review and comment for each phase of improvements or expansion projects, including wastewater treatment plant location(s), recharge areas, pump stations, equipment storage and materials staging areas and cross-country sewer right-of-ways,

ENF Figure 5-12 shows historic districts listed in the State and National Registers of Historic Places. Project planners should continue to consult the Inventory of Historic and Archaeological Assets of the Commonwealth for identified historic and archaeological properties. MHC's Inventory of Historic and Archaeological Assets of the Commonwealth (which includes current State Register listings) is available for research at our office, without an appointment, during normal business hours. Researchers should be aware, however, that consultation of the Inventory is not sufficient to identify all significant historic and archaeological resources that may be affected by a project (see 36 CFR 800.4).

Project planners should consider feasible design and locational considerations that meet the engineering requirements, while also seeking to avoid or minimize impacts to historic and archaeological properties and areas. Proposed above-ground construction (e.g. pump stations) in historic areas should be designed to be compatible and sensitive to the historic characteristics of the surroundings. Design elements for new construction in historic areas should consider size, scale, massing, height and materials in developing the specifications, and also consider vegetative screening to minimize visual effects. Proposed project elements may also required Certificates of Appropriateness from the Old King's Highway Regional Historic District Commission and/or the Barnstable Historic District Commission.

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 71) and MEPA (301 CMR 11). If you have questions or require additional information please contact Jonathan K. Patton at this office.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc: Thomas K. Lynch, Barnstable Town Manager
Dale Saad, Barnstable Department of Public Works
Secretary Richard K. Sullivan, Jr., EEA, Attn: MEPA Unit
John Felix, DEP-BRP
DEP-SERO-DWPC
Sara Korjeff, Cape Cod Commission
Barnstable Conservation Commission
Barnstable Historical Commission
Barnstable Historic District Commission
Patricia Anderson, Old King's Highway Regional Historic District Commission-Barnstable

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CAPE COD
COMMISSION

N2

June 4, 2012

U.S. Mail and Email

Secretary Richard K. Sullivan, Jr.
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Barnstable Comprehensive Wastewater Management Plan
MEPA Project No.: 14896
MEPA Analyst: Nicholas Zavolas

Dear Secretary Sullivan:

On June 4, 2012, a joint Cape Cod Commission (Commission)/MEPA public hearing/scoping session was held and the Commission received comments on the Environmental Notification Form/Barnstable Comprehensive Wastewater Management Plan (CWMP).

Prior to this hearing, the Commission subcommittee received a copy of the Barnstable CWMP. During the hearing, the Town of Barnstable and their consultant, GHD, Inc., made a presentation on the CWMP, and Commission staff provided an analysis of the CWMP in a staff report. After consideration of this information, the subcommittee voted to adopt the Commission staff report as their comments to MEPA.

The attached staff report provides comments for inclusion in the Environmental Impact Report (EIR) scope, in the 2009 Regional Policy Plan (revised May 20, 2011) issue areas of Water Resources, Land Use, Coastal Resources, Natural Resources, Historic and Archeological Resources, and Transportation.

Thank you for considering our comments as you develop the EIR scope. Please contact Commission staff if you have any questions or concerns about the content of this letter or the attached staff report.

Sincerely,

Richard Roy
Subcommittee Chair

Enclosure

Cc: Nathan Weeks, P.E., BCEE, GHD, Inc., 1545 Iyannough Road, Hyannis, MA 02601
Mark Ells, Director Department of Public Works, Barnstable
Jo Anne Miller Buntich, Director, Growth Management Department/DRI Liaison, Barnstable
Thomas Lynch, Barnstable Town Manager
Karen Greene, Director of Community Development/DRI Liaison, Yarmouth
Nathan Jones, Town Planner/DRI Liaison, Sandwich
Joyce Mason, Town Manager/DRI Liaison, Mashpee

STAFF REPORT

CAPE COD COMMISSION

PROJECT: **Barnstable Comprehensive Wastewater Management Planning Project**
(Commission Project: ENF12016-JR12016, MEPA EEA Project No.: 14896)

TO: Barnstable CWMP Subcommittee
Richard Roy, Chair
Royden Richardson
John D. Harris
Leonard Short
John McCormack, Jr.
Ernest Virgilio, Alternate
Roger Putnam, Alternate

STAFF: Jessica Rempel, Regulatory Officer
Kristy Senatori, Chief Regulatory Officer
Tom Cambareri, Water Resources Program Manager
Phil Dascombe, Senior Community Design Planner
Heather McElroy, Natural Resources Specialist
Sarah Korjeff, Historic Preservation Specialist
Glenn Cannon, PE, Technical Services Director

DATE: **JUNE 1, 2012**

INTRODUCTION

The Cape Cod Commission (Commission) has received an Environmental Notification Form (ENF) for a Comprehensive Wastewater Management Planning (CWMP) Project (Project) from the Town of Barnstable (Applicant). The CWMP/ENF was noticed in the May 9, 2012 Massachusetts Environmental Policy Act (MEPA) *Environmental Monitor*. The ENF consists of the first two major submittals of the CWMP referred to as the Needs Assessment Report (NAR) and Alternatives Screening Analysis Report (ASAR).

The Project is subject to MEPA review because potential facilities recommended by the Project are expected to exceed MEPA thresholds requiring the preparation of an Environmental Impact Report (EIR). As such, the Project is also subject to Commission review pursuant to Section 2(d)(i) of the *Enabling Regulations* (revised March 2011) as "*Any proposed development for which an Environmental Impact Report (EIR) is required to be prepared under the provisions of MEPA shall be deemed a DRI.*"

The Applicant has requested Joint MEPA/Commission Review pursuant to the Memorandum of Understanding between the Commission and the Massachusetts Executive Office of Energy and Environmental Affairs – MEPA Unit. The Commission received the application for Joint Review on May 3, 2012 from the Applicant's representative, Nathan C. Weeks, P.E., BCEE, of GHD.

The Joint MEPA/DRI scoping session/public hearing will be held on June 4, 2012 at 7:00 PM at the Town of Barnstable Department of Public Works, 382 Falmouth Road, Hyannis, MA. The purpose of the scoping session/public hearing is to gather information for the Joint MEPA/DRI Review of the CWMP/ENF prepared by the proponent and to recommend a scope for the Barnstable CWMP Project. The close of the MEPA comment period is June 26, 2012.

Wastewater management is one of the most significant regional concerns affecting Cape Cod. The Cape Cod Commission (Commission) is actively engaging with Cape towns to discuss the science, the challenges, and the potential solutions for managing wastewater in an efficient and cost-effective way. The Commission supports the efforts of the Town of Barnstable to develop a comprehensive plan to address wastewater management and applauds the Town for seeking input from the Commission on its plan and proposed alternatives at this stage of the review process.

The Town's request to review its CWMP ENF through joint review with the Commission, Massachusetts Environmental Policy Act, and the Town's Citizen's Advisory Council is commendable. The Commission feels that the Town of Barnstable's CWMP review process and discussion of alternatives can serve as a model for the Cape for how to engage citizens and regulators to address this important issue. The Commission looks forward to continuing to partner with the Town of Barnstable as its CWMP develops.

PROJECT DESCRIPTION

The purpose of the Town of Barnstable CWMP Project is to provide a plan for wastewater treatment and nutrient management in the Town of Barnstable for the 20-year planning period of 2015 to 2035. The town initiated its last wastewater planning process in 1993 with the 20-year planning period of 1994 to 2014. The Commission rendered an approval, with conditions,

decision on that Development of Regional Impact (DRI; Barnstable Wastewater Facilities Plan Project EIR96005) on September 20, 2007. Many of the recommendations of that project and conditions of that decision have been completed, including upgrading and expansion of the Hyannis Water Pollution Control Facility (WPCF), initial sewer extensions, and development of nutrient limits for most of the town's coastal estuaries. However, Sewer Resource Benefit Assessments for Areas of Concern that are being implemented have not been completed and quarterly Adaptive Management and Monitoring Program reports and annual Water Level and Water Quality Monitoring reports have not been submitted to the Commission.

The purpose of the proposed Town of Barnstable CWMP/ENF is to summarize the progress completed on the Project to-date and to identify and scope the subsequent evaluations and environmental review process that the town will complete to produce the Draft and Final CWMP/EIR documents. The CWMP Project will assess the wastewater needs, evaluate mitigation measures, and develop a recommended plan. The Project is expected to recommend sewer extensions, the construction of advanced wastewater treatment and recharge facilities, and other efforts to mitigate excessive nitrogen loading that is entering the watersheds through existing septic systems. These expected recommendations are anticipated to meet or exceed MEPA review thresholds requiring the preparation of an EIR and therefore the Project would be deemed a DRI.

As indicated in the ENF, the overall CWMP Project has been divided into phases. Completed or ongoing phases include environmental monitoring and modeling, development of nutrient limit targets, preparation of nutrient management Needs Assessment and Alternative Screening Analysis Reports, and environmental and public review process. The CWMP/ENF includes copies of the NAR and ASAR, focuses review on the alternative management scenarios and their associated environmental impacts and benefits, and details how these alternative management scenarios will be evaluated.

The NAR identifies the wastewater and nutrient management planning history in Barnstable, estuarine and pond water quality needs, groundwater quality and drinking water supplies, wastewater treatment and recharge facilities and related needs, and informational needs to complete the CWMP Project. The ASAR investigates and screens alternative technologies, solutions, and sites, and identifies alternative plans for more detailed evaluation, including a "No Action Alternative."

COMMENTS FOR INCLUSION IN THE MEPA EIR SCOPE

Commission staff has reviewed the CWMP/ENF for consistency with the 2009 Regional Policy Plan (RPP), as amended in May 2011, and offers the following comments on the ENF and the

MEPA EIR scope. As the Project is a planning evaluation, as no specific recommended plan or development has been identified, and as much of the Project size and impacts are identified in the CWMP/ENF as "TBD", Commission staff has not commented in all issue areas of the RPP at this time. However, RPP issue areas not included in the following assessment will be reviewed once a recommended plan or development has been decided upon and during the Draft EIR, Final EIR, and/or DRI reviews. Nevertheless, the town should consider all RPP issue areas as it continues to develop its CWMP and Commission staff looks forward to working with the town as the Project proceeds through the planning and review process.

WATER RESOURCES

The Needs Assessment and Alternatives Screening Analysis Reports conclude with five alternative plans, not including the no-action alternative. Each alternative assumes a portion of the town will remain on Title 5 systems where nutrient removal is not required and that remote recharge sites for treated effluent will be needed.

Decentralized Plan A – Making use of Innovative and Alternative technologies (IA) and multiple satellite systems (for western portions of town) and expansion of the Hyannis WPCF to serve the eastern portion of town.

Decentralized Plan B – Making use of one or two new satellite facilities in the western portion of town and expansion of the Hyannis WPCF to serve the eastern portion of town.

Centralized Plan A – Expansion of the Hyannis WPCF to serve all portions of town.

Centralized Plan B – Expansion of the Hyannis WPCF to serve all portions of town with use of an ocean outfall for treated effluent disposal into offshore marine waters.

Alternative #5 – Decentralized Plan B with planned abandonment of impacted water supplies and their replacement with new supply sites to be developed.

Each of the Alternatives also include recommendations for non-structural nutrient controls including: fertilizer reductions; storm water management; enhanced natural attenuation, with specific mention of two projects, one at Mill Pond on the Marston's Mills River and the second, estuarine inlet widening at Rushy Marsh; zoning to create flow neutrality in sewer service areas, not dedicated for growth; and use of aquaculture.

CRITICAL PATHWAYS

The proposed decentralized and centralized technology approaches for meeting the nutrient management needs of Barnstable make a distinction between the east and west parts of the town. The nutrient management needs are generally presented as the MEP nitrogen percent

removals in tables and maps and a breakdown of wastewater flow within them. However, the pathway to implement the universe of solutions to meet the removal percentages is unclear. Specific watershed management approaches need to transcend the east and west distinction and be the focus of identifying alternatives. The following approach is suggested to be incorporated into the alternatives analysis for the Town of Barnstable.

Targeted Watershed Approach

The goal of a Targeted Watershed Approach is to expedite nutrient management in critical and significantly impacted watersheds and sub-watersheds. Barnstable has four major embayments with critically impaired waters to focus on including:

Lewis Bay – including Hyannis Harbor, Mill Pond Creek and Snows Creek

Three Bay – including Prince Cove / Arm / Channel and North Bay.

