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CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
SINGLE ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Harwich Comprehensive Wastewater Management Plan
PROJECT MUNICIPALITY	: Harwich
PROJECT WATERSHED	: Cape Cod
EEA NUMBER	: 15022
PROJECT PROPONENT	: Town of Harwich
DATE NOTICED IN MONITOR	: April 6, 2016

Pursuant to the Massachusetts Environmental Policy Act (MEPA) (M.G. L. c. 30, ss. 61-62I) and Section 11.08 of the MEPA regulations (301 CMR 11.00), I have reviewed the Single Environmental Impact Report (EIR) and hereby determine that it **adequately and properly complies** with MEPA and its implementing regulations.

The CWMP was filed concurrently with the Cape Cod Commission (CCC) for joint review pursuant to the November 1991 Memorandum of Understanding regarding joint MEPA/CCC review for Developments of Regional Impact (DRI).

Project Description

As described in the Single EIR, the Town of Harwich is pursuing a long term, multi-phased wastewater management program with regional and centralized treatment to reduce nutrient loading to coastal waters and meet total maximum daily loads (TMDLs) for estuaries and embayments along Nantucket Sound and Pleasant Bay. The Comprehensive Wastewater Management Plan (CWMP) proposes a town-wide wastewater collection and treatment system, continued use of on-site septic systems and non-structural alternatives including stormwater management, restoration projects, fertilizer

education, and review of town-wide land use regulations. Consistent with goals of the 208 Plan, the CWMP proposes to increase inter-municipal cooperation with Chatham, Dennis and Brewster.

The CWMP has been developed through the Town's Water Quality Management Task Force (WQMTF) Wastewater Management Subcommittee (WMS) and in consultation with the University of Massachusetts (UMass) - Dartmouth School of Marine Science and Technology and the Massachusetts Estuaries Project (MEP). The Town initiated developing a Comprehensive Wastewater Management Plan (CWMP) process in 2007. Planning was organized around several town-wide goals:

- Achieve levels of wastewater nitrogen removal required to restore local aquatic ecosystems, according to the goals established through the MEP;
- Reduce nitrogen inputs to the Town's drinking water supplies;
- Achieve phosphorus removal where needed to restore or stabilize ecological health of freshwater ponds;
- Provide alternative wastewater management strategies to areas of town where achievement of Title 5 standards has been difficult; and,
- Provide infrastructure to support growth forecasted in the Town's Local Comprehensive Plan.

The CWMP proposes targeted sewering, using a hybrid system of gravity and low pressure sewers. It will include approximately 92 miles of sewer pipes, 34 pumping stations and two centralized treatment facilities. Sewer mains will be installed in existing paved roads. The Plan includes the treatment of a portion of the town's wastewater flow from the Pleasant Bay watershed to Chatham's WWTF which discharges to infiltration beds at a gravel pit. A new WWTF (HR-12) is proposed to treat wastewater flows from the remaining watersheds (Allens Harbor, Wychmere Harbor, Saquatucket Harbor and the Herring River). It will be located at the Harwich Department of Highways and Maintenance property (a former landfill) in the Herring River watershed and consist of a sequencing batch reactor (SBR) and infiltration beds.

Conventional on-site sewage treatment and disposal will continue in areas that are not proposed for sewering. The CWMP includes non-structural alternatives including two restoration projects to increase natural attenuation of nitrogen. The Muddy Creek inlet widening project is underway in the Pleasant Bay watershed and a project is proposed in the Cold Brook area in the Saquatucket Harbor watershed. The CWMP identifies a permeable reactive barrier (PRB) pilot program.

In addition, the CWMP incorporates a number of non-structural elements designed to reduce nutrient loading including: growth management regulations; public outreach and education programs for controlling the use of fertilizer products on lawns, gardens and agricultural areas; low impact landscaping; stormwater management; enhancement of embayment flushing rates; and water conservation.

The CWMP will be implemented in eight phases over a 40-year period. Implementation will be guided through an Adaptive Management Strategy to assess and target attainment of water quality goals and standards. Adaptive management acknowledges the uncertainties in design and implementation of projects, carefully monitors outcomes, assesses progress in a transparent fashion and requires recalibration of plans and projects as necessary. The Town will revisit the Recommended Plan and modify the phasing, timing, or the specific areas to be sewered based on the results of the earlier

implementation and results of monitoring. Each phase will be reassessed prior to design and construction. The phases are summarized below.

- Phase 1(started in 2013): Widening of the Muddy Creek Bridge to 24-feet to increase flushing, improve water quality and restore habitat and evaluation of alternatives to improve the natural attenuation in the Cold Brook former cranberry bog network off Bank Street.

- Phase 2 (2016): Design and installation of sewers in the Pleasant Bay watershed, which is the largest watershed in the Town with the highest percentage of septic system nitrogen removal required. Wastewater will be discharged to Chatham's WWTF. Sewer service will be provided to the East Harwich Village Commercial District to reduce impacts to drinking water wells. This phase includes implementation of the Cold Brook project.

- Phase 3 (2021): Additional sewers will be installed in the area north of the Harwich Village Commercial District. This phase may include improvements to Seymour Pond.

- Phase 4 (2026 and 2029): Phase 4A will include the construction of the Harwich WWTF and 4B will include the construction of the sewers in the northeast area of the Herring River Watershed. The WWTF will be constructed to treat and discharge approximately 40-45 mgd which would provide sufficient capacity to treat flows from Phases 4, 5 and 6. The design includes the ability to increase capacity (Phase 7).

- Phase 5 (2033): Design and installation of sewers in the Northwest part of the Herring River watershed near the WWTF which will discharge to the Harwich WWTF.

- Phase 6 (2038): Design and installation of sewers in the southeast area of the Herring River watershed. This phase will include design and installation of sewers in the Allen and Wychmere Harbor watersheds. Wastewater will discharge to the Harwich WWTF. This phase may also include implementation of the Bucks and John Joseph Pond restoration projects.

- Phase 7 (2043): Expansion of the WWTF design and installation of sewers in the remaining areas of the Herring River. The WWTF will be expanded to treat up to 0.9 mgd.

- Phase 8 (2048): Design and installation of sewers in the Saquatucket watershed and the remaining areas of the Pleasant Bay watershed. Areas to be sewered near the Great Sand Lakes and the Campground will also be included in this phase. Sewer service areas in Phases 5, 6, 7 and 8 can be adjusted as needed to meet local needs and in response to water quality monitoring data.

The total cost to implement the CWMP is estimated at $230 million dollars; the first three phases are estimated to cost $47.8 million dollars.

Project Area

The planning area for the CWMP encompasses the entire Town of Harwich, which is approximately 21 square miles. The Town of Harwich has approximately 11 miles of tidal shoreline, four harbors, 22 freshwater ponds, two reservoirs and two scenic river corridors (Herring River and Muddy Creek).

The Town of Harwich does not own or operate any large scale wastewater treatment facilities. Residents and businesses rely on on-site wastewater management systems regulated by the Massachusetts State Environmental Code, or Title 5. Traditional Title 5 systems provide an adequate level of treatment for pathogens originating from wastewater, however, minimal nutrient (nitrogen) removal is achieved. As the Town's population has increased and has transitioned to a year-round community for many of its residents, continued reliance on Title 5 systems has become problematic and affects the ability to grow and growth patterns.

MEPA Jurisdiction and Permitting

The project is undergoing review and requires the preparation of a Mandatory EIR pursuant to Section 11.03(5)(a)(3) of the MEPA regulations because it requires State Agency Action and it will involve the construction of one or more new sewer mains of ten or miles in length. The project is also undergoing MEPA review pursuant to Sections 11.03(5)(b)(1), 11.03(11)(b) and 11.03(3)(b)(1)(f) because it will involve the construction of a new wastewater treatment facility with a capacity of more than 100,000 gallons per day, is located in an Area of Critical Environmental Concern (ACEC) and will alter ½ or more acres of other wetlands.

The project will require a Sewer Connection/Extension Permit and a Groundwater Discharge Permit from the Massachusetts Department of Environmental Protection (MassDEP) and a Vehicular Access Permit from the Massachusetts Department of Transportation (MassDOT). The project also requires review under the Massachusetts Endangered Species Act (MESA) by the Natural Heritage Endangered Species Program (NHESP). The project is also subject to the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol.

The project will require an Order of Conditions from the Harwich Conservation Commission (and on appeal only, a Superseding Order of Conditions from the MassDEP).

The project requires a National Pollutant Discharge Elimination System (NPDES) Construction General Permit from the U.S. Environmental Protection Agency. The project may also require Federal Consistency Review by the Massachusetts Coastal Zone Management Office and a Section 404 Permit from the U.S. Army Corps of Engineers.

The Town anticipates applying for State Revolving Fund (SRF) loans for subsequent planning and construction of each phase of the proposed project. Because the Town is seeking State Financial Assistance, 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 Single EIR

Degradation of Cape Cod's water resources stemming from excessive nutrient contamination is not only one of the most significant environmental challenges facing the Cape, but also presents serious potential economic impacts, including a decline in fishing, shellfishing, tourism and property values. Increased population and development in areas surrounding Cape Cod's estuaries have resulted in excessive amounts of nutrients being discharged into these sensitive resources, causing serious impacts to water quality. The Town, MassDEP and CCC identify the importance of regional wastewater planning to tackle these issues. They note the ongoing effort, through the Section 208 Plan Update, to evaluate the cost and effectiveness of regional wastewater management efforts and to build capacity and support for inter-municipal cooperation. This effort has the potential to improve water quality on Cape Cod more efficiently, with lower costs and less physical infrastructure, than the typical CWMP process implemented by an individual municipality. I recognize and commend the inter-municipal approach and cooperative agreement between the Towns of Harwich and Chatham to advance wastewater management efforts in both communities.

The development and review of the both the Expanded Environmental Notification Form (EENF) and the Single EIR have provided a comprehensive evaluation of wastewater and nitrogen management planning evaluations, evaluations of traditional and non-traditional wastewater management technologies, a summary of environmental impacts associated with the Town's recommended CWMP, and discussion of the Town's CWMP planning process completed to date. The Single EIR includes a discussion of the Town's public participation program and its consistency with SRF requirements.

The Single EIR was responsive to the comments raised during the review of the EENF. Comments on the Single EIR from the Massachusetts Department of Environmental Protection MassDEP and CCC express strong support for the Town's planning efforts, recommend that the Single EIR be found adequate and identify subsequent review permitting processes that will guide implementation. MassDEP and the CCC concur that the CWMP has been developed consistent with current water quality regulations and the 208 Plan Update. CCC will make a formal determination regarding the consistency with the 208 Plan in conjunction with its DRI review. Over the course of the 40-year implementation, progress will be monitored and the Plan should be updated accordingly. Over time, projects will change in response to monitoring, funding, regional alternatives and changes to regulatory standards. The Town will continue to analyze the cost and effectiveness of alternatives, develop targeted analysis of alternatives for each watershed, and evaluate regional solutions to meet short-term and long-term water quality goals and standards. The Town of Harwich is encouraged to work with MassDEP's State Revolving Fund (SRF) section to develop funding alternatives as the project development proceeds.

Comments from the Division of Marine Fisheries (DMF) highlight the importance of protecting and improving aquatic health of coastal salt ponds which are critical nursery areas for many marine species including winter flounder, anadromous fish, horseshoe crabs, and shellfish. Both winter flounder and blue crab are sensitive to eutrophication. There are several areas in Harwich where shellfishing is prohibited due to bacterial contamination, including Bass River, Allen's Harbor, Saquatucket Harbor, Wychmere Harbor, and Muddy Creek. DMF supports the Town's efforts to reduce nitrogen loading in coastal salt ponds.

Needs Areas and Growth

The Town conducted a wastewater needs assessment and prioritized each area of Harwich. The Single EIR describes a significant number of parcels in the Town of Harwich that are currently undeveloped but could be developed under build-out conditions if a sewer system is installed. The Single EIR describes how build-out conditions are consistent with the MEP in-watershed nitrogen thresholds and, if not, what methods of growth limitation the Town will employ.

MEP has developed three technical reports that establish the in-stream total nitrogen thresholds necessary to restore estuarine water bodies in Harwich including the Herring River, Allen Harbor, Wychmere Harbor, Saquatucket Harbor, and Muddy Creek. The Single EIR describes how the CWMP and total nitrogen loads are consistent with the total nitrogen thresholds in these reports.

The MEP reports existing and projected nitrogen loads based on build-out conditions. The analysis is based on maximum nitrogen loading that can be generated in that watershed under current or proposed zoning, rather than on a timeline. The CWMP proposes sufficient nitrogen removal at build-out to meet the proposed TMDL for each embayment. Because each watershed requires nitrogen removal under present conditions, any nitrogen associated with future growth must be removed. The following summarizes the MEP reports for each estuary.

- Allen Harbor estuary is a moderate-to-significantly impaired system beyond its natural capacity to process additional nutrients without further degrading ecological health. While eelgrass is typically an indicator species of overall health, there is no evidence that the basin has ever supported it in this man-made harbor. Total septic system nitrogen loading to Allen Harbor must be reduced by 78 percent in order to restore ecological conditions in the harbor and meet the MEP established threshold of 0.50 mg/l total nitrogen to support healthy infaunal habitat.

- Wychmere Harbor is a moderate-to-significantly impaired system beyond its natural capacity to process additional nutrients without further degrading ecological health. While eelgrass is typically used as an indicator species of overall health, there is no evidence it ever existed historically in Wychmere Harbor since this is a man-made harbor. Total septic system nitrogen loading to Wychmere Harbor must be reduced by 100 percent in order to restore ecological conditions in the harbor and meet the MEP established threshold of 0.50 mg/l total nitrogen to support healthy infaunal habitat.

- Saquatucket Harbor estuary is a moderate-to-significantly impaired system beyond its natural capacity to process additional nutrients without further degrading ecological health. While eelgrass is typically an indicator species of overall health, there is no evidence that the basin has ever supported it in this man-made harbor. The Saquatucket system was modeled with the understanding that the Cold Brook would be modified to increase natural nitrogen attenuation (reduction) through possible flora and physical restructuring of this system to maximize the residence time of groundwater in the system. With the enhanced attenuation, total septic system nitrogen loading to the Saquatucket Harbor must be reduced by 58 percent to restore ecological conditions in the harbor and meet the MEP established threshold of 0.50 mg/l total nitrogen to support healthy infaunal habitat. Without the increase in natural nitrogen attenuation the total septic nitrogen reduction at buildout would be around 65 percent.

- Pleasant Bay varies from healthy to degraded depending on particular locations. For the purposes of assessing water quality indicators, Upper Muddy Creek and Round Cove were classified as small enclosed basins and received similar results for key habitat indicators, while Lower Muddy Creek was categorized as a moderate sized tributary sub-embayment. The Pleasant Bay system modeling included benefits associated with the Muddy Creek project. Total septic system nitrogen loading to the Pleasant Bay subwatersheds in Harwich must be reduced by 65 percent in order to meet the MEP established threshold of 0.21 mg/l (Lower Muddy Creek) for total nitrogen to support a healthy habitat.

- The Herring River system is one of the largest tidal wetland systems on Cape Cod and functions more as two systems. North of Route 28 it is a wetland-dominated habitat of salt marsh and tidal channels which is considered to be a healthy ecosystem. South of Route 28 it has historic eelgrass habitat supporting benthic animal community's characteristic of more open water basins. This lower tidal reach is significantly impaired. The ecological difference between the two systems results in a greater sensitivity to nitrogen in the lower tidal river area. That greater sensitivity impacts the whole watershed. Total septic system nitrogen loading to the Herring River watershed must be reduced by 58 percent in order to restore ecological conditions in the estuary and meet the MEP established threshold of 0.48 mg/l total nitrogen in the lower tidal basin to support healthy infaunal habitat and eelgrass.