Centerville River – including East Bay

Popponessett – Shoestring Bay

The alternatives assessment should provide a pathway that targets those critically impaired waters to get the greatest amount of nutrients removed in the quickest time frame. The MEPA and DRI approved CWMPs of Chatham and Orleans are long-term infrastructure projects that will ultimately achieve the rigorous TMDL nutrient removal goals. However, each of those plans will require 20 to 30 years to achieve that goal. In the interim, nitrogen will still course through the aquifer to discharge into the impaired coastal waters. Wastewater infrastructure planning on Cape Cod must make a shift to target aggressive remedial approaches to demonstrate the effectiveness of nutrient removal to restore water quality.

The Needs and Alternatives Analysis need to consider time as a primary factor in the evaluation. The Commission is developing a wastewater management tool (Watershed –MVP) that can assist the town is developing targeted remedial approaches. The Watershed – MVP can be used to evaluate the Decentralized approaches of Plan A or B in the critical headwaters of these particularly impacted embayments. This approach should consider alternatives including the use of more easily located local facility and discharge sites that are capable of removing 75% or more of the nitrogen from critical watersheds in the first years of implementation. The accompanying adaptive management plan for these targeted watershed approaches will be focused to evaluate improvements by monitoring of groundwater, embayment water quality and habitat. Contingent connection to centralized infrastructure may be an option to be considered in later years.

Targeted watershed approaches include a first a prioritization to remediating water quality problems in Lewis Bay, Prince Cove and Centerville River and Shoestring Bay.

Sewer Resource Benefits Assessments

The Commission's DRI approval of the 2007 Wastewater Facility Plan includes a condition for Sewer Resource Benefits Assessments (SRBA; Condition WR3) in which *"...the town shall compare resource benefits with the impacts of expanding sewer areas in order to provide additional support, and prioritization for sewering of each area... These Sewer Resource Benefits Assessments for each Areas of Concern shall be submitted for Cape Cod Commission review and approval prior to the preliminary sewer design report for each AOC."*

This condition is intended to bridge the gap between the 2007 Facility Plan that identified wastewater needs in eastern Barnstable and the needs for town-wide nutrient management. The recent sewer Stewart's Creek project did not file a SRBA with the Commission. The CWMP should re-evaluate the priorities of the 1993 identified AOCs in line with nutrient management needs for the allocation of treatment capacity at the WPCF over importing flow from AOCs outside the Lewis Bay watershed.

For instance, sewer flow from AOC BWCMEL1A-1B, and BEARSES to prioritize collection in Snows Creek and Mill Pond should be combined with collection in Hyannis Inner Harbor and Inner Harbor Creek for removal of nutrients into Lewis Bay.

Collection should also be prioritized to remove septic system contaminants that impair the Maher, Simmons Pond, and Hyannisport wells. Extension of an appropriate collection service to the Yarmouth Line to service BWCMEL AOCs could open opportunities for regional solutions for the watershed. The Commission has identified working with Barnstable and Yarmouth in the next year.

SRBAs should be provided for AOCs that would import nitrogen from outside to inside of the Lewis Bay watershed, notably the Wequaquet Lake AOC. Commission staff can assist the town in the scoping of SRBAs.

Lewis Bay

Wastewater treatment capacity at the Hyannis WPCF should be prioritized for Lewis Bay including an appropriate portion (approximately 660,000 gpd average) from the Town of Yarmouth. Commission staff provided a Memo to Barnstable staff in April 2009 that discussed a number of issues and suggestions for MEP scenarios. Allocation of the buildout potential for the two towns will need to be resolved, with additional scenario runs that include prioritized 2007 AOCs and securing additional effluent disposal capacity. A focused feasibility study of discharge proximate to the Hospital bogs should be evaluated. The Nutrient Assessment for Lewis Bay solutions needs to incorporate allocation of nitrogen from the WPCF treated effluent that will ultimately contribute to downgradient resources. Additional groundwater modeling will be required to identify those allocations.

Three Bays

The priority for remedial action within the Three Bay system should be targeted on Prince Cove subwatersheds with the use of decentralized infrastructure. The Cotuit Landing treatment system is a satellite facility with excess capacity, which has achieved an average total nitrate concentration of 5.4 ppm in its effluent. Similar systems could be localized through these subwatersheds to aggressively remove the majority of the near source nitrogen. The Watershed-MVP will be useful to develop and test the veracity and relative costs of this type of approach.

Centerville River

The Centerville River System includes Scudder and East Bay. These Bays are identified as being significantly impaired. The MEP example shows that the removal of nitrogen in Centerville River East subwatershed as one alternative to restore water quality of those down river embayments. Additional strategies that include remedial actions closer to the impaired water bodies of Scudder and East Bay, including ENA, should be considered and run as MEP scenarios, prior to focusing alternatives on the Centerville River East scenario.

Popponessett Bay

Barnstable shares the watershed to Popponessett with the Town of Mashpee so water quality improvement alternatives for Shoestring Bay should include alternatives for potential regional options with Mashpee. The sewering of the Cotuit Bay Condominiums on the Mashpee shore of Shoestring Bay to the Willow Bend treatment plant is a good example of the type of options that should be pursued. The Commission will assist the towns in moving forward with this option. We commend the town for working with the other towns in this shared watershed (Mashpee and Sandwich) to develop a method for agreeing on nitrogen reduction responsibilities between the towns, and we look forward to working with the town on this effort as it moves forward.

Targeted Wastewater Assessments and Scenario Development

Targeted watershed approaches will require several levels of assessment to evaluate effectiveness. While infrastructure scenarios can be developed with the Commission's Watershed - MVP, comparisons of expected water quality improvements will need to be run as MEP scenarios. The Commission will offer assistance to develop a formal and stream-lined approach to develop and test infrastructure alternatives and MEP scenarios.

ADDITIONAL INFORMATION REQUESTED

The Detailed evaluation and Development of the Nutrient Management for Phase IV requires the ability to bring any past and present data and information to bear on the problem and a clear definition of objectives. The submitted NAR and ASAR provide a good background on the history and setting the stage for the Detailed Evaluation but it should also include or

appropriately summarize the information that is needed to inform the detailed evaluation and present a clear road map for achieving its objectives.

The following areas will need to be enhanced and considered in order to bring Barnstable to the next stage of wastewater planning.

Water Supply – The Needs Assessment characterizes the town's water supply quality as either well or not well protected. The assessment makes use of the published consumer confidence reports. The consumer confidence reports provide little in the way of spatial water quality assessment of Barnstable's 41 public water wells or recognition of impacted wells that are referred to in Decentralized Plan "C." The consumer confidence report for the Hyannis Water Division was missing from the summary Table 5-2. A quantitative assessment and summary of the public water supply quality is required. This should include summary tables of nitrate, sodium, volatile organics, and where available, emerging compounds of concern and maps of nitrate concentrations. An interpretation of the occurrence of contaminants of emerging concern (CEC) should be presented. This type of work was part of the 1993 Needs Assessment but needs to be updated.

Maps showing the water supply infrastructure for the town carry forward a number of potential water supply sites that had been identified in the past, particularly the Hyannis Water Division. The Assessment should re-evaluate the feasibility of developing these and other site sites with the Water Districts and DEP-Drinking Water staff given new regulations on groundwater under the influence and purchase of the Independence Park area by Department of Conservation and Recreation. Two of the potential sites have been built; the COMM Patty's Pond and BFD #5 wells.

Ponds – The Ponds Action report and use of the Commission's work with the Town of Barnstable provide a good basis for the recommendations on the action plan. Ponds in proximity to critical subwatersheds targeted for potential sewer service areas should be identified if septic system phosphorous control is required.

Disposal Sites and Total Organic Carbon – The Needs and Alternative screening report includes a summary of the efforts and results to identify potential effluent discharge sites from the 2007 Wastewater Facility Plan which was only focused on the eastern part of Barnstable. The report should also include the results of the town's earlier discharge site screening that evaluated town-wide sites, including those in the western part of town. The Commission is presently conducting a County-wide screening analysis for effluent discharge sites for its Regional Wastewater Management Plan and is establishing criteria for their evaluation. The Town and Commission staff should continue to work on this aspect together.

The CWMP's discussion of disposal sites provides significant detail to address the Department of Environmental Protection regulatory requirement (314 CMR 5.00), which was adopted in

2009 for Total Organic Carbon (TOC) removal for wastewater discharges in Zone IIs. The ASAR indicates that the literal application of this regulatory requirement for Cape Cod wastewater solutions will result in significant capital and operation and maintenance costs and in the case of the Hyannis WPCF, constrain the expansion of the existing discharge site. The increased cost for TOC removal, estimated in the Falmouth CWMP for a 1.8 MGD plant, is $30 to $40 million more than an enhanced nitrogen removal plant with approximately 60% additional annual operating costs of 2 to 3 million dollars. This constraint and the cost for compliance have made wastewater planning for the future so difficult that the ASAR has resuscitated ocean outfall and public water supply abandonment as viable alternatives.

The potential costs and ramifications of the literal application of the TOC regulation for expansion of discharge in Hyannis merits a complete review of the present impact of the treated effluent on groundwater in the Hyannis area. This requires a full evaluation of the water quality monitoring program for the WPCF and the impact of septic systems on existing and potential downgradient water supplies. The existing disposal site at the Hyannis WPCF has been in operation for more than 75 years. The level of impact on the surrounding groundwater and down gradient public supply wells should be well understood. The Needs Assessment and Alternatives Analysis states that the WPCF is "operating well and meeting its permit requirements"...and... "the groundwater monitoring program is showing no alarming trends." It does not provide a rigorous assessment of the WPCF and water quality needed for this topic.

The Cape Cod Water Protection Collaborative commented on the draft DEP Groundwater Discharge Regulations indicating that the literal application of the TOC requirement would have a serious effect on wastewater planning for Cape Cod. DEP modified their regulations (314CMR5.10) to include some accommodation for extenuating circumstances.

> (4A)(a)(3). Total Organic Carbon shall not exceed three milligrams per liter unless otherwise determined by the Department; In making this determination the Department may consider, but not be limited to the following:
>
> a. The location of the discharge relative to the Zone of Contribution as determined by a Hydrogeological Evaluation as provided in 314 CMR 5.09; and
>
> b. Mitigation or additional source protection measures provided;

Groundwater from the WPCF and Marstons Mills Plants has more than 20 years of travel time before it migrates to the vicinity of the supply wells and a smaller proportion of water pumped from the wells would originate from those facilities vs. septic systems that are more proximate to the wells. The 2007 Development of Regional Impact (DRI) approval and permit included an Adaptive Management and Monitoring Program for the WPCF. A number of the DRI conditions

for monitoring were meant to better understand the degree of groundwater impact so that this information could be used to more fully address the TOC and pathogen treatment level issue. A number of the DRI permit conditions have not been followed including, annual meeting of a Technical Advisory Group(WR5), compilation of quarterly water quality and water level monitoring on a quarterly basis and submittal of annual report (WR5), installation of additional monitoring wells (WR4), submitting revised GWDP within one year of DRI approval (WR7), conduct an assessment of Pharmaceuticals and Personal Care Products (WR10), and conduct an assessment of the fate and transport of pathogens in the aquifer beneath the WPCF (WR11).

TECHNOLOGY

The ASAR technology exercises a risk adverse management approach in which technologies not approved or without long term records or conflicting reports are not recommended. Staff suggests that this approach can be moderated by embracing a targeted and incremental approach that can broaden the universe of solutions to the nutrient management needs of the town.