The CWMP provides collection and conveyance, treatment, and effluent recharge for about 1.26 mgd of annual average day wastewater flow from the MEP Watersheds and other selected needs areas of Harwich. This is an approximate 25 percent increase over the current wastewater flow.

Title 5

Areas along the southern coast and south of Route 28 represent significant challenges for long-term wastewater management. Dense development on small size lots and shallow depth-to-groundwater limit the ability to design and construct onsite system upgrades in compliance with Title 5 and local Board of Health regulations. One of these areas is located east of Allen Harbor along Nantucket Sound and is known locally as "the Campgrounds." It generally consists of small lots with a significant percentage of seasonal occupancy. The other area is located along Route 28 north of Allen Harbor and was flagged primarily due to high groundwater conditions and the presence of mounded septic systems. Both of these areas were incorporated into the CWMP.

The Town of Harwich declined to adopt a nutrient management bylaw as authorized by the Cape-wide Fertilizer District of Critical Planning Concern in 2013. The Town should consider developing a detailed plan, including proposed actions and budgets for fertilizer management to support the credit taken for fertilizer reductions in the CWMP. In addition, I note comments from the Association for the Preservation of Cape Cod (APCC) which recommend the Town consider land use planning strategies to limit potential impacts associated with growth.

Regional Cooperation

The Single EIR describes the discussions to date and consultation to develop an Inter-Municipal Agreement (IMA) for that purpose with the Town of Chatham. In addition, the two Towns are implementing the Muddy Creek inlet widening project. It is currently under construction with an expected completion date in summer 2016.

Harwich has had preliminary discussions with the Town of Dennis who is in the process of developing its CWMP. The two towns share small portions on the Herring River watershed and Swan Pond watershed. However, both communities are considering constructing wastewater treatment plants at DPW sites which are less than 3 miles from one another. Thus, discussions about constructing a joint facility to gain an economy of scale cost savings are ongoing and Harwich will continue that discussion. I note that the WWTF is proposed in a later phase of the CWMP such that significant time is available to consult with Dennis regarding a regional facility.

Harwich and Brewster share portions of the Herring River watershed and Pleasant Bay watershed. Portions of Brewster contribute nitrogen into Harwich at the headwaters of the Herring River watershed. Further discussions between the two communities will need to occur to determine how Brewster might contribute to the Harwich solution for meeting that watershed TMDL in the future. Currently, the Harwich CWMP demonstrates it can meet the TMDL. At this time, each community will implement their own solution for removing their share on nitrogen contribution to Pleasant Bay. The two communities have worked together previously to address phosphorus loadings in Long Pond and further discussions in this regard may occur for other freshwater ponds in the upper Herring River watershed.

The Town of Harwich should continue to work with neighboring towns to pursue shared infrastructure to reduce nitrogen in watersheds. The Town of Harwich should undertake an analysis of options to provide capacity for wastewater treatment and disposal by the Town of Dennis. In the event Dennis wastewater is not treated in Harwich the CCC has indicated that the Town of Harwich should conduct and present a fiscal analysis of potential additional costs associated with constructing infrastructure limited to town boundaries. I strongly encourage the Town of Harwich to consider the potential for adopting a Nutrient Trading Program with abutting towns to achieve TMDL compliance.

Alternatives Analysis

The Single EIR included a broad alternative analysis which included the No-Build Alternative, Regional Alternatives, and the Construct a Smaller or Larger Sewer Service Area Alternative. The No-Build Alternative involves the continued use of onsite Title 5 septic systems and innovative and alternative (I/A) systems where needed to meet the wastewater needs of the community. The Single EIR indicates that on-site treatment technologies cannot reliably meet the stringent nitrogen reduction standards on thousands of individual lots that are possible with more centralized, municipally-run treatment systems. While some I/A systems exist which provide better nutrient reduction than a typical Title 5 system, they still fall short of the requirements since they do not remove the 50 to 100 percent of the septic nitrogen load that is required in the MEP reports for Harwich. The Town decided not to pursue the I/A scenario because the cost was the highest among all options considered. As such, continued use of on-site systems town-wide would not be cost effective to achieve the nitrogen levels required to restore the local embayments to the highest and best use water quality goals described in the

MEP documents. The No-Build alternative will not maintain surface water quality. In addition, the slightly elevated levels of nitrogen found in the Town's drinking water supply suggest that nitrates in drinking water in Harwich could potentially become elevated over the long-term, particularly in areas where higher density development is desired. The No-Build alternative also presents land use limitations, specifically in the East Harwich Village Center, the Campground area, the Route 28 corridor including Harwich Port and other areas of desired growth throughout town. Without off-site wastewater management options, desired land uses are expected to be severely restricted by Title 5.

The Town also explored the feasibility of a Regional Alternatives to address the wastewater needs identified in the Herring River and Pleasant Bay watersheds. The first is a regional treatment solution with the Town of Dennis for the western portion of the proposed sewer area that falls within the Town of Dennis limits. The recommended wastewater plan presented in the Single EIR assumes that the Town of Dennis will collect wastewater in the Dennis Port area and will recharge the treated effluent in a watershed outside of the Herring River. This assumption is only preliminary and further discussions with the Town of Dennis will be required as the Town moves forward with development of their CWMP. Harwich is also communicating with Dennis and Yarmouth about a potential regional treatment facility located at the Dennis DPW site. These discussions are also in the preliminary stages.
The second is a Regional Alternative involves discussions with the Town of Chatham for areas within the Pleasant Bay watershed, which is shared among Brewster, Chatham, Harwich and Orleans. The recommended wastewater plan presented in the Single EIR assumes that the Town will collect wastewater from the Pleasant Bay watershed and will send it to Chatham for treatment to a total nitrogen concentration of 3 mg/l. The treated effluent will then be recharged in Chatham for the early phases of the project if timing and phasing of the projects permit. For the later phases of the project, the treated effluent may be required to be recharged back in the Pleasant Bay watershed to ensure that the TMDL limits are not exceeded. According to the Single EIR discussions with the Town of Chatham are in process.

The Construct a Smaller or Larger Sewer Service Area Alternative involves analysis that the Town developed over the course of the CWMP process. The Town explored many alternatives to the two wastewater treatment plant program ultimately recommended. Smaller, decentralized service areas with smaller treatment facilities were explored where the Town looked at the scenario of having four different wastewater treatment plants and four different effluent recharge sites. An option with one centralized facility with an ocean outfall was also explored. In addition, hundreds of treatment and effluent recharge locations were considered under the highly decentralized on-site I/A scenario. The Town indicated that these decentralized approaches were cost prohibitive and, therefore, eliminated them. The Town also felt that the selected effluent recharge sites were ideal compared with the other sites. Other effluent recharge sites were more limited in terms of land use, land area redundancy and their potential to accept effluent flow.

On the other end of the spectrum, the Construct a Smaller or Larger Sewer Service Area Alternative examined the possibility of sewering the entire town. Based on the analyses performed as part of the Single EIR, sewering areas beyond those necessary to protect the local embayments, to allow for additional growth in East Harwich Village Center, the Route 28 corridor including Harwich Port and to address limited Title 5 or pond water quality issues, is considered cost-prohibitive and would provide no apparent benefit at this time to the Town. Based on several years of analysis, the CWMP Preferred

Alternative provides sewers in the areas where they are needed and maintains septic system use in the areas where lower cost and lower technology strategies remain appropriate.

Natural Attenuation

The Allen, Saquatucket, Pleasant Bay and Herring River watershed systems all have some degree of natural attenuation associated with them. In the Allen Harbor watershed, the Allen Harbor stream is estimated to have approximately 30 percent nitrogen attenuation. In the Saquatucket Harbor watershed, attenuation occurs in several ponds and streams including the Cold Brook. Both the Pleasant Bay and Herring River systems have natural attenuation in several ponds. The existing natural attenuation factors are already accounted for in the MEP nitrogen models as existing conditions.

The Scope for the Single EIR required additional analysis of projects to increase natural attenuation of nitrogen. The first project increases flushing through replacement of the Muddy Creek culverts located under Route 28. Modeling has shown that a 24-foot wide culvert will provide benefit to water quality in the Muddy Creek subwatershed. This may result in a reduction of the amount of conventional infrastructure that would ordinarily be needed to meet target thresholds within the subwatershed. In its comments, MassDEP has stated that it is working with the Town to develop an appropriate monitoring plan to assess the benefits of the project and, specifically, its contribution to nitrogen reduction. Monitoring will include upgradient and downgradient nitrogen loads. This project is almost completed and will be functional by June 2016.

The second approach is proposed in the event that the project cannot meet the target thresholds. It consists of modifying or manipulating flow through the Bank Street cranberry bogs to increase nitrogen attenuation from 35% to a projected 50%. Modifications to Cold Brook and associated wetlands to maximize residence time of groundwater are proposed to achieve 15% of the total nitrogen attenuation required in the Saquatucket Harbor estuary.

The Cold Brook project would be proposed as a demonstration project. It would require review and permitting under the Wetlands Protection Act (WPA) and the Wetlands Regulations (310 CMR 10.00). The Town and MassDEP should discuss permitting requirements at the earliest opportunity. Should the project be permitted, the Town will need to develop a design and monitoring protocol with MassDEP so that the effectiveness of the modifications is adequately documented in order to secure credit for the anticipated additional nitrogen removal. The Single EIR provides a discussion of alternate mitigation strategies if the enhanced attenuation does not meet expectations. Because this proposal is conceptual in nature and the impacts cannot be adequately reviewed at this time, the Town should file an NPC with the MEPA Office if the project exceeds environmental review thresholds.

The Town should consider MassDEP comments regarding the potential need for a Variance from the WPA and consideration of (e.g., natural succession, different restoration techniques and wetland creation) that would reduce wetlands alteration while meeting water quality restoration goals. There appear to be a number of upland areas that may allow for successful wetland creation in and around these abandoned cranberry bogs that should be investigated further.

The CWMP summarizes water quality data and the health of freshwater ponds in Harwich for which data were available. An overabundance of phosphorus is the main concern in most freshwater

systems, as phosphorus is typically the nutrient in limited supply. Therefore, an increase in phosphorus can result in significant plant and algae growth, which can degrade water quality. The Single EIR identifies three developed areas around John Joseph, Bucks and Sand Ponds, Hinckleys, Seymour and Long Pond, and Paddocks Pond as areas of potential concern which warrant additional study. Long Pond was recently effectively treated for phosphorous. The Single EIR states that Hinkleys Pond, Seymour Pond, Bucks Pond and John Joseph Pond may also be restored and may include phosphorous controls; however, no plans are proposed at this time. As projects are proposed, the Town should consult with the MEPA Office regarding the filing of a NPC.

Permeable Reactive Barrier

The Town wants to evaluate further treatment optimization at the WWTF by piloting a permeable reactive barrier (PRB) around one of the infiltration basins. In limited studies to date, PRBs have provided additional denitrification removing additional nitrogen from wastewater effluent. The PRB consists of a trench excavated deep enough into the groundwater and filled with a woodchip/ sawdust/compost/sand mixture to provide a carbon source for the denitrification process to occur. Once the applied effluent reaches the groundwater table, it flows through this barrier and reduces the nitrate levels from the 3 to 5 mg/l level. This could increase capacity of the recharge site in a cost-effective manner by allowing more flow to be recharged while maintaining nitrogen levels. If successful, a PRB would become part of the overall future wastewater treatment process to reduce effluent nitrogen at the treatment facility.

DMF has requested that the Town examine monitoring studies for any PRB study sites that include other contaminants from wastewater, not just nitrogen. For example, ecosystem quality will still be impaired if the barriers remove nitrogen but not endocrine disrupting compounds.

Shellfish Program

The Town of Harwich has an active shellfish laboratory and a nursery facility that has been operating since 1994. More than 31 million shellfish have been seeded in Harwich's waterways, including the Allen, Wychmere and Saquatucket Harbors, Pleasant Bay and Herring River. The Town is assessing the benefits of this program in terms of nitrogen reduction and evaluating significance to the overall wastewater plan. Regular sampling of each nitrogen-sensitive embayment through the adaptive management plan will help to determine if the amount of sewering can be scaled back as a result of these and other non-traditional nitrogen reduction strategies.

<u>Build-out Flows</u>

The Single EIR contains cross referenced water quantity information from cumulative pumping and actual parcel level metered water use. The average household water use is 186 gpd and commercial use is 768 gpd whereas the MEP residential flow is 166 gpd. The CWMP used the MEP build-out analysis and applied the appropriate water use to project the number of residential and commercial properties. The increase in wastewater flow ranges from 14 to 32% for the five major coastal watersheds with an average of a 26% increase for growth. The CWMP evaluated the effect of irrigation water use on wastewater projects and found that the long-term irrigation amount is 315,000 gallons per day (gpd) for July and August, making up 3 of the 10% average non-consumptive water use. The maximum month

peaking factor for Harwich is 2.2 times the average flow of 1.72 mgd. The CWMP uses build-out water volumes for infrastructure design purposes. The CWMP's Adaptive Management Planning contemplates a process to document how the Town would comply with a flow-neutral condition for SRF zero percent loan eligibility.

Wastewater Treatment

The Single EIR provides a hydrogeological report for the proposed infiltration sites (HR-12, SH-2 and PB-3). Only sites HR-12 and PB-3 were carried forward. Site PB-3 was dismissed because it required the purchase of several privately owned properties. A warrant article to purchase the properties passed at the 2015 Annual Town Meeting but was subsequently defeated on a town-wide ballot vote. The Single EIR evaluates project impacts on groundwater hydrology, surface water and wetlands resources, wildlife habitat and other sensitive resources in the project area. The Town should continue to work with the CCC on watershed analysis and other aspects of the CWMP developed during preparation of the SEIR. The Town should also coordinate closely with MassDEP regarding permitting issues and allowable removal rates.

Source Reduction

I have received letters of support for the Town of Harwich in its efforts to develop a CWMP that serves as a water resources management strategy to meet TMDL requirements. Development of a CWMP is an important step toward meeting TMDLs and restoring impaired waters. However, the plans to meet TMDL requirements for nutrient loading must always consider source reduction as the primary means of long-term nutrient control. Source reduction usually focuses on controlling watershed land use loads generated from human activity and can include eliminating fertilizers, constructing on-site systems with enhanced nutrient removal capability, reducing runoff from impervious surfaces, reducing impervious surfaces, and tightening standards for new and upgraded septic systems. In addition to source controls, successful nutrient management plans may include alternative nutrient control strategies to achieve the desired nitrogen concentrations specified in the TMDL and MEP reports.

Drinking Water

The CWMP reports that approximately 9,800 accounts in the town are serviced by drinking water from 14 gravel packed wells that collectively pump approximately 2 million gallons per day (mgd). The drinking water quality is excellent with the exception of naturally occurring iron. The Town Water Department recently completed construction of a 6.5 mgd treatment plant to remove iron and manganese.

The CWMP reports that drinking water protection is not a factor in the town’s sewering plans. However, public water wells located in the Pleasant Bay watershed show an increase in nitrate concentrations, although still below the threshold for safe levels. This recent elevation in nitrate levels does indicate that development and wastewater is impacting the town’s water supply. It also increases concerns over other wastewater-borne contaminants, including contaminants of emerging concern (CEC). Plans to schedule sewering of this area of the Pleasant Bay watershed in the early phases of the sewering program should also be a benefit to the water supply, according to the CWMP.

Land Use and Alteration

The Single EIR proposes approximately 92 miles of new sewer mains to be installed within existing roadways. The Single EIR quantifies the total amount of alteration associated with the proposed project (including areas to be altered for sewer mains, wastewater treatment and disposal, and other project components) and the amount of alteration associated with different project elements. The Single EIR also clarifies the location, type and amount of alteration in previously undisturbed areas.