Alternative and Cluster Systems

The ASAR provides a thorough review of wastewater treatment options. The range of wastewater treatment for this selected suite of technologies is from single residential (330 GPD) to neighborhood systems (< 10,000 gpd). This is a wide range of flow and any one of these particular technologies likely performs better at a higher consistent flow. The single summary table should distinguish performance at a range of flows by selecting a threshold of say 2,000 gallons per day. Non-discharge technologies are not recommended by the ASAR, for a number of reasons, but it is noted that they were recommended previously for areas like Sandy Neck. Innovative and Alternative technologies approved by DEP for General Use are recommended by the ASAR for further evaluation in areas where nitrogen removal is less than 25%. Limiting the use of IAs to just one area constrains the potential use of a series of technologies to address nitrogen removal anywhere it is needed. Technologies that have Provisional Approval by DEP are not recommended by the ASAR for large scale implementation. Large scale implementation is not defined, however. If any of these technologies was found to be useful in a sub-area of a watershed then it would not be large scale but appropriate. Several of the provisional technologies not recommended have very good treatment performance, such as the Brackett Road Affordable housing project in Eastham that has a facility with a flow if 8,300 gpd and is achieving <3 ppm nitrogen in effluent. The CWMP is presenting a 20 year long-term solution for the Town of Barnstable; de-selection of these technologies because they do not have long term operating data appears to unduly constrain a suite of promising technologies.

Centralized and Satellite Systems

The ASAR does a thorough assessment of centralized and satellite system technologies. The present treatment system at the WPCF is a multiple stage nitrogen removal process referred to as the Modified Ludzack-Ettinger process (MLE) with a maximum month flow capacity of 4.2 million gallons per day (MGD). It is not clear if the ASAR evaluated whether the WPCF effluent has a high or low Dissolved Organic Carbon (DOC)/TOC ratio or if the amount of carbon use in the Granular Activated Carbon (GAC) technology be greater than 2000 lbs/day for the WPCF.

The ASAR evaluates the anticipated removal efficiencies of a number of technologies that can be added on to the WPCF either within the existing footprint or by expanding the footprint. The ASAR should indicate how the existing effluent discharge capacity will change by converting sand filter beds to additional structures, including the recently constructed solar arrays.

The driving factors for screening and selecting expanded treatment technologies are 1) anticipated increased flows and 2) compliance with the 2009 DEP TOC treatment requirement. This section is summarized in Table 4-5 and 4-6 of the ASAR. If accommodating an incremental flow increase up to 5.6 MGD is satisfactory for the planning period, then adding a 4th aeration tank is the least costly but the ASAR indicates that it does not provide the set-up for TOC removal. Conversion of the existing tankage to accommodate Membrane Bioreactor (MBR) or BioMag are retained to significantly increase flow capacity, provide greater treatment for nitrogen and better primary treatment for TOC. These last two technologies however have high costs, complex operation, high energy demand and need for additional chemicals. These Biological Nitrogen Removal (BNR) technologies can be converted to Enhanced Nitrogen Removal (ENR) technologies if additional methanol dosing equipment is accommodated.

If expanding the treatment footprint is reasonable, then the option to essentially double the existing BNR treatment process with the 4th aeration tank and a new clarifier is possible. Another presented approach would be to convert the treatment process totally over to MBR. Converting the existing BNR system to Enhanced Nitrogen Removal (ENR) alternatives include the doubling of the existing system and adding a denitrifying filter. Another version of this ENR is converting the BNR to a Bardenpho, clarifier and tertiary filters, and a third is converting the BNR MBR process with a Bardenpho treatment system (these distinctions can be better described here in the ASAR summary).

Each of these technology alternatives for nitrogen removal sets up subsequent TOC removal technologies including costly Granular Activated Carbon, Reverse Osmosis with variations including membrane or filtration pretreatment. It appears that a number of the TOC removal technologies evaluated are more typically used for drinking water treatment and that there is not a track record for their application to large volumes of wastewater effluent and therefore present some risk to be managed.

Commission staff's initial response to these options, if doubling the treatment capacity is necessary, is to favor those that make use of the existing treatment process like B3 (MLE and Clarifier(s)), which can be easily accommodated and cost the least. As indicated previously, the town should thoroughly evaluate the impacts of the existing impacts of the WPCF and its relation to drinking water in relation to the intent of the 2009 DEP TOC removal requirement. The town will need to clearly make its case that its priority is nutrient removal and water quality restoration of its coastal embayments over the provision for a high level and extremely costly treatment for discharge to an area of the aquifer that has been impaired by over 75 years of growth and effluent discharge.

The ASAR should present anticipated flow rates over time to better evaluate these treatment technology alternatives by addressing how much and by how fast additional capacity is needed. The NAR projects town wastewater flow of 6.7 MGD. If only 40% of the town is sewered, then the planning horizon combined flow would be 2.7 MGD. If the anticipated flows are lower, and TOC removal is deferred, then the 4th clarifier for increased capacity up to 5.6 MGD within the existing footprint may be reasonable.

WATER AND WASTEWATER FLOWS UNDER EXISTING AND BUILDOUT CONDITIONS

The existing water supply flows are 4.3 and 1.0 MGD for residential and commercial properties. Comparison of these recent flows (~2010) to MEP flows (~2004) is 18% higher. The buildout analysis indicates an increase of 31% residential and 198% commercial development. The NAR calculates that future buildout wastewater flows are 4.9 for residential and 2.9 for commercial for a combined flow of 8.8 MGD. The projected town-wide wastewater flows for the 20 year planning horizon is 5.4 MGD for residential and 1.3 MGD for commercial for a combined planning horizon flow of 6.7.

The NAR indicates that existing flow to the WPCF is 1.3 MGD and that the buildout wastewater will add another 1.3 MGD, including the Hyannis GIZ, for a combined 1.6 MGD (Table 5-13).

The 2007 AOCs have reserved another 0.55 MGD.

The projection for the WPCF, combining these factors, is 5.5 MDG for maximum month flows. This should be compared to the 4.2 MGD projected flows of the 2007 Wastewater Facility Plan.

OCEAN OUTFALL

The ASAR indicates that an Ocean Outfall solution for treated effluent has minimal land requirements and groundwater impacts and offers possible cost savings and drinking water supply protection. Although the CWMP identifies the difficult regulatory and legal hurdles of Ocean Outfall, the Citizen's Advisory Committee (CAC) is in favor of pursuing it as an alternative. Designing and estimating the cost for an Ocean Outfall is a rather straightforward task. However, satisfying the legal requirements for attaining a waiver for Ocean Outfall will

require a significant technical feasibility study. Issues to be addressed include: tides, depth, sediments, benthic surveys, fish and fowling habitats, modeling of mixing zones, documentation of background water quality, projection of impacts, establishment of a Scientific Task Force and developing a monitoring and contingency plan. These studies would take several years to implement and interpret and would need to be duplicated if the town desired to carry forward both Nantucket Sound and Cape Cod Bay options. If the town wishes to carry this option forward, the budget and timing to conduct the feasibility studies should be clarified.

ABANDONMENT OF PUBLIC WATER SUPPLY WELLS

The ASAR includes Alternative 5, which is similar to Decentralized B, but includes the abandonment of impacted water supplies for newly developed and permitted supply sites. The ASAR does not provide adequate information to fully comment on this alternative. As discussed in the Water Supply section above, the NAR and ASAR do not include an adequate characterization of drinking water quality in the town. Commission staff presumes that the CWMP is referring to the supply wells directly downgradient of the WPCF and that this strategy is an attempt to relieve the Town from the TOC treatment level. Because the WPCF creates a significant mound, which will expand under additional flows, the Zone IIs from nearly every well in east Barnstable originates from it so there may be no escaping the literal application of the TOC regulation. Modeling from previous studies has indicated the water quality impacts that are seen in groundwater from the downgradient wells are largely due to the upgradient septic systems rather than the WPCF. Sewering these water supply zones would achieve greater pharmaceuticals and personal care products (PPCP) removal from the aquifer than additional treatment at the WPCF and could potentially be presented as a TOC removal offset. Comments for the NAR/ASAR to include a better characterization of drinking water quality and the existing groundwater impacts around the WPCF can provide the town with better justification for more appropriate strategies than abandoning important water supply wells.

PUBLIC OUTREACH

The CWMP process for Barnstable has included a sufficient public outreach component that includes regular meetings of its Citizens Advisory Board and much discussion by Town Council members and officials. This effort can be greatly improved with little effort. The CAC is a committee that represents the town's wastewater planning effort. The town website should establish a dedicated wastewater webpage. While there are many documents that are highlighted on the CAC website, many town studies and links to pertinent information are not available. Notably missing from the CAC webpage, at the time of our review, are the ENF documents presently under review and the recent and important Town Council Workshop of 2-12-12 on wastewater. The public outreach component for the CWMP should be improved upon to make important wastewater planning information more readily available and accessible.

LAND USE

Chapter 5 of the Needs Assessment Report includes a discussion of the existing and projected land use conditions in the town over a 20-year planning horizon (2015-2035). Section 5.12 describes how land use can be used to quantify the water use and wastewater flows for the CWMP, and how critical this assessment is to the overall facilities plan. The town has established a working group to assist in this task and to oversee the development of a parcel level GIS dataset for buildout conditions. The Appendix includes a "Summary of the Buildout Methodology" that articulates some of the assumptions made in this effort.

Table 5-8 shows that the town expects a 31% increase in residential dwellings and a 198% increase in non-residential square footage town-wide. The report acknowledges that there are limitations to using this data and notes that "water consumption and wastewater generation cannot be estimated directly from this data." To estimate water consumption and wastewater generation, the CWMP appears to use a projected growth based on trends in the town between 1998 and 2010, during which time development in the town grew on average by 317 units/year and 197,000 square feet/year according to the CWMP. However, the reliability of the buildout numbers presented in Table 5-8 is important if the town is considering applying for funding through the zero percent financing provisions of the Commonwealth's State Revolving Fund (SRF). Under these regulations (310 CMR 44), applicants for zero percent SRF funding must demonstrate flow neutrality based on zoning and Title 5 limitations on development. The buildout would therefore be reviewed for consistency with the requirements of 310 CMR 44 before this type of funding is allocated to the town and it is therefore essential that all the assumptions made are clearly stated in the CWMP and that these buildout estimates are fully supportable.

The numbers presented in Tables 5-7 and Table 5-8 of the Needs Assessment differ from buildout numbers presented in both the Local Comprehensive Plan (LCP) and a more limited buildout included as part of the town's Growth Incentive Zone (GIZ) application for Hyannis. Both the LCP and GIZ documents include methodologies and breakdowns of projected future growth that are in some cases significantly less than those projected under the CWMP. The town should therefore reconcile these differences and account for any significant upward projections outlined in the CWMP. This should include an explanation of why existing development figures cited are higher than previous town-wide numbers and should include specifics on the source of this information.

The task of predicting future development is difficult and as with all buildout methodologies is subject to a wide variety of assumptions to arrive at an estimate of future growth. Given the sensitivity of the results to these assumptions, the town should clearly articulate all the assumptions used in arriving at the buildout totals presented (particularly the growth projections shown in Table 5-8). In particular:

1. The Appendix includes a brief description of the procedure followed, together with some of the assumptions. However, additional information should be provided that expands on both the method and assumptions used, particularly the assumptions used to generate the Floor Area Ratios (FAR) shown.
2. The buildout summary notes that the FARs are different than those specified under zoning. The town should explain how and why these are different.
3. Parking demand is generally a major influence on development potential as the area needed to accommodate vehicle circulation and parking tends to consume the amount of land available for development more quickly than the associated buildings. Therefore, the CWMP should include a description of how the parking requirements were used to arrive at the buildout projections shown, and particularly the mix (types) of non-residential uses assumed in these calculations as this directly affects the amount of parking needed. Any assumptions made about structured parking should also be explained.
4. Typically, state class codes are used in buildout analyses to exclude certain parcels that are not developable or are unlikely to be developed in the planning horizon. The buildout summary included in the appendix lists some of the exclusions, however, it is not clear if this is a complete list of the exclusions. The town could support their assumptions in this area by listing the state class codes of excluded or constrained parcels.
5. The buildout methodology should also include a description of how variances and Chapter 40B projects are accounted for in the analysis.

Commission staff has had preliminary discussion with town staff regarding the buildout, and we look forward to meeting with town staff to further discuss these numbers.

COASTAL RESOURCES

Due to the planning nature of the Barnstable CWMP/ENF, Commission staff offers the following Coastal Resources comments to guide the planning process and ensure compliance with MPS in the Coastal Resources section of the RPP as the Project develops. In particular, standards under Coastal Resources Goal CR2 (Coastal Hazard Mitigation) intend to limit development in known coastal hazard areas in order to protect the natural beneficial functions of Coastal Resources and standards under Coastal Resources Goal CR3 (Coastal Water Quality and Habitat) intend to mitigate pollution sources and minimize negative impacts to Coastal Resources.