The construction period impacts on traffic and the transportation network should be considered by the Town at the appropriate stage in the design process. The Town should coordinate sewer construction activities with planned roadway improvement projects to minimize traffic disruptions and reduce overall costs. The CWMP states that potential traffic impacts and mitigation methods will be looked at in greater detail during the design of the individual CWMP components, including coordinating other needed roadway improvements with the sewer project where such coordination is logical and cost- effective for the Town.

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. Furthermore, Executive Order 149 directs State Agencies responsible for programs that affect land use planning to take flood hazards into account when evaluating plans.

The Single EIR has identified certain areas of town with shallow depth-to-groundwater south of Route 28 along the southern coast. Due to Title 5 and board of health compliance issues based on high groundwater and small lot sizes, the Town has included these low-lying areas in the sewering plan. The CWMP states that sewer lines and pumping stations built within existing flood zones will be designed to withstand flood conditions. However, the Final CWMP does not explain how or if infrastructure design for these locations will account for predicted sea level rise and the impact it will have on the extent of future surface flooding. The Town should focus on developing design plans that address future flood risk, not just current flood risk.

As phases of the project are further developed, the Town's sewering design should also consider anticipated changes to the water table as a result of sea level rise. A groundwater modeling study of the mid-Cape Cod region conducted over the past two years by the U.S. Geological Survey and commissioned by the Association to Preserve Cape Cod (APCC) predicts significant impacts to in-ground infrastructure and the function of natural systems due to changes in the interface between salt

water and the water table, based on expected sea level rise. It is possible that in low-lying coastal areas of Harwich, predicted sea level rise will increase the number of properties experiencing Title 5 compliance issues due to a high water table compared to the number of properties currently experiencing such problems.

Historical/Archaeological Resources

The Town will provide the Massachusetts Historical Commission (MHC) with a U.S. Geological Survey topographical map that clearly locates the project areas by phase and scaled project plans showing existing and proposed conditions. These plans should be submitted to MHC as early as possible during the design of each of the project phases and the Town must coordinate with MHC to address potential historic impacts from the project and measures to avoid, minimize or mitigate impacts.

Greenhouse Gas Emissions

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. 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 quantifying project-related GHG emissions and the effectiveness of mitigation measures.

The Single EIR contained descriptions of project alternatives that include either modification of existing wastewater management systems, pump stations and discharge facilities and the construction of the new WWTF. 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, there is no building energy code equivalent that applies specifically to WWTFs. Because there is not a readily available energy use model (such as eQUEST) to estimate the projected energy use of the WWTF processing energy loads and requiring Towns to estimate energy consumption, particularly by process equipment, would involve a detailed design and selection of systems and equipment that is not available at this conceptual level of design, DOER recommended an alternative method to estimate GHG emissions.

The Town used the EPA's Energy Star Portfolio Manager (ESPM) computer modeling program to quantify the energy usage associated with the wastewater treatment technologies included in its Final CWMP. The Town's GHG analysis established a baseline case and a mitigated case of the project using the EPA's ESPM for Wastewater Treatment Facilities. The EENF established that the baseline case would have an ESPM Energy Performance Rank of 50. It is important to note that there is no design at this time for this facility, the baseline case in the Single EIR was based on a similar WWTF designed by the consultants for another Cape Cod community. The estimated energy use at the plant was scaled from this design based on the difference in the two plants' annual flow. The power consumption for both plants, the oxidation ditches, and SBRs are similar for a facility of the size proposed for the Town of Harwich. The mitigated case was ranked 11 in the EPSM. I note that the ESPM rank of 11 for proposed flows is below the national mean for WWTFs with the same input characteristics and climate zone and

likely indicates an issue with the accuracy of the modeling. DOER strongly recommends that the Town incorporate measures including energy recovery, system monitoring, optimized lighting, reduced ventilation and heating requirements, use of variable frequency drives in motors, and process optimization in design of the facility improvements. Implementation of these measures could result in significant reductions in GHG emissions and will support the Town's goal of improving its ranking. To the extent that the Town prioritizes energy efficiency early in the design, it will be more effective.

The Town has committed to obtain a minimum of 51 in the EPSM (email dated May 10, 2016) and to incorporate cost-effective energy efficient building systems and process systems. Because the WWTF will not be designed or constructed for 10 – 15 years, I advise the Town to consult with MEPA, DOER and MassDEP prior to project design because assessment and modeling of GHG emissions, as well as technology, will likely improve during that time period.

The Town plans to incorporate the following energy efficiency measures into the design of the WWTF including:

- Minimizing energy use from building orientation and strategic landscaping and minimizing the building footprint may (up to 6% percent reduction).
- Heating, ventilation, and air conditioning (HVAC) measures (up to 20%).
- Lighting efficiencies and light bulb selection (up to 75% reduction).
- Particular wastewater processes equipment selection (up to 35% reduction).
- At least three percent of the energy use will be provided through on-site renewable generation and purchase of green energy or renewable energy credits.

The Single EIR also supports the use of alternative technologies and the use of high efficiency systems. Those criteria were used in selecting the type of collection, treatment and effluent recharge systems proposed for the recommended wastewater program. The Town has also recently installed a solar photovoltaic (PV) array at the former municipal landfill site which is adjacent to the proposed WWTF site (HR-12). This PV array will be used to help offset the power needs of the Town for that facility.

The Town should review EPA's BMP guidance document to identify additional GHG and energy reduction strategies that the Town should explore. Going forward, the Town may benefit from 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.

The draft Section 61 Findings in the Single EIR did not include a self-certification specific to GHG emissions; however, the Town is required to provide a certification to the MEPA Office indicating that the mitigation measures identified in the MEPA process have been incorporated into the project or similar measures to provide equivalent benefits.

Monitoring

The Town has committed to provide a detailed monitoring plan that includes, at a minimum, an assessment of downgradient resources of sensitive receptors, placement of monitoring stations, parameters of evaluation, methods for collecting and analyzing data, and frequency of data collection. The monitoring should include site specific monitoring to understand the impact of stormwater infrastructure upgrades and the effectiveness of fertilizer reduction strategies. In addition, it should include monitoring within Pleasant Bay and Saquatucket Harbor to assess the effectiveness of the projects to increase natural attenuation of nitrogen in those watersheds. I encourage the Town of Harwich to share ambient water quality monitoring results and performance monitoring results with the CCC and with the Towns of Chatham, Brewster, and Dennis.

Hazardous Materials

MassDEP has indicated that the Town should consider the potential for encountering contamination during excavation. The Single EIR identifies known hazardous waste sites governed by the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. c. 21E) in the vicinity of the project area and provides an updated summary on the status of these sites consistent with the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000). The Town is advised that, if oil and/or hazardous material (OHM) is identified during the implementation of the project, notification pursuant to the MCP 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. Construction protocols and procedures should reflect the potential for discovery of OHM during the construction period. I refer the Town to the comments from MassDEP for additional guidance on the prevention and management of potential releases of OHM.

Construction Period Impacts

The Single EIR includes a draft Construction Management Plan (CMP) describing project activities and their schedule and sequencing, and BMPs that will be used to avoid and minimize adverse environmental impacts. The final CMP should address potential demolition and construction period impacts (including but not limited to land disturbance, noise, vibration, dust, odor, nuisance, vehicle emissions, construction and demolition debris, impacts on trees and other vegetation, and construction-related traffic) and analyze and outline feasible measures that can be implemented to eliminate or minimize these impacts. The CMP discusses plans for reuse and recycling of construction materials including asphalt, brick and concrete (ABC). The CMP should include an erosion control component to address protection of water quality and wetlands resources. The project must comply with MassDEP's Solid Waste and Air Quality Control regulations during construction.