Any proposed development in Land Subject to Coastal Storm Flowage (LSCSF) should be sited outside of V-Zones to minimize damage to the structures during storm and high water events and any proposed aboveground structures sited in the coastal flood zone should be constructed

above base flood elevation to minimize saltwater inundation and damage of interior mechanisms. To the extent feasible, the landward migration of coastal resources, such as salt marshes, coastal dunes, and coastal beaches, should be considered during the initial planning and design phases of any proposed development. In addition, any proposed activity should not increase the velocity of floodwaters or increase flows due to changes in drainage. MPS CR2.8 (Public Infrastructure in LSCSF) prohibits new non-water dependent public infrastructure in LSCSF unless there is an overriding public benefit. MPS CR2.10 (General Exceptions) relaxes the above MPS if the applicant can demonstrate that the best available measures are used to minimize impacts on the critical characteristics of LSCSF and if MPS for underlying resource areas are met.

Any proposed aboveground structures sited in the coastal zone should provide at least a 100-foot buffer surrounding coastal wetlands and/or landward of the mean high water mark of coastal water bodies. In addition, MPS CR3.3 (Stormwater Discharges) prohibits direct discharge of stormwater into any coastal waters or wetlands, above or below mean high water level. Site-specific erosion and sedimentation control plans for work within LSCSF or near other coastal wetland resource areas and water bodies should be developed to minimize adverse impacts to these sensitive resources.

In addition to the above comments, the CWMP/ENF identifies ocean outfall and wetland restoration, including pond dredging and tidal flushing projects, as possible components of alternatives to be considered. Regarding proposed wetland restoration projects, Commission staff is generally supportive of such projects, provided best available measures are utilized to minimize adverse impacts on all critical characteristics of resource areas. Regarding ocean outfall, it is prohibited by the Ocean Sanctuaries Act and the Oceans Act of 2008 and would require extensive design and permitting requirements if one were to be proposed, as discussed in the Water Resources section of this report.

NATURAL RESOURCES

As noted in the ENF, the Barnstable CWMP is in the conceptual phase, and details on specific resource area impacts are not known. The Town of Barnstable has identified a number of possible alternative wastewater treatment actions within the CWMP; the following comments address considerations to reduce impacts to wetlands, wildlife, and open space resources as the town proceeds with alternatives analysis.

The RPP prohibits impacts to wetlands and the 100 foot buffer to wetland resources, though utility line installation is allowed where there is no other feasible alternative. During CWMP planning, Project planners should avoid direct and indirect wetland and buffer impacts wherever possible. Indirect impacts could include actions that reasonably may be expected to

alter the natural functions of the wetland. At the same time, alterations that result in wetland restoration are typically supported in the RPP.

The RPP also prohibits activities that would impact rare species or their habitats. To the extent feasible, utility lines should be located within the road rights of way and avoid overland crossings. Rare species habitat should be included in the evaluation criteria for wastewater treatment or disposal sites, and screened out, wherever possible.

In addition, landscape level impacts, where overland utility installations result in new land clearing or disturbance, or where disposal sites require new clearing of undisturbed land, should be avoided. CWMP planners should strive to minimize additional fragmentation of the natural habitats in Barnstable, and cluster treatment facilities on previously disturbed land. Sensitive natural resources, as well as land held in permanent conservation, should be protected from additional activities that would adversely impact their natural functions or the purposes for which they were originally conserved.

Regarding proposed wetland restoration projects, Commission staff is generally supportive of such projects, provided best available measures are utilized to minimize adverse impacts on all critical characteristics of resource areas.

HISTORIC AND ARCHAEOLOGICAL RESOURCES

The Town of Barnstable has numerous historic resources, historic districts, and archaeologically sensitive areas. Elements of future wastewater infrastructure that can be accommodated within existing road layouts is unlikely to affect significant archaeological resources, historic structures, or districts, but provisions for potential unexpected finds should be made. The CWMP/ENF acknowledges concerns about these resources by including a map of town historic districts and by listing the need for archaeological survey in the identification and screening of potential sites for nutrient management facilities. When considering sites for the location of larger wastewater facility components, potential impacts on historic and archaeological resources will need to be considered to ensure compliance with RPP standards MPS HPCC1.1 (Historic Structures), MPS HPCC1.2 (Cultural Landscapes), and MPS HPCC1.3 (Archaeological Sites). The applicant should consult with Massachusetts Historical Commission (MHC) and consider the town's inventory of historic and archaeological assets early in the process to identify where there are archaeologically sensitive areas and historic resources that may be impacted. Any new facilities proposed adjacent to historic structures or within historic districts must be carefully designed to preserve the key character-defining features of those resources. Archaeologically sensitive sites will require a pre-development investigation to determine the extent of the archaeological resources and protect them from disturbance.

TRANSPORTATION

The Barnstable CWMP was developed to provide an environmentally and economically sound plan for wastewater treatment and nutrient management in the Town of Barnstable for the next 20 years. The ENF application includes discussion of five (5) alternative management plans to be included for further evaluation. The town has not decided on a recommended plan, however. Commission transportation staff offers the following comments on the ENF.

Transportation related questions that would be considered for any new or expanded treatment facility include the following: *Will the Project generate more than 250 new daily trips?; Will the Project generate more than 25 new peak hour trips at a high crash location?; and Does the Project have direct access on or does the Project abut a regional roadway?*

Regardless of any new facility's trip generation, MPS TR1.8 requires acceptable sight distances at all access and/or egress locations for DRIs. As any proposed new facility is expected to generate consistent truck traffic, it is recommended that the town confirm to the Commission that any new treatment facility be sited such that the new site driveway provides sight distances that meet the stricter of the Massachusetts Department of Transportation and American Association of State Highway Transportation Officials guidelines for safe stopping sight distances.

In conformance with MPS TR1.2, review of crash frequency over the most recent three years shall be required at local road intersections with regional roads that are used by a project for access to the regional road network where the DRI is expected to increase traffic by 25 vehicle trips during the project's peak hour. Review of crash records would be unnecessary should the town confirm for the Commission that any new facility would generate less than 25 peak hour trips. Furthermore, should peak hour estimates fall below 25, identification of safety impacts as stipulated by MPS TR1.3 would not be necessary.

Given the early stage of the Project, there are currently no estimates provided of increased trip generation. With the determination of a preferred alternative, it is recommended that the town confirm to the Commission the estimated peak hour trip generation for any expanded and/or new facility(s). Also essential is a traffic count or estimate of current traffic volumes at the existing facility.

Commission staff recommends the town confirm to the Commission the Level of Service (LOS) at any intersection with a regional roadway that would be substantially affected by any new or expanded treatment facility (MPS TR3.1).

Commission transportation staff recommends the town not be required to take any actions related to transportation at this stage of planning; however, with the determination of a preferred alternative, the transportation related impacts should be identified.

CONCLUSION

In conclusion, Commission staff acknowledges that the Project is phased and that the current phase proposes the evaluation of assessments and alternatives in the preparation for the town's development of a Draft CWMP/EIR. Staff recommends that the town continue to work with Commission staff as Project plans develop to help ensure that the Project complies with Minimum Performance Standards identified in the RPP.

Haley and Ward, Inc.
Civil and Environmental Engineers

"Client Service and Engineering Excellence...Since 1897"

June 22, 2012

BY ELECTRONIC MAIL AND FACSIMILE

Secretary Richard K. Sullivan, Jr.
Executive Office of Environmental Affairs
MEPA Office
ATT: Nicholas Zavalos, EEA No. 14896
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Town of Barnstable Environmental Notification Form
Comprehensive Wastewater Management Plan (EOEA #13526)

Dear Secretary Sullivan:

On behalf of the Barnstable Fire District (BFD), we offer the following conditions for consideration in issuance of your certificate for the above-referenced filing.

1. The Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (FEIR) should address the impact of alternatives which include effluent recharge at the McManus site. Modeling of the effluent contribution to the Barnstable Fire District's Wells 3 and 4 was conducted prior to 2005, based upon a number of assumptions. The USGS aquifer model should be updated to more accurately predict effluent contribution as follows:
   a. The hydraulic conductivity should be more representative of the well supply yields and established pumping test data for the Zone II area. The model uses a value of 75 feet per day for the Zone II area; the values for Wells 3 & 4 are substantially greater. Hydraulic conductivity will also vary with aquifer stratigraphy. It is unclear that the model represents the heterogeneous stratigraphy of the aquifer.
   b. The model should reflect water table gradients within the contributing area, using a sufficient number of monitoring wells (40 to 50, for example).
   c. The model should reflect the influence of the Hyannis Golf Course well(s) during the growing season.
   d. The revised model should be calibrated to the additional monitoring well, pumping well and test well data, with model calibration results be provided. We request that a sensitivity analysis be provided for variations in hydraulic conductivity, storativity and stratigraphy.
   e. The model should project the influence of the reclaimed water discharge at the McManus site (Site B) and the Cape Cod Community College site (Site D).
   f. The model should assume that the Barnstable Fire District Water Department will continue to rely upon Wells 3 and 4 as it's primary sources of supply to meet maximum month demands through 2030. All wells should be modeled at their DEP-approved maximum withdrawal rates.

25 Fox Road, Waltham, MA 02451-1056
Phone: (781) 890-3980 • Fax: (781) 890-1401
Email: hwi@haleyward.com • Web: www.haleyward.com

2.The Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (FEIR) should provide **calibrated** aquifer modeling, to determine whether the more stringent effluent standards of 314 CMR 5 are required (within a 2-year travel time to the wells). A calibrated model should include a minimum of 40 observations wells within the Zone II area of Wells 3 and 4 (many exist), error determination and sensitivity analysis.

3.The CWMP- FEIR should provide a build-out nitrogen loading analysis for the approved Zone II area of BFD Wells 3 and 4 under no-discharge, 0.5 mgd and 1.6 mgd McManus site effluent loadings. The modeling is necessary to demonstrate future compliance of BFD Wells 3 and 4 with 310 CMR 22 Drinking Water Standards for nitrogen.

4.Use of the McManus site in any alternative should be based on a minimum number of sewer service connections which offset the nitrogen loading of the effluent flow, using a calibrated aquifer model. The sewering of Area of Concern CE4 should be a legally binding prerequisite for effluent discharge to the McManus site.

5.The CWMP- FEIR should require that the Barnstable DPW demonstrate that it's POTW pretreatment program (40 CFR 403, 314 CMR 12), for control of commercial and industrial discharges to the sewer system has been effective in preventing groundwater pollution of all forms. Any uses under the Standard Industrial Classes discharging to the sewer system would prohibit effluent discharge within the Zone II area within which the McManus site is located (310 CMR 22).

6.The CWMP- ~~FEIR~~ should require that the Barnstable DPW describe its plan for effectively monitoring McManus property effluent prior to discharge, to avoid aquifer contamination. The aquifer monitoring and emergency contingency response plans should be fully described in all parameters, consistent with drinking water quality standards (310 CMR 22) and groundwater discharge permitting (314 CMR 5).

7.DEP Reclaimed Water Permit Program and Standards, 314 CMR 20.06 (5) (March, 2009) states that Reclaimed water shall not be used or distributed in a manner that causes the water quality of any public source of potable water or private source of water used for drinking, domestic or culinary purposes to violate the standards set forth in the Drinking Water Regulations of Massachusetts, 310 CMR 22.00. The Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (FEIR) should require that the Barnstable DPW should provide assurances that the BFD in receiving the discharge in its Zone II will not lose its VOC testing waivers, and potentially it's IOC, SOC and Technical Criteria waivers from MADEP under 310 CMR 22. The Barnstable DPW must commit to assuming all additional water sampling and analysis costs associated with the increased water supply monitoring resulting from the McManus site discharge. Full

assessment of existing and proposed drinking water quality for BFD Wells 3 and 4 should be provided in the CWMP- FEIR.

8. The CWMP- FEIR should require that the Barnstable DPW guarantee that a 4-log inactivation of viruses and other pathogens will occur prior to use of reclaimed water by the Barnstable Fire District Water Department. This should be demonstrated to the satisfaction of the DEP Water Supply Division prior to use of the McManus site.

9. The CWMP- FEIR should require that the Barnstable DPW commit to assuming all additional treatment costs associated with a treatment technique violation under the Total Coliform Rule or the Groundwater Rule occurring at Well 3 or Well 4 if attributable to the proposed discharge. This includes capital, engineering and monitoring costs.

10. The CWMP- FEIR should require that the Barnstable DPW commit to analyzing the treated effluent for all regulated drinking water parameters on a monthly basis. In accordance with the April 24, 1996 MEPA certificate, the CWMP should consider the ability of the wastewater facility to treat the wastewater to meet drinking water standards.

11. The CWMP ENF indicates that the effluent will be treated to DEP standards for reclaimed water. The Barnstable DPW should commit to post-filtration chloramination or other disinfectant residual for the purpose of aquifer protection. Disinfection should achieve 4-log inactivation of pathogens. Disinfectant should not create the potential for trihalomethane formation if organics are present in effluent water quality. The Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (FEIR) should address this requirement.

12. For any future MEPA filing seeking an increase in effluent disposal at the McManus site, the Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (FEIR) should prioritize alternative sites which have the advantage of not impacting public water supplies. Clear justification for site selection should be based on protection of water supply as the first priority.

13. The CWMP- FEIR should provide Sewer Resource Benefit Assessments for Areas of Concern, including the Zone II areas of BFD Wells 3 and 4, in accordance with the Cape Cod Commission's September 20, 2007 DRI Decision on the Barnstable Wastewater Facilities Plan.

14. The "Effluent Disposal and Reuse Planning Guidance Document and Case Study Report" (Stearns & Wheler, 2005) indicates that a 1 million gallon per day (mgd) discharge at the Cape Cod Community College (Site D) would not impact the Barnstable Fire District well supplies. We urge that the CCCC site be subject to detailed evaluation in the CWMP- FEIR

before further consideration is given for use of the McManus site (Site B) beyond the 0.5 mgd of the Secretary's May 18, 2007 finding.

15. The "Effluent Disposal and Reuse Planning Guidance Document and Case Study Report" (Stearns & Wheler, 2005) indicates that a 0.5 mgd discharge at the Lorusso property (Site F) would not impact well supplies. We urge that the Lorusso site be subject to detailed evaluation in the CWMP- FEIR before further consideration is given for use of the McManus site (Site B) beyond the 0.5 mgd of the Secretary's May 18, 2007 finding.

16. The Cape Cod Commission's June 1, 2012 Staff Report indicates that the Town of Barnstable has not complied with Conditions WR4, WR5, WR7, WR10 and WR11. Some of these conditions are integral to a full understanding of project alternatives and impacts.

17. Finally, the CWMP-EIR should clearly indicate the Zone II areas of BFD Wells 3 and 4 as Areas of Concern. Protection of the Barnstable Fire District's well supplies water quality must be given the utmost consideration in the alternatives evaluation. The Barnstable Fire District is a clear stakeholder in the CWMP-EIR, and should have been included in all previous Cape Cod Commission and MEPA permit filings and related correspondence.

In conclusion, we submit that the CWMP-EIR must address serious and significant issues relative to the McManus site. The CWMP-EIR should evaluate and prioritize alternatives based on protection of all drinking water supplies as the highest priority. The CWMP-EIR should address, in the most definitive, complete and committed manner, all project comments and concerns of the Barnstable Fire District Water Department.

Thank you for your consideration of this correspondence.

Sincerely,

Very truly yours,
HALEY AND WARD, INC.

Thomas C Sexton

By:
Thomas C. Sexton, P.E.
Project Manager

Zavolas, Nicholas (EEA)

From: Petitpas, Christian (FWE) [christian.petitpas@massmail.state.ma.us]
Sent: Friday, June 22, 2012 12:28 PM
To: Zavolas, Nicholas (EEA)
Cc: 'lou.chiarella@noaa.gov'; Boeri, Robert (EEA); Chin, Ken (DEP); Ed Reiner (E-mail); Lehan, Richard (FWE); 'Bookbinder, Claudette'; 'Gatewood, Rob'; 'Nate.Weeks@ghd.com'
Subject: EEA# 14896, Town of Barnstable CWMP

Dear Mr. Zavolas:

Re: EEA# 14896

The Division of Marine Fisheries (*MarineFisheries*) has reviewed the Environmental Notification Form by the Town of Barnstable for the Comprehensive Wastewater Management Planning project with respect to potential impacts to marine fisheries resources and habitat.

Based on the information provided, *MarineFisheries* has no recommendations on the proposed scope of work at this time.

Questions regarding this review may be directed to John Logan in our New Bedford office at 508-990-2860 ext. 141.

Sent on behalf of John Logan

N2

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1200 Fax (617) 626-1240 Web Site: www.mass.gov/czm/buar/index.htm

June 25, 2012

Secretary Richard K. Sullivan, Jr.
Executive Office of Energy and Environmental Affairs
Attention: Nicholas Zavolas, MEPA Unit
100 Cambridge St., Suite 900
Boston, MA 02114

RE: Comprehensive Wastewater Management Plan (CWMP) Project, Barnstable (EEA#14896)

Dear Secretary Sullivan:

The staff of the Massachusetts Board of Underwater Archaeological Resources has reviewed the above referenced Environmental Notification Form (EEA# 14896) prepared for the Town of Barnstable. We offer the following comments.

The Board has conducted a review of its files and secondary literature sources to identify known and potential submerged cultural resources in the proposed project area. While no record was found for submerged cultural resources within the project area, the Board cannot conclude that cultural resources are not present in the project area. Archaeological research indicates that certain types of environmental and topographical settings, particularly those that offered diverse resources on a consistent or seasonal basis, are strongly associated with the presence of prehistoric archaeological deposits. The general landscape of the local river/pond system is suggestive of the potential for the occurrence of Native American (prehistoric) sites. Additionally, there are a large number and wide distribution of historic sites and districts in the planning area. Based on these factors, this area (at the broad scale) may be considered archaeologically sensitive.

Given the ENF and current CWMP does not depict specific detailed routes or infrastructure facility locations, Board can make only general recommendations to impacts on submerged lands. The proponent should consider the need to (1) undertake an archaeological assessment of the route and facilities; and develop (2) a program of archaeological monitoring during construction; and (3) develop procedures for unanticipated finds encountered during the dredging component of this project. The Board's *Policy Guidance for the Discovery of Unanticipated Archaeological Resources* (updated 9/28/06) is an appropriate protocol.

The Board appreciates the opportunity to provide these comments as part of the review process. Should you have any questions regarding this letter, please do not hesitate to contact me at the address above, by email at victor.mastone@state.ma.us, or by telephone at (617) 626-1141.

Sincerely,

Victor T. Mastone
Director

CC: Brona Simon, MHC
Kate Atwood (via email)
Bob Boeri and Steve McKenna, MCZM (via email)
Bettina Washington, THPO, Wampanoag Tribe of Gay Head (Aquinnah) (via email)
THPO, Mashpee Wampanoag Tribal Council (via email)

MEMORANDUM

TO: Nicholas Zavolas, Environmental Reviewer, MEPA Unit

THROUGH: Jonathan Hobill, Regional Engineer, Bureau of Resource Protection
Martin Suuberg, Regional Director
David Johnston, Deputy Regional Director,
Bureau of Resource Protection
Maria Pinaud, Acting Deputy Regional Director, BWP
Millie Garcia-Serrano, Deputy Regional Director, BWSC
Brenda Chabot, Deputy Regional Director, ADMIN

CC: Elizabeth Kouloheras, Chief, Wetlands and Waterways and
Team Leader, Cape Cod Watershed
Jeffrey Gould, Chief, Water Pollution Control
Brian Dudley, Wastewater Management, Cape Cod Watershed
Richard Rondeau, Chief, Water Supply
Richard Keith, Chief, Municipal Services
Pamela Truesdale, Municipal Services
Mark Dakers, Acting Branch Chief, Solid Waste Management
Leonard Pinaud, Chief, Site Management
Julia Sechen, Site Management

FROM: Sharon Stone, SERO MEPA Coordinator

DATE: June 26, 2012

RE: ENF EOEEA #14896 – BARNSTABLE – Comprehensive Wastewater
Management Plan (CWMP)

****

"For Use in Intra-Agency Policy Deliberations"

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) for the proposed CWMP for the Town of Barnstable, Massachusetts (EOEEA #14896). The project proponent provides the following information for the project:

"The Town of Barnstable is conducting a study of five alternatives involving the extension of sewers and the construction of advanced wastewater and treatment facilities and nitrogen mitigation technologies to treat wastewater from Barnstable to mitigate excessive nitrogen loading entering the watersheds through existing on-site septic systems. Permits listed in the ENF to be sought for the project include an Order of Conditions, a DEP Sewer Extension Permit and an Effluent Discharge Permit."

Wastewater Management Comments

The Town of Barnstable has submitted an Environmental Notification Form for its Comprehensive Wastewater Management Plan (CWMP) which includes an Alternatives Screening Analysis Report supplemented by a Needs Assessment report. The Town has prepared the CWMP primarily to address nutrient related issues and implement measures to achieve TMDL compliance with impacted water bodies.

The CWMP has been very thorough in its evaluation of strategies, technologies and approaches to nutrient management and has proposed four (4) separate alternatives with other recommendations to be implemented along with whatever option is chosen as the recommended plan. Briefly, the alternatives can be summarized as:

1. Decentralized Plan A: This plan would rely on conventional Title 5 systems in areas not requiring nitrogen load removal and individual nitrogen removal systems where 25% or less nitrogen load removal is required. Satellite treatment systems and remote recharge sites would be required in areas requiring nitrogen load removal exceeds 25%. This plan would also include expansion of the current Hyannis WPCF to extend service to the eastern part of town and development of remote recharge sites.
2. Decentralized Plan B: This plan would incorporate continued use of Title 5 systems in areas not requiring nitrogen load removal and construction of up to two (2) satellite facilities to serve the western part of town along with associated sewer extensions and recharge sites. This plan would also include expansion of the current Hyannis WPCF to extend service to the eastern part of town and development of remote recharge sites.
3. Centralized Plan A: This plan would incorporate continued use of Title 5 systems in areas not requiring nitrogen load removal and expansion of the Hyannis WPCF, sewering all portions of town requiring nitrogen load removal and development of remote recharge sites.
4. Centralized Plan B: This plan would incorporate continued use of Title 5 systems in areas not requiring nitrogen load removal and expansion of the Hyannis WPCF, sewering all portions of town requiring nitrogen load removal and development of an ocean outfall.

Other recommendations to address nutrient enrichment from a non-wastewater perspective include:

- Fertilizer and pet waste management
- Stormwater management through best management practices (BMPs)
- Sediment removal at Mill Pond in Marstons Mills
- Inlet opening and maintenance at Rushy Marsh
- New zoning or land use regulations to address growth neutral requirements for 0% loans from the State Revolving Fund (SRF).
- Expanded use of aquaculture.

It should be noted that the CWMP does include for further study several innovative approaches such as inlet reconfiguration, enhanced natural attenuation and BMPs for fertilizer and stormwater.

The CWMP also addressed a No Action alternative which concluded that degradation of coastal waters would continue and result in loss of valuable plant and animal habitat.

Various strategies and technologies were evaluated and screened out so that they were not included in the recommended alternatives. These included such wastewater technologies as so-called innovative/alternative systems regulated under Title 5 which do not have General Use Approval, waterless toilets and non-wastewater approaches such as permeable reactive barriers.

As stated previously, the CWMP is thorough, but it does require some additional clarification and evaluation which can be provided in subsequent phases of the process.

In reference to recharge sites for wastewater disposal, the CWMP states that existing public drinking water supply wells should be relocated so that existing Zone IIs could be abandoned and used for wastewater recharge without the need for additional TOC treatment. Any plan for relocation and development of new drinking water supply and potential abandonment of existing wells would require close coordination with MassDEPs Drinking Water Program. However, given that the Town is served by three separate water districts and a town owned and operated water division, logistics of relocating wells may be problematic. For that reason the CWMP should evaluate the potential consolidation of the existing water supply entities into a single entity.