I ask that the Town participate in MassDEP's Clean Air Construction Initiative (CACI) and the MassDEP Diesel Retrofit Program to mitigate the construction-period impacts of diesel emissions to the maximum extent feasible. The Town should consult with MassDEP to develop appropriate construction-period diesel emission mitigation, which could include the installation of after-engine emission controls such as diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs). Project contractors are required to use ultra low sulfur diesel (ULSD) fuel (15 parts per million sulfur) in off-road engines and MassDEP can provide additional resources to assist with implementation of this program.

According to the Final CWMP, stormwater contributes approximately five to nine percent of the controllable nitrogen entering Harwich's coastal waters. It is also a source for phosphorus in freshwater ponds. The Town is required to prepare a Stormwater Pollution Prevention Plan (SWPPP), which must clearly and reasonably delineate all areas to be 'altered', and describe the practices that will be implemented to protect the resources during construction as well as upon completion of the project. This includes Erosion and Sedimentation Control Plans and design calculations to assess all drainage leaving the construction areas. The SWPPP must also include designation of areas where stockpiling of material and operations are to occur. The Town should consult with MassDEP and others to ensure that the Project will meet any performance standards associated with a federal NPDES permit for all proposed project construction activities. The APCC recommends in its comments that the Town review its bylaws and regulations to determine where improvements can be made to increase the effectiveness of stormwater management to further reduce nutrients and other pollutants from entering water bodies.

Mitigation/Section 61 Findings

The Single EIR included a separate chapter on mitigation measures and draft Section 61 Findings for each State Agency Action. The Single EIR identified each mitigation measure and the responsible party for implementation. Draft Section 61 Findings should be revised in response to this Certificate and provided to State Agencies as part of permitting to support the issuance of Final Section 61 Findings.

The Single EIR identifies the following measures to avoid, minimize and mitigate impacts:

- Avoid wetlands impacts through installation of sewer in existing roadways;
- Design and construction of sewers and associated infrastructure (e.g. pumping stations, pipes, etc.) to withstand coastal flood hazards;
- Pumping stations will be located outside of flood zones wherever possible, will be designed to withstand a 100-year storm and will be protected with a system of check valves in critical areas;
- Design and implement a comprehensive water quality management plan to monitor water quality of coastal embayments and to identify reductions in nitrogen loading from the construction of the CWMP projects;
- Provide annual water quality reports to MassDEP, CCC, DMF and the Towns of Dennis, Brewster and Chatham;
- Following the completion of project phases, adjustments to the CWMP will be made to address those aspects accordingly, while working MassDEP and the CCC;
- Continue consultation with NHESP regarding specific conditions to minimize potential rare species impacts associated with the installation of groundwater discharge;
- Consult with DOER regarding feasibility and effectiveness of GHG reduction measures at the WWTF to achieve a ESPM high rating index of 51 or greater;
- Continue to evaluate recommendations developed by the WQMTF and Wastewater Management Subcommittee (WMS), to protect the Town's beaches and coastal wetlands from detrimental impacts associated with climate change.
- Continue consultation with MHC on historic and archaeological issues. As required, conduct an intensive (location) archaeological survey and submit results to MHC.

- Design and construct stormwater management systems consistent with the WPA Stormwater Management Standards, including operating and management plans.
- Prepare a Stormwater Pollution Prevention Plan (SWPPP).
- Conduct all dewatering in accordance with applicable regulatory discharge permits.
- Comply with MassDEP's Solid Waste and Air Quality Control regulations, pursuant to M.G.L. Chapter 40, Section 54;
- Implement measures to avoid, minimize and mitigate construction period impacts (FEIR, Section 8.3.1); and,
- Provide a Construction Management Plan to manage construction-related traffic, erosion, dust, noise and wetlands impacts.

Conclusion

Based on a review of the EENF, Single EIR, comment letters and consultation with State Agencies, I find that the Single EIR adequately and properly complies with MEPA and its implementing regulations. The project may proceed to permitting. State Agencies and the Proponent should forward copies of the Final Section 61 Findings to the MEPA Office for publication in accordance with 301 CMR 11.12.

To ensure consistency with the 208 Plan Update, the CCC has indicated that implementation of the CWMP should be conducted consistent with the process outlined in the 208 Plan Update which includes creation of a Technical Review Panel that includes local, regional and state representation. The purpose of the Review Panel is to provide input on the review and refinement of each five-year planning and implementation increment. The Town should consider discussion of recommendations with the watershed community through a facilitated process to gain consensus for recommendations prior to adoption and implementation.

To support the Town's adaptive management approach to developing long-term solutions and in acknowledgement of the Town and its residents concrete support for projects that will reduce nitrogen levels in the short-term, I have determined that the Single EIR adequately and properly complies with MEPA and its implementing regulations. This determination is conditioned upon potential filing of a Notice of Project Change (NPC) or NPC's for the purpose of evaluating impacts associated with discrete elements of non-structural alternatives that were not fully analyzed in the Single EIR (e.g. the Cold Brook Project, pond restoration projects).

The purpose of the NPC is twofold: 1) identify the project's potential contribution towards attaining water quality standards within the watershed; and, 2) identify potential environmental impacts, summarize alternatives considered to avoid, minimize and mitigate impacts, and identify measures that will be incorporated to avoid, minimize and mitigate impacts. Filing of an NPC also would offer an opportunity to provide an update on design and construction of sewering and documentation of progress towards achieving TMDL's for each watershed. I strongly encourage the Town to consult with the MEPA Office regarding the scope of any NPC prior to filing.

In general, the NPC should identify the project area/site; include maps and plans at a reasonable scale that clearly locate and delineate project elements and environmental resources; identify environmental impacts; identify associated Agency Actions and discuss the consistency of the project

with regulatory standards and requirements. To the extent that agency comments on the Single EIR identified issues, concerns and/or provided recommendations associated with the project (e.g. MassDEP comments regarding wetlands impacts associated with Cold Brook) they should be addressed in the NPC. The NPC can also provide updates on design and construction of the sewering and document progress towards achieving TMDL's for each watershed.

May 13, 2016
Date

Matthew A. Beaton

Comments received:

05/06/2015 Cape Cod Commission
05/06/2015 Association to Preserve Cape Cod
05/06/2015 Massachusetts Division of Marine Fisheries
05/06/2015 Massachusetts Department of Environmental Protection – SERO
05/10/2016 Department of Energy Resources

MAB/ACC/acc

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CAPE COD
COMMISSION

By Electronic Mail

May 6, 2016
Matthew A. Beaton, Secretary
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office, Anne Canaday, Analyst
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Single Environmental Impact Report - EEA No. 15022
Town of Harwich Comprehensive Wastewater Management Plan
(CCC Project No. 13004)

Dear Secretary Beaton:

Please find attached the Cape Cod Commission's comments on the above-referenced matter, arranged by relevant issue area from Barnstable County's Regional Policy Plan (RPP).

Thank you for the opportunity to provide comments on the above-referenced SEIR. Cape Cod Commission staff is available and happy to answer any questions about these comments.

Sincerely,

Patty Daley
Deputy Director

ENC
cc: Project File
David Young, CDM Smith, Project Consultant via email w/ ENC
Jacqueline Etsten, Town of Harwich Cape Cod Commission representative via email w/ ENC

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CAPE COD
COMMISSION

STAFF REPORT

RE: TOWN OF HARWICH
COMPEHENSIVE WASTEWATER MANAGEMENT PLAN (CWMP)
SINGLE ENVIRONMENTAL IMPACT REPORT (SEIR)
JOINT REVIEW HEARING MEPA/ CCC
HARWICH TOWN HALL
(CCC NO. 13004/ EEA NO. 15022)

DATE: APRIL 28, 2016 (REVISED 5/6/16)

CAPE COD COMMISSION HEARING SUBCOMMITTEE

RICHARD ROY, TOWN OF DENNIS, CHAIR
JACQUELINE ETSTEN, TOWN OF HARWICH
MICHAEL SKELLY, TOWN OF CHATHAM
ELIZABETH TAYLOR, TOWN OF BREWSTER
JOHN MCCORMACK, JR., TOWN OF YARMOUTH
LEONARD SHORT, TOWN OF ORLEANS (ALTERNATE)
KEVIN GRUNWALD, TOWN OF TRURO (ALTERNATE)

INTRODUCTION

Wastewater management is one of the most significant regional concerns affecting Cape Cod. The Commission is actively engaged in the 208 Area Wide Water Quality Management Plan Update for Cape Cod. The Commission's review of Comprehensive Wastewater Management Plans (CWMPs) is guided, in part, by the 208 Area Wide Water Quality Management Plan Update. As such, the Commission will be working with towns within Barnstable County on the shared challenges of wastewater management to identify efficient and cost-effective solutions common to the towns.

The Town of Harwich is pursuing, in its CWMP, a long term, multi-phased wastewater management program with regional and centralized treatment to reduce nutrient loading to coastal waters and meet total maximum daily loads for estuaries/embayments along Nantucket Sound and Pleasant Bay. The plan proposes a town-wide wastewater collection and treatment system, with work located throughout the Town. Sewer mains are proposed in existing paved roads. The Town is recommending a traditional wastewater program that includes approximately 92 miles of sewer pipes, 30 pumping stations and two centralized treatment facilities. The preferred alternative includes two treatment facilities; one that utilizes the existing facility in Chatham, and a new facility in at the Harwich landfill. The project also includes non-structural alternatives for stormwater management, pond water quality protection and restoration, fertilizer education, town-wide land use regulation reviews and two projects anticipated to provide some natural nitrogen attenuation. The total plan is projected to be phased over 40 years and will develop an adaptive management approach to guide its implementation.

In its certification of the Cape Cod Section 208 Area Wide Water Quality Management Plan Update ("208 Plan Update"), the Commonwealth of Massachusetts designated the Town of Harwich as the Waste Treatment Management Agency (WMA) for those watersheds and portions of watersheds located within the Town of Harwich.

It is the Commission's opinion that the Single Environmental Impact Report ("SEIR") submitted by the Town of Harwich for its CWMP complies with MEPA, and the Secretary should issue a Certificate thereon, concluding review under MEPA at this time. Upon issuance of such a Certificate, the Commission would commence Development of Regional Impact/ 208 Plan consistency review of the CWMP.

QUALIFIED 208 PLAN UPDATE CONSISTENCY

These comments are provided for the totality of the Harwich CWMP. It should be noted that Cape Cod Commission ("Commission") future determinations of 208 Plan Update consistency and Commission regulatory reviews will be rendered on a targeted watershed basis.

The Harwich CWMP meets the overall goals of the 208 Plan Update and should be granted qualified 208 consistency, making the Town of Harwich eligible for State Revolving Fund (SRF) funding. Staff suggests that:

1. The CWMP's nitrogen reduction planning is conducted on a watershed and subembayment basis.

2. The CWMP accepts responsibility for 100% of nitrogen in the Allen, Red River, Saquatucket and Wychmere watersheds which are wholly or primarily within the Town of Harwich, and accepts responsibility for Harwich's share of nitrogen

contributions in the shared watersheds of Herring River, Pleasant Bay, and Swan Pond River, as allocated in the 208 Plan Update.

3. The goal of the CWMP is to: a) achieve TMDL compliance for all marine embayments wholly within the Town of Harwich; and b) to address the required nitrogen removal amounts allocated to the Town of Harwich in the 208 Plan Update to achieve TMDLs in shared watersheds.

4. The CWMP includes a growth management component that proposes to remove 100% of nitrogen from new growth within the town. There will be no increase in untreated nitrogen within nitrogen sensitive areas.

5. The CWMP creates an adaptive management program to implement nitrogen reduction strategies that achieve TMDLs while adapting to water quality and environmental monitoring results and other changes in circumstances over time.

Future 208 Plan Update Consistency

In order to achieve full 208 Plan Update consistency, implementation of the Harwich CWMP should be conducted consistent with the process outlined in the 208 Plan Update. This includes creation of a Technical Review Panel that includes local, regional and state representation to provide input on the review and refinement of each five-year planning and implementation increment. The formation and engagement of the panel will be a requirement of the regional permit and it is recommended that it be a requirement of any state permit issued.

Public Engagement

Technical Review Panel recommendations should be discussed with the watershed community through a facilitated process to gain consensus for preferred actions going forward. Public outreach measures should include engagement of Environment Justice Communities and existing watershed associations, among other stakeholders.

The Town of Harwich should consider promoting the formation of new watershed association(s) to ensure public support of subsequent phases during implementation.

Planning Approach

The Town of Harwich should proceed with phases 2 through 8 consistent with the nitrogen load assumptions contained in the 208 Plan Update, as they may be amended from time to time based on best available data.

Coordination in Shared Watersheds

The Town of Harwich should continue to work with neighboring towns to pursue shared infrastructure to reduce nitrogen in watersheds.

The Town of Harwich should consult with the Commission on further development of phases 2 through 8 of the CWMP during its review and refinement of each five-year planning and implementation increment. Future watershed based planning should include the development of a hybrid plan in shared watersheds consistent with the Hybrid Watershed Scenario planning approach set forth in the 208 Plan Update and including a range of both collection and non-collection technologies. Planning in shared watersheds should be in collaboration and cooperation with the Commission and the towns of Chatham, Orleans, Brewster and Dennis.

The Town of Harwich should undertake an analysis of options to provide capacity for wastewater treatment and disposal by the Town of Dennis. In the event Dennis wastewater is not treated in Harwich, the town should conduct and present a fiscal analysis of potential additional costs associated with constructing infrastructure limited to town boundaries.

The Town of Harwich should analyze the potential for adopting a Nutrient Trading Program with abutting towns to achieve TMDL compliance.

Fertilizer and Stormwater Credits

The Town of Harwich should be prepared to respond to the draft small MS4 permit in accordance with permit deadlines.

The Town of Harwich declined to adopt a nutrient management bylaw as authorized by the Cape–wide Fertilizer District of Critical Planning Concern in 2013. The town should develop a detailed plan, including proposed actions and budgets for fertilizer management to support the credit taken for fertilizer reductions in the CWMP.

Capital Project Development and Coordination

Construction impacts resulting from deployment of infrastructure on marine and drinking water resources and Minimum Performance Standards (MPSs) and Best Management Practices (BMPs) for siting technologies will be addressed in the Commission's regulatory review.

The town should outline how it proposes to meet the criteria of the SRF program to be eligible for zero-percent interest SRF loans, including adoption of local flow neutral land controls.

At the completion of each five year period of the adaptive management plan, an evaluation of the performance of deployed technologies should be conducted, and the town should assess whether it has achieved nutrient removal performance, cost effectiveness, and any associated co-benefits.

Permitting requests for phases 2 through 8 of the CWMP should address on-going implementation of other capital projects in the Town of Harwich.

Monitoring and Data Sharing

The Town of Harwich should share ambient water quality monitoring results and performance monitoring results in a timely manner with the Commission and with the Towns of Chatham, Brewster, Dennis and Orleans.

The town shall provide a detailed monitoring plan that includes, at a minimum, an assessment of downgradient resources of sensitive receptors, placement of monitoring stations, parameters of evaluation, methods for collecting and analyzing data, and frequency of data collection. The monitoring should include site specific monitoring to understand the impact of stormwater infrastructure upgrades and the effectiveness of fertilizer reduction strategies.

To maintain 208 consistency, the town should share building permit data with the Commission on an annual basis. Such data shall include but not be limited to: new residential units and non-residential units, and all new development likely to result in an increase in wastewater disposal. This data should be provided to the Commission electronically either by providing the Commission with access to vendor-managed assessing data or directly from the Town Assessing Department.

The town should enter into a data sharing agreement with the Commission including, but not limited to: building permit data (as discussed above), water supply pumping (annual statistical reports, or ASRs) and water quality results, parcel based water use, data relative to the monitoring of technologies deployed under the CWMP adaptive management plan, and data relative to the monitoring of water quality and environmental conditions to demonstrate TMDL compliance.