While intermunicipal cooperation is mentioned, more effort should be expended to forge cross-community solutions. One example is the suggestion that wastewater recharge could help reestablish base flow in the cranberry bogs near Cape Cod Hospital. These bogs are located in the Town of Yarmouth and would likely require agreement with Yarmouth. This could provide an opportunity to allow Barnstable to accept some wastewater from Yarmouth in exchange for wastewater recharge on Yarmouth property. However, discharge near wetlands will likely require permitting through the wetlands regulations and close coordination with MassDEP should be initiated should this proposal advance. As an alternative, subsurface discharge further upstream near Route 28 could provide some opportunity to reestablish base flow for the dry creek bed that once fed the bogs. MassDEP is willing to entertain proposals of this nature to evaluate wastewater recharge that could help return lost habitat to a more natural condition. Again, however, close coordination with MassDEP is necessary to evaluate these proposals. On the western side of town, the CWMP mentions discussions with Sandwich and Mashpee; however, more detail should be provided as to how the towns can develop an intermunicipal approach to wastewater management. Other options for regional cooperation that should be explored further are sludge processing, including the possibility of a regional anaerobic digestion facility.

The alternative proposing an ocean outfall will require further discussion among local authorities, regional agencies, MassDEP, CZM and state legislators. MassDEP understands the needs that push the Town in considering this option; however, there are significant statutory and permitting challenges which need to be addressed if the Town se

It is noted that local and regional agencies have been invited to participate closely in the planning process. MassDEP offers to provide an increased presence in the planning process.

There are some specific items in the CWMP which should be addressed and are listed below:

1. Reference is made throughout the document that the Cape Cod Water Protection Collaborative (CCWPC) is planning to create a special review process for certain types of wetlands/watershed modifications. It should be noted that has proposed such a process, but it has not yet been reviewed or endorsed by any regulatory agency.
2. The privately owned wastewater treatment plants in Barnstable are listed as Cotuit Landing Stop & Shop and Cape Regency Skilled Nursing and Rehabilitation Center. The list should also include the facility serving the Cotuit Meadows subdivision.
3. While the Lewis Bay TMDL is awaiting EPA approval and therefore has not yet been finalized, it is not accurate to say that EPA approval of that TMDL is necessary to complete the CWMP.
4. The CWMP states that the Bio-Microbics FAST system has General Use Approval for a maximum design flow of 2,000 gpd and an effluent concentration of less than 25 mg/L. Depending on the loading credit anticipated, the FAST system is approved for 25 mg/L (550 gpd/acre) or 19 mg/L (660 gpd/acre).
5. Discussion of Advantex states that the high effluent quality with respect to BOD and TSS makes it suitable for drip irrigation. Drip irrigation does not necessarily require pretreatment and can be used in conjunction with septic tank effluent.
6. In evaluating drip irrigation the CWMP states that it may not operate or be [practical in very cold conditions. Experience in local climates so far has not indicated operational problems even in very cold weather.
7. The discussion of wetland restoration states that it is being considered as a way to introduce highly treated wastewater into watersheds impacted by water withdrawals. In order to avoid any confusion, it should be made clear that treated effluent is not suitable for discharge directly to wetlands.
8. Any discussion of created wetlands as a means of enhancing attenuation should acknowledge that the efficiency of artificially created wetlands stills needs to be established through pilot or demonstration projects.

Construction Activities - EPA

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

Bureau of Waste Site Cleanup

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 the town if excavation is necessary for the installation of the collection system/or distribution system. 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.

Proposed s.61 Findings

The "Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form" may indicate that this project requires further MEPA review and the preparation of an Environmental Impact Report. Pursuant to MEPA Regulations 301 CMR 11.12(5)(d), the Proponent will prepare Proposed Section 61 Findings to be included in the EIR in a separate chapter updating and summarizing proposed mitigation measures. In accordance with 301 CMR 11.07(6)(k), this chapter should also include separate updated draft Section 61 Findings for each State agency that will issue permits for the project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation.

The MassDEP Southeast Regional Office appreciates the opportunity to comment on this proposed project. If you have any questions regarding these comments, please contact Sharon Stone at (508) 946-2846.

6-26-12
Barnstable CWMP ENF
Stationary GHG Sources
Comments
JJ Ballam

The ENF contains descriptions of options which include either modification of existing treatment facilities and pumping stations, and/or the establishment of new ones. Both types of facilities represent potential direct and indirect sources of GHG emissions, due to related electrical and thermal loads and as such, per the MEPA GHG Policy and Protocol (the Policy), the proponent is required to make a good faith effort to quantify both the sources and the projected GHG emissions from the sources.

The DOER also recognizes that the application of the Policy to waste water collection and treatment projects differ from what can readily be applied to projects that are primarily building based, in the following important ways:

1) That there are no energy simulation software modeling tools such as eQUEST that are available WWTF design teams which can be used to closely approximate the projected energy performance of a building, even at the conceptual stage of design, with a fairly low cost and level of effort, which are however to building design teams of architects and engineers,
2) That a "waste water facility energy code" which would be similar to the state building energy code does not exist, which creates the problem of what to use as a proxy for the base case.

The DOER also is aware of and appreciates that districts are concerned that given these conditions, requiring that projected energy consumption, particularly by process equipment, would involve detailed selection and characterization of systems and equipment at a stage in the project development well in advance of the normal project schedule, and that this could easily increase the scope and cost of a CWMP as well as distort the related budget plan.

Fortunately, the EPA's Energy Star Portfolio Manager for WWTFs is a well founded and well established tool which can be used to quantify the site energy usage of a proposed WWTF, as well as rank it against the energy usage of all plants with similar fundamental operating parameters, operating in the same climate zone.

6-26-12
Barnstable CWMP ENF
Stationary GHG Sources
Comments
JJ Ballam

The extensive underlying research and analysis performed during the establishment of the ESPM for WWTFs resulted in identifying the number of characteristic inputs required to quantify the demand profile of a WWTF to a relatively small number. The list of the required inputs is:

Required Input
Average Influent Flow (MGD):
Design Flow (MGD):
Average Influent Biological Demand (BOD) Concentration: (mg/l)
Average Effluent Biological Demand (BOD) Concentration: (mg/l):
Fixed Film Trickle Filtration Process: Yes or No
Nutrient Removal: Yes or No
Facility Zip Code

In addition the proponent will need to know and enter the type of fuels to be used (e.g. electricity, natural gas, heating oil, etc)

In the DOER's opinion, for the majority of CWMPs submitted at either the EENF or DEIR level, this information will have already been determined in the normal sequence of the CWMP development, and consequently will represent no addition to the consultant(s) scope and related cost.

The EPA has confirmed that the ESPM can be readily be used to obtain a value for the annual site energy usage in kBtus which correlates to an ESPM rank of 50. A rank of 50 means that that the annual energy use would place the facility in the 50th percentile of all the plants (regardless of age) with the similar operating characteristics located in the same climate zone, and that this can be obtained in a minimal amount of time by a knowledgeable operator.

6-26-12
Barnstable CWMP ENF
Stationary GHG Sources
Comments
JJ Ballam

The DOER suggests that in very few cases would it be either desirable or expected that a new or upgraded facility would achieve a rank lower than a 50, and for this reason the DOER suggests that the following method be employed in order to satisfy the intent and objectives of the Policy with regard to WWTFs which would apply to the GHG sections of all EIR submittals except the initial ENF:

1) That the proponent uses the ESPM, with inputs specific to the Barnstable CWMP, to obtain a value for the annual site energy usage in kBTU which correlates to a rank of 50.
2) That the submittal includes a copy of the ESPM print out showing that this was in fact done.
3) That this value then is adopted as the minimum allowable annual energy of the "for construction" design, and that this is stated in the GHG submittal.
4) That the proponent will describe in as much detail as current state of design allows, the general and/or particular mitigation strategies and/or measures that they will be investigating or adopting during the design process.
5) That all WWTF buildings that have either lighting and/or HVAC loads be addressed in compliance with the Policy.
6) Based on (3) above, that the Proponent select a target reduction in annual site energy that will result in an improved ESPM rank of greater than a 50 (e.g. a 60 or 70). Note: The proponent will not be held to this, but rather this will serve as a realistic efficiency target for the use of both the design team and state regulators as the design progresses to the "for construction" level.
7) That energy supplied by on-site renewable sources be addressed separately in the computation of GHG emissions (not energy) for both the mitigated as-proposed case. This to ensure that irrespective of any on-site renewable sources, the facility design achieves the minimum standard of efficiency represented by an ESPM rank of 50.

The DOER suggests that the Proponent contact Mr. Jason Turgeon (see contact information below) regarding guidance on the operation of the ESPM for WTTFs to obtain the results as described above.

Jason Turgeon
EPA New England
5 Post Office Square, Suite 100
Mail Code OEP05-2
Boston, MA 02109-3912
Voice: (617) 918-1637
Fax: (617) 918-0637

Commonwealth of Massachusetts
Division of Fisheries & Wildlife
MassWildlife

Wayne F. MacCallum, *Director*

June 7, 2012

Ian A. Bowles, Secretary
Executive Office of Environmental Affairs
Attention: MEPA Office
Nicholas Zavolas, EEA No. 14896
100 Cambridge St.
Boston, Massachusetts 02114

Project Name:	*Comprehensive Wastewater Management Plan*
Proponent:	*Town of Barnstable*
Location:	*Town of Barnstable*
Document Reviewed:	*Environmental Notification Form*
EEA No.:	*14896*
NHESP No.:	*12-30930*

Dear Secretary Bowles:

The Natural Heritage & Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries & Wildlife has reviewed the *Environmental Notification Form* (ENF) for the proposed Comprehensive Wastewater Management Plan for the Town of Barnstable and would like to offer the following comments.

Portions of the Town of Barnstable are mapped as *Priority* and *Estimated Habitat* for several state-listed rare species protected pursuant to the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00) as well as the Massachusetts Wetlands Protection Act and its implementing regulations (WPA) (310 CMR 10.00). Based on a review of the preliminary information included in the ENF, it is currently unclear which state-listed species, if any, may be impacted by the proposed project. The NHESP notes that all portions of the proposed project that occur within *Priority* and *Estimated Habitat* will require review through a direct filing with the NHESP for compliance with the MESA and the WPA. The NHESP encourages the Town of Barnstable to consider design alternatives which avoid, minimize and mitigate impacts to state-listed species and their habitats, and to consult with the NHESP on the proposed project during the design phase.

We appreciate the opportunity to comment on this project, and look forward to working with the Town of Barnstable to proactively address potential concerns related to state-listed rare species. If you have any questions about this letter, please contact Jesse E. Leddick, Endangered Species Review Biologist, at jesse.leddick@state.ma.us or 508-389-6386.

Sincerely,

Thomas W. French

Thomas W. French, Ph.D.
Assistant Director

cc: Nathan Weeks, GHD
Town of Barnstable, Department of Public Works
Town of Barnstable, Conservation Commission
DEP Southeastern Regional Office, Wetlands Program

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
(617) 626-1200 FAX: (617) 626-1240

MEMORANDUM

TO: Richard K. Sullivan Jr., Secretary, EEA
ATTN: Nicholas Zavolas, MEPA Unit
FROM: Bruce Carlisle, Director, CZM
DATE: July 10, 2012
RE: EEA 11517, Comprehensive Wastewater Management Plan, Barnstable

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Environmental Notification Form (ENF) noticed in the *Environmental Monitor* dated May 5, 2012, and offers the following comments.

Project Description

This project involves the development of a Comprehensive Wastewater Management Plan (CWMP) for the Town of Barnstable. The project is subject to review by MEPA because potential facilities recommended by the project are expected to exceed MEPA thresholds and may utilize State Revolving Funds. This planning process is approximately 50% complete, and the Town is now beginning to evaluate five alternatives. The project is expected to recommend the extension of sewers and the construction of advanced wastewater treatment and recharge facilities to mitigate excessive nitrogen loading that is entering the watersheds through existing septic systems throughout the project planning area. While it is impossible to estimate many of the environmental impacts of these different alternatives at this point in the process, the proponent is seeking public and regulatory input on the planning evaluations completed to date and the five alternatives scoped for evaluation. The project will result in the preparation of a Final Comprehensive Wastewater Management Plan. A joint environmental review process by the Executive Office of Energy and Environmental Affairs (EEA) and the Cape Cod Commission has been requested.

Project Comments

CZM recognizes that the impacts caused by the discharge of nitrogen through both private septic and municipal sewer systems to surrounding waterbodies can be severe and that this is a significant issue for towns on Cape Cod. These impacts carry implications for not only the environment, but for economic development as well. CZM supports the comprehensive planning for wastewater management and applauds the effort that has gone into the development of this plan. We look forward to assisting with the development of the final plan and offer the following comments.

Ocean Outfall, Hyannis

Among the alternatives proposed in the ENF, two (Alternative Plan No. 3 and No. 4) propose centralized wastewater management alternatives. Alternative Plan No. 4: Centralized Plan B includes planning based upon the use of an ocean outfall from the Hyannis Wastewater Treatment Facility. As the Town is likely aware, the state Ocean Sanctuaries Act (OSA) has significant implications for this alternative. The OSA specifically defines what activities are allowed in ocean sanctuaries, and several sections of the OSA must be read together to understand the legislature's direction as to the limited set of projects that are allowed in ocean sanctuaries. MGL c. 132A §15 prohibits the dumping or discharge of commercial, municipal, domestic or industrial wastes in an ocean sanctuary. MGL c. 132A §16 allows municipal wastewater treatment discharges if such

discharge into the ocean sanctuary is the only feasible alternative to existing water pollution problems except in the Cape and Islands Ocean Sanctuary, the Cape Cod Ocean Sanctuary, or the Cape Cod Bay Ocean Sanctuary. MGL c. 132A §16A allows a variance to be sought for a proposed increase in volume or change in location of an existing discharge from a publicly owned treatment plant. "Existing discharge" is defined in the OSA as "a municipal, commercial or industrial discharge at the volume and locations authorized by the appropriate federal and state agencies … on December eighth, nineteen hundred and seventy-one, in the case of the Cape Cod Bay and Cape and Islands Ocean Sanctuary ...". Variances from the OSA prohibitions for ocean outfalls are the authority of the Department of Environmental Protection (DEP) in accordance with MGL 132A §§16B-16F and the implementing regulations at 302 CMR 302 5.10. CZM recommends that Alternative Plan No. 4 be revised to specifically identify which existing discharge(s) the Town would be proposing to relocate and/or expand and to describe the steps and actions necessary to integrate the necessary information and analysis to support such the variance application and review process into the CWMP. If the Town determines that the relocation of an existing discharge is not feasible, this alternative should be eliminated from the planning process as it would be prohibited by the OSA.

Coastal Hazards

The availability of sewer infrastructure in coastal areas subject to storm damage, flooding, and erosion could allow new or expanded development in these hazard-prone areas. This development may also adversely impact natural buffers to storm waves and erosion, and compromise the storm protection provided to landward development, infrastructure, natural resources, and upland areas. The resulting impacts of development in these coastal areas could include loss of life and property, increased public expenditures for storm recovery activities, taxpayer subsidies for flood insurance and disaster relief, and risks to emergency personnel. CZM Coastal Hazards Policy #3 states that federally funded public works projects shall not promote growth and development in hazard-prone or buffer areas. In addition, State Executive Order 181 states that state and federal grants for construction projects shall not be used to encourage growth and development in hazard prone barrier beach areas. Executive Order 181 also seeks to minimize and mitigate potential storm damage by prohibiting development within flood velocity zones. Further, Executive Order 149 directs state agencies responsible for programs that affect land use planning to take flood hazards into account when evaluating plans. Therefore, CZM recommends that specific planning consideration be developed for areas located within mapped coastal flood zones and within barrier beach areas.

As part of the planning process for this project, the Town and its consultants should use the best available information regarding the extent of the flood zones, and particularly the highest hazard zones, including the Velocity zone, AO zones, and the portion of the A zone designated as the MoWa (moderate wave action capable of structural damage). The Federal Emergency Management Agency (FEMA) has acknowledged that their Flood Insurance Rate Maps (FIRMs) need to be updated to more accurately reflect the extent of the floodplain. In 2011, FEMA began a study to update the FIRMs for Barnstable County with new analysis. One of the significant updates to the FIRMs will be to extend the Velocity zone to the landward toe of the primary frontal dune. Therefore, CZM recommends that the Town's analysis of potential growth in hazard-prone areas also include, at a minimum, primary frontal dunes in addition to those areas shown on the current maps as flood zones.

Since the wastewater planning process will continue for many years, it is very likely that new FIRMs will be issued before the planning process is completed. CZM recommends that the Town use the revised FIRMs to determine the extent of the flood zones when they are available. The ENF included a map of the flood zones for the Town based on the preliminary revised FIRMs for Barnstable dated 2009. These draft maps were withdrawn by FEMA due to technical errors and therefore should not be used. Revised FIRMs are likely to be issued by the end of this year. CZM recommends that the consultants for the Town stay in touch with the Barnstable Emergency Manager regarding the schedule for the revised FIRMs. CZM is available to provide technical assistance and to advise the Town and its consultants regarding the delineation of flood zones and primary dunes.

The ENF states that the Town plans to look at zoning and other land use controls to meet growth neutral requirements for sewered areas where Growth Centers are not identified. The ENF indicates that this is necessary to be eligible for low or no interest loans from DEP. As discussed above, in order to be consistent with the above-mentioned Executive Orders, growth controls are needed to ensure that the project does not increase growth or development in hazard-prone areas.

CZM understands that extending sewage collection and treatment to areas currently utilizing on-site sewage treatment must be balanced with the potential risks in coastal areas subject to erosion, flooding, and storm damage. CZM believes that these storm damage risks can be minimized through careful design considerations. CZM recommends specific design considerations to address these risks, including the locating of pump stations and other critical infrastructure outside of the 100-year floodplain, protecting the collection system from potential wave action, and incorporating a system of check valves into sections of the collection system within flood zones. This can help minimize impacts from a storm related breach to the collection system. Given the historic rate of sea level rise (i.e., one foot over 100 years), the likelihood of the historic rate doubling in the next century, and the predicted life of wastewater treatment facilities, CZM recommends designing the pump stations and other critical infrastructure system facilities to accommodate at least two feet of sea level rise.

Federal Consistency

The proposed project may be subject to CZM federal consistency review. For further information on this process, please contact, Robert Boeri, Project Review Coordinator, at 617-626-1050 or visit the CZM web site at www.state.ma.us/czm/fcr.htm.

BC/sm/jk/tlb

cc: Stephen McKenna,
CZM Cape & Islands Regional Coordinator
Elizabeth Kouloheras, Section Chief
Southeast Regional Office, MA DEP
Nate Weeks, GHD Inc.

#14896 N2

ANN BAXTER CANEDY, TOWN COUNCILOR
PRECINCT ONE
70 Van Duzer Road
Cummaquid, Massachusetts 02637
508-362-4561
acanedy@comcast.net

June 26, 2012

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

Re: Town of Barnstable Comprehensive Wastewater Plan

To Whom It May Concern:

I am the town councilor for precinct one, Town of Barnstable, and I represent Barnstable Village and parts of West Barnstable, Centerville and Hyannis. The opinions and concerns raised in this letter are my own and do not purport to represent the Barnstable Town Council as a whole.

I attended both June 4th meetings regarding this proposed Plan and commented before the Cape Cod Commission joint hearing with MEPA. I have read the Plan's Executive Summary and Cape Cod Commission Staff Report, and spoken with Mark Ells, Director of the Town of Barnstable's DPW, Nicholas Zavolas, Senior Environmental Analyst, MEPA, Tom Cambareri, Cape Cod Commission Water Resources Program Manager, and Phil Boudreau, Chair of the Citizens Advisory on Wastewater.

My two concerns regarding the Plan as proposed are: 1) lack of comprehensiveness and 2) planned effluent discharge on McManus property/Route 132.

Lack of comprehensiveness: I question the "comprehensiveness" and "townwide" representation of the Plan in view of the fact that there is no planning for north of Route 6. Route 6 acts as a "spine" of sorts in that ground water flows north of Route 6 to the Cape Cod Bay and south of Route 6 to the Nantucket Sound.

I understand that the north side is not included in this Plan largely because the Massachusetts Estuaries Project has not been completed and is not expected to be completed until 2014. As a consequence, there are incomplete nutrient level figures for the north side embayments and Barnstable Harbor.

Further, the north side is not included because of the perception that the area of concentration should be the south side embayments. This is supported by existing data indicating some areas will require 100% nutrient remediation to meet State limits. I do not dispute that the embayments on the south side of Barnstable are in immediate crisis.

However, the north side should not be ignored in this planning process. While flushing and soil composition has protected the Bay side to a degree, there are signs of marsh degradation and Hinckley Pond, a Great Pond of Massachusetts is essentially "dead". There are frequent beach closures due to bacteria, and more frequent drinking water alerts.

Because of the predominately clay soil conditions and distance from the Sewer Treatment Plant, it is unlikely that the north side will ever see sewer expansion to the area. Barnstable Village is a densely populated area with one acre zoning (as opposed to two elsewhere in the Town with the exception of Hyannis). West Barnstable residents are on private wells. The future wastewater needs to these areas pose a unique challenge. Does the Town contemplate private or municipally owned neighborhood cluster systems? Upgraded Title 5 systems (many residents are on "tight tanks" or "cess pools")? Planning should be explicitly outlined *now* before all available land is consumed and before any "town wide " system (with attending town wide tax consequence) is imposed.

In conclusion, while this Plan proposes an aggressive reactive effort to reverse damage to south side embayments, it is not truly "comprehensive" or "town wide" without a proactive plan to halt overload to the North side and protect its embayments and drinking water against present and future threats.

Proposed McManus Property/Route 132 Effluent Discharge Site: In 2002, the Town of Barnstable purchased property known as McManus property (Deed recorded 3-8-2002 Book 863/ Page 929, Barnstable Land Court) The funds used to purchase this property was Land Bank funds for the express purpose outlined in Mass General Law Ch 293, Section 3 (1998) which is excerpted as follows (emphasis added):

OPEN SPACE LAND ACQUISITION PROGRAM.

SECTION 3. Any real property interest in open space purchased with land bank funds shall be retained in natural, scenic, or open condition and **shall be bound by a permanent deed restriction limiting the use of the interest to the purpose for which it was acquired.** Said deed restriction shall run with the land and shall be enforceable by the town open space committee. Real property interests may consist of any of the following: **(*a*) land to protect existing and future well fields, aquifers and recharge areas;** (*b*) agricultural lands; (*c*) forest land; (*d*) fresh and salt water marshes and other wetlands; (*e*) ocean and pond frontage, beaches, dunes and other coastal lands; (*f*) land to protect scenic vistas; (*g*) land for natural or wildlife preserve; (*h*) land and easements for trails; and (*i*) land for recreational use. **Notwithstanding the foregoing, towns may make improvements to promote recreation that are not inconsistent with such use.**

At the same time, the Town purchased an Easement on 6.9 acres of this land for the express purpose of using "said premises for effluent mitigation". (Easement recorded 3-8-2002 Book 863/Page 928 Barnstable Land Court). The latter was not purchased with Land Bank funds. The dichotomy of this purchase does strike me as being inconsistent in purpose (i.e. protection of drinking water and effluent discharge)

The concern with this particular proposed effluent site is that it is within a Zone 2 area of contribution and is upgradient to immediately adjacent Barnstable Village drinking water wells. The Town of Barnstable is unique in that it has a number of water districts which are not owned or operated by the Town, but rather by separate independently elected, autonomous Districts with their own taxing authority. The Barnstable Water District commissioners and the District taxpayers have expressed their strong opposition to this site.

In addition, the site is upgradient to private drinking wells of residents north of the site, predominately along Route 6A in West Barnstable. While the travel time is estimated to be 50 years from site to well locations and to the Bay itself, the identification and reliance on this site as well as the lack of mitigation or remedial planning for this area within the "comprehensive" Plan is troubling. I respectfully request that this site be reviewed and reconsidered and alternative effluent discharge site(s) identified.

Thank you for your consideration.

Sincerely,

Ann Canedy

CC: Nicholas Zavolas, MEPA; Jon Erikson, Barnstable Water District; Peter Eleftherakis, Barnstable Prudential Committee; Phil Boudreau, Citizens Advisory Committee; Mark Ells, DPW Director, Town of Barnstable

Attachments: Easement/Deed McManus Property

Doc:863,929 03-08-2002 2:15
Ctf#:164515
BARNSTABLE LAND COURT REGISTRY

Locus: Route 132, Barnstable (Hyannis), MA

QUITCLAIM DEED

We, **J. Drew McManus and George H. Lovequist, Trustees of Mallam Realty Trust**, under Declaration of Trust dated December 3, 1962, and recorded as Document No. 84,428 at the Barnstable Registry District of the Land Court, for consideration paid of

ONE MILLION SIX HUNDRED AND SIXTEEN THOUSAND SEVEN HUNDRED and NO/100 ($1,616,700.00) DOLLARS

grant to the **Town of Barnstable**, a municipal corporation having an address of 367 Main Street, Hyannis, MA 02601, for the purposes delineated in Section 2 of Chapter 293 of the Acts of 1998 (the "Cape Cod Open Space Acquisition Program")

with **QUITCLAIM COVENANTS**

the land situated in Barnstable in the County of Barnstable and Commonwealth of Massachusetts, bounded and described as follows:

Southeasterly by	the northwesterly line of Mid-Cape Highway, NO ACCESS, one hundred fifty-eight and 19/100 (158.19) feet;
Northwesterly by	lands now or formerly of Priscilla Paine Hills et al and Mary E. Baker, fifteen hundred sixty-six and 18/100 (1566.18) feet;
Northerly by	lands now or formerly of E. Beatrice Barnard and Owner Unknown, one hundred thirty-four and 24/100 (134.24) feet; and
Southeasterly by	land now or formerly of Eben H. Carruthers et al, fifteen hundred fourteen and 88/100 (1514.88) feet.

Said land is shown as LOT 1 on plan hereinafter mentioned.

Northwesterly by	the southeasterly line of Mid-Cape Highway, NO ACCESS, three and 47/100 (3.47) feet;
Northerly	three hundred two and 54/100 (302.54) feet, and
Westerly	eighty-five and 11/100 (85.11) feet, by land now or formerly of Priscilla Paine Hills et al;
Northwesterly by	the southeasterly line of Mid-Cape Highway, NO ACCESS, one hundred sixty-eight and 93/100 (168.93) feet;

1,2,3 37625 A

Easterly	one hundred eleven and 91/100 (111.91) feet;
Northerly	one hundred and 60/100 (100.60) feet, and
Westerly	one hundred eleven and 40/100 (111.40) feet, by land now or formerly of the Town of Barnstable;
Northwesterly by	the southeasterly line of Mid-Cape Highway, NO ACCESS, one hundred seventy and 72/100 (170.72) feet;
Southeasterly by	land now or formerly of George Blanchard, fifteen hundred three (1503) feet;
Southwesterly by	the northeasterly line of Iyannough Road, in part NO ACCESS, seven hundred seventy-three and 87/100 (773.87) feet; and
Northwesterly by	land now or formerly of The Commonwealth of Massachusetts, eight hundred and 26/100 (800.26) feet.

Said land is shown as LOT 2 on said plan.

Northeasterly by	the southwesterly line of Iyannough Road, in part NO ACCESS, seven hundred sixty-eight and 81/100 (768.81) feet;
Easterly by	land now or formerly of George Blanchard, thirty-five and82/100 (35.82) feet;
Southerly by	land now or formerly of Carl W. Pearson, seven hundred eleven and 57/100 (711.57) feet; and
Northwesterly by	land now or formerly of The Commonwealth of Massachusetts, four hundred seventy-five and 66/100 (475.66) feet.

Said land is shown as LOT 3 on said plan.

All of said boundaries are determined by the Court to be located as shown on plan 37625-A dated September 14, 1972, drawn by Barnstable Survey Consultants, Inc., Joseph M. Monahan, Jr., Surveyor, as modified and approved by the Court, and filed in the Land Registration Office at Boston, a copy of a portion of which is filed in Barnstable County Registry of Deeds in Land Registration Book 514 Page 17 with Certificate of Title No. 63777 and said land is shown thereon as LOTS 1, 2 and 3.

Said land is conveyed subject to the following restriction which shall be in perpetuity, shall run with the land and shall be binding on Grantee's successors or assigns: This land may be

used only for the purposes as outlined in Chapter 293 of the Acts of 1998 and shall be enforceable in accordance with Section 3 of Chapter 293 of the Acts of 1998 (as amended).

Said land is subject to a claim disclosed by a Lis Pendens notice dated November 7, 1967 duly recorded in Book 1383 Page 539, such claim being made by Cape & Vineyard Electric Company, now New Bedford Gas & Edison Light Company.

Said land is subject to a Taking made by the Cape & Vineyard Electric Company, now New Bedford Gas & Edison Light Company, for a utility easement, dated March 19, 1968 duly recorded in Book 1394 Page 1009.

Said Lot 2 is subject to and with the benefit of the rights of the public in Old Neck Lane, an ancient way, as approximately shown on said plan.

Said land is subject to Takings made by the Commonwealth of Massachusetts, Department of Public Works, affecting Mid-Cape Highway (Route 6) and Iyannough Road (Route 132) Layout No. 3956 and Layout No. 3954, both dated March 25, 1952 duly recorded in Book 807 Pages 428 and 432 respectively; and the ACCESS and NO ACCESS provisions of said Taking, affecting this locus, are reflected on the aforesaid plan.

The above-described Lot 2 is conveyed subject to an easement to the Town of Barnstable for administration by its Department of Public Works dated March 1, 2002 registered with the Barnstable Registry District of the Land Court as Document No. 863.928

For our title see Certificate of Title No. 72550.

WITNESS our hands and seals this 1 day of March, 2002.

Trustee

McManus, Trustee

Trustee

Lo[illegible]quist, Trustee

STATE OF FLORIDA

County of Collier, ss. March 1, 2002

Then personally appeared the above named J. Drew McManus and acknowledged the foregoing instrument to be his free act and deed as Trustee of the Mallam Realty Trust, before me,

OFFICIAL NOTARY SEAL
DENISE FRANCO
NOTARY PUBLIC STATE OF FLORIDA
COMMISSION NO. DD056940
MY COMMISSION EXP. SEPT 13,2005

Denise Franco
Notary Public
My Commission Expires: Sept. 13, 2005

Locus: Route 132, Barnstable, MA

EASEMENT

We, **J. Drew McManus and George H. Lovequist, Trustees of MALLAM REALTY TRUST**, under Declaration of Trust dated December 3, 1962, and recorded as Document No. 84,428 at the Barnstable Registry District of the Land Court, hereinafter "Grantor"

for consideration paid of SIX HUNDRED TWENTY SIX THOUSAND FOUR HUNDRED and NO/100 ($ 626,400.00) DOLLARS

Grant to the **TOWN OF BARNSTABLE** for administration by its Department of Public Works, 367 Main Street, Barnstable (Hyannis), Barnstable County, Massachusetts 02601

With **QUITCLAIM COVENANTS**

the perpetual right and easement to use said premises for effluent mitigation, including, but not limited to, the laying of mains, pipes, shut-offs, service boxes, buildings, sand filter beds, leaching fields and any other equipment necessary to achieve the purpose of effluent mitigation, as determined to be necessary and advisable by the Department of Public Works of the Town of Barnstable in, over and upon a portion of land located in Barnstable, Barnstable County, Massachusetts, described as follows:

> LOT 2 on Land Court Plan 37625A, Sheet 2, in accordance with a sketch plan attached hereto as Exhibit "A." The easement is noted as "Easement Area" and contains 6.9 acres, more or less.

The location of said effluent mitigation equipment as described above is to be determined by the Department of Public Works of the Town of Barnstable within the above-described easement area. Included in this easement is the right to enter upon the premises for any of the purposes hereinbefore mentioned, including inspecting, repairing, improving, replacing, testing, making necessary connections and administering all effluent mitigation systems.

Barn 2 37625-A

For Grantors' title see Certificate of Title No. 72550.

WITNESS our hands and seals this 1 day of March, 2002.

J. [illegible], Trustee

[illegible], Trustee

STATE OF FLORIDA

County of Collier, ss. March 1, 2002

Then personally appeared the above named J. Drew McManus and acknowledged the foregoing instrument to be his free act and deed as Trustee of the Mallam Realty Trust, before me,

Notary Public: Denise Franco
My Commission Expires: Sept. 13, 2005

OFFICIAL NOTARY SEAL
DENISE FRANCO
NOTARY PUBLIC STATE OF FLORIDA
COMMISSION NO. DD056940
MY COMMISSION EXP. SEPT 13,2005

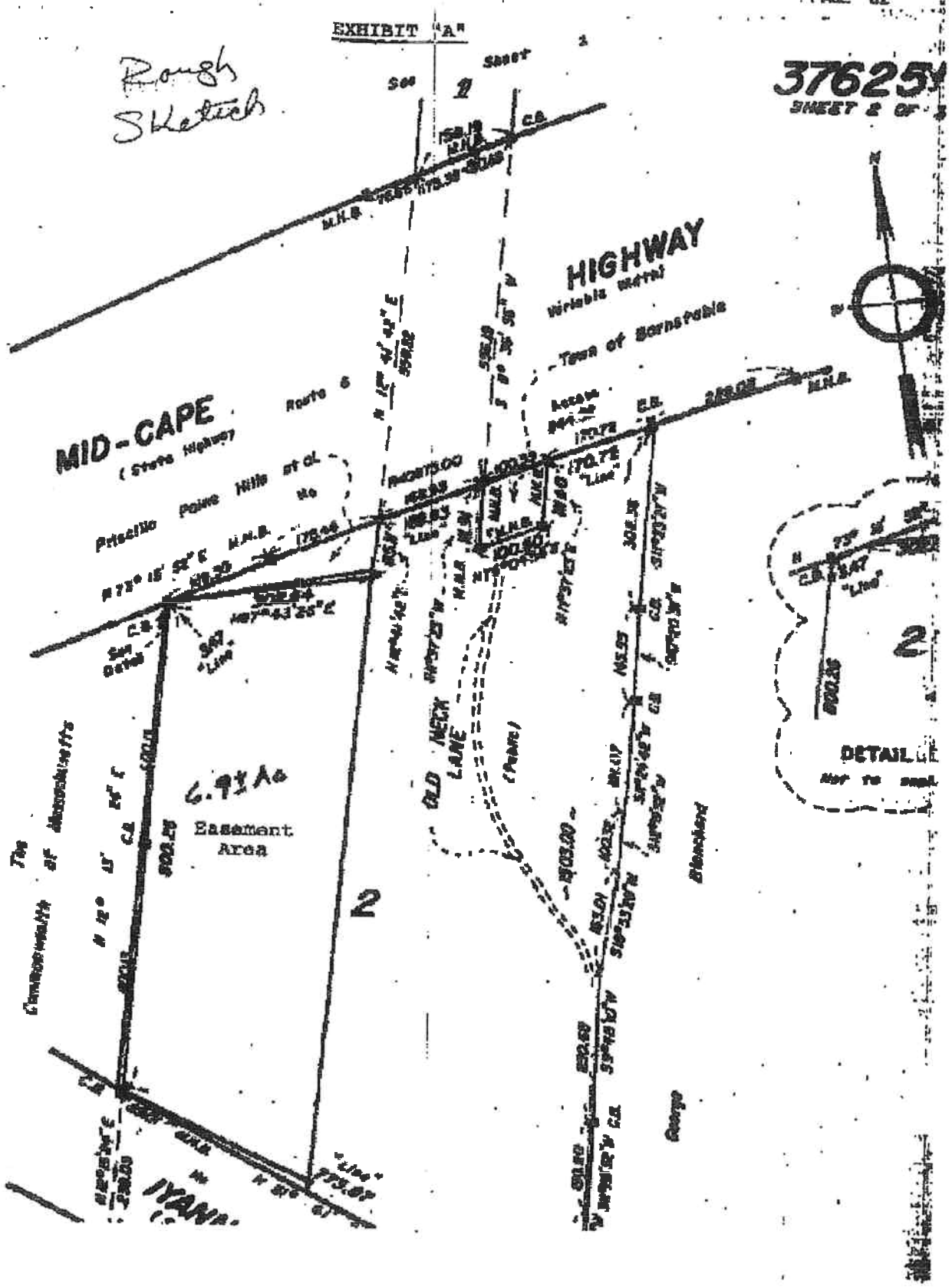
EXHIBIT "A"
Rough Sketch
SHEET 2 OF
HIGHWAY
MID-CAPE
Route 6
Town of Barnstable
Old Neck Lane
6.9± Ac
Easement Area
DETAIL