WATER RESOURCES

I. Needs Assessment

The SEIR includes a needs assessment which provides the background and interpretation of the water quality conditions for drinking water, fresh water ponds, and coastal embayments, which are the three major water resource areas identified in the Cape Cod Regional Policy Plan and the 208 Plan Update. The background information provides the framework for the project and identifies the Town's overall wastewater management needs. The CWMP includes a process to identify wastewater collection areas, primarily to achieve the amount of septic nitrogen removal necessary to restore coastal water quality as determined through the MEP studies' critical nitrogen loads. The process is one that uses parcel specific water use information and accounts for the occurrence of natural attenuation and opportunities for enhanced attenuation similar to the CCC 208 Plan Tracker and Watershed/MVP analysis. Sewer collection is prioritized

in several areas as a result of this process. The CWMP also includes a process to account for the removal of septic nitrogen and the return of treated effluent nitrogen to achieve the overall goal of balanced restoration.

II. Wastewater Flows and Buildout

The CWMP cross referenced water quantity information from cumulative pumping and actual parcel level metered water use. The town-wide water use for the years 2001 to 2007 is between 679 and 600 million gallons. The average household water use is 186 gpd and commercial use is 768 gpd whereas the MEP residential flow is 166 gpd. Specific water uses for each Marine watershed from observed water use and MEP are compared and the differences were determined to be minor and both appropriate for planning purposes. The CWMP used the MEP buildout analysis and applied the appropriate water use to project the number of residential and commercial properties. The increase in wastewater flow ranges from 14 to32% for the five major coastal watersheds, as listed on Table 1, with an average of a 26% increase for growth based on 2001 to 200 water use. The CWMP evaluated the effect of irrigation water use on wastewater projects and found that the long-term irrigation amount is 315,000 gpd for July and August, making up 3 of the 10% average non-consumptive water use. Maximum month peaking factor for Harwich is 2.2 times the average flow of 1.72 mgd. The buildout assessment makes use of the MEP buildout analysis including some modification for economic development in the East Harwich and Harwich Port areas. The CWMP uses buildout water volumes for infrastructure design purposes over 6 Phases. The CWMP's Adaptive Management Planning contemplates a process to document how the Town would comply with a flow-neutral condition for SRF zero percent loan eligibility.

III. Drinking Water

The CWMP reports that approximately 9,800 accounts in the town are serviced by drinking water from 14 gravel packed wells that collectively pump approximately 2 MGD. The drinking water quality is excellent with the exception of naturally occurring iron. The Town Water Department recently completed a new 6.5 MGD treatment plant to remove iron and manganese. The average nitrate concentration from the wells is 1.1 ppm, which is substantially below drinking water health limits. The Wellhead Protection Areas (WPAs) that provide recharge to the public supply are not identified as a wastewater management need, however, limited sewering in overlapping Marine Water Recharge Areas (MWRAs) will provide potential benefits to drinking water quality. The Pleasant Bay drinking water well recharge area that is proposed for sewering for Pleasant Bay has an average nitrogen concentration of 2 ppm, which is below the state and federal standard of 10 ppm, and the Cape Cod Commission loading standard of 5 ppm. The Town has conducted monitoring under the Unregulated Contaminant Monitoring Rule for Compounds of Emerging Concern.

IV. Ponds

There are 22 major ponds in Harwich. The Water Quality Task Force has taken advantage of the Cape Cod Ponds and Lake Stewardship (PALS) program to obtain important long term water quality data. The CWMP utilized prior reports, including those prepared through the Cape Cod Commission, and developed a pond program to protect and, where necessary, restore pond water quality. The program proposes continued monitoring, evaluation of stormwater treatment opportunities and further investigation, particularly to determine whether phosphorous loads are internal (sediments) or external (from the watershed). Three areas were identified around John Joseph, Bucks and Sand Ponds, Hinckleys, Seymour and Long Pond, and Paddocks Pond. The CWMP indicates that continued monitoring and study are required to determine the best overall approach to protect and restore pond water quality. An alum treatment of Hinckleys Pond is recommended in a detailed study by Water Resources Services dated March 2012 and an unscheduled associated CWMP project.

V. Marine Water Quality

The CWMP reports on the findings of the Massachusetts Estuary Project (MEP) which includes critical nitrogen loads referred to as thresholds. The next step is for the MA Department of Environmental Protection (DEP) is to establish Total Maximum Daily Loads (TMDLs) from the thresholds in the MEP report and to work with the Town and SMAST to prepare and complete the regulatory review necessary to establish the TMDLs.

The MEP critical nitrogen loads are presented as the amount of septic nitrogen that will need to be removed from the watersheds. The percent removal for existing and buildout conditions is summarized on Table 1 below.

Table 1 Percent Nitrogen Removal by Watershed

Watershed	Present Load (kg/d)	Percent Septic Reduction Existing Condition	Percent Septic Reduction Buildout Condition
Allen Harbor	5.64	74	78
Wychmere Harbor	3.21	100	100
Saquatucket Harbor	13.25	60	58
Pleasant Bay (Round Cove)	5.18	64	68
Pleasant Bay (Muddy Creek	13.32	48	58
Pleasant Bay	16.69	61	70
Herring River	38.59	38	58

Of particular note is the large increase of percent removal that occurs under buildout conditions in the Herring River Watershed. A majority of this future load comes from the West Reservoir sub-watersheds where the amount to be removed increases from zero at present conditions to 48% at buildout conditions. This results in the largest difference between percent removal for existing and buildout conditions in the table above. Commission staff notes that the Herring River has the largest residential water

use (181 gpd) of the Harwich embayments and recommends that non-structural controls on future growth, including open space protection in the Herring River watershed be considered as an alternative/complementary strategy for nitrogen management. The CWMP acknowledges the role that potential non-traditional technology may play in reducing potential sewer collection areas within the 10 year time frame prior to Phase 4 of the CWMP.

VI. Wastewater Needs

Two areas of concern for Title 5 failure are the area north of Allen Harbor due to high groundwater, and the Campground area due to dense development. Sewering to alleviate Title 5 issues is recommended by the CWMP because the areas are also identified for nitrogen reduction. Wastewater needs for nitrogen reduction using the MEP thresholds was summarized above. Wastewater needs for socio-economic reasons for East Harwich, Harwich Port and Harwich Center were identified and factored into projected overall wastewater flow and management scenarios. The CWMP acknowledges that the Campground area may be an area that receives and interim wastewater solution within the 40 year Plan. Commission staff notes that the proposed 6.6 million dollar harbor improvement and dredging project for Saquatucket Harbor may remove a significant source of benthic nitrogen and should be acknowledged in and incorporated into the Plan as an interim intervention.

- Wastewater Effluent Disposal. The CWMP used a screening process to eliminate unsuitable parcels for consideration as potential facility and effluent disposal sites. Of the 11,600 parcels in town, forty parcels were identified for further consideration, ten parcels were selected for further study, and five sites were chosen as part of the CWMP management scenarios. The site suitability approach was methodical and included reasonable assumptions for the projected and cumulative sub-regional volumes of wastewater. The CWMP identified PB-3 as a key site for effluent disposal, noting that DEP would not require costly removal for Total Organic Carbon if this site was used. However, the Town vote to authorize the purchase of the site for effluent recharge failed in 2015. Accordingly, the Town is now moving forward with the Chatham Plant disposal option. The draft Intermunicipal Agreement includes language that Chatham will provide a 3-year advance notice in the event that it intends not to continue accepting Harwich wastewater. As such the Town continues to investigate other options for disposal for the Pleasant Bay effluent. Options for ocean outfall and numerous other scenarios have been developed including a single disposal scenario (3A) at the HR-12 site near the landfill.
- Wastewater Management Scenarios. The CWMP developed eight alternative scenarios for wastewater management as summarized in the Table below. The baseline case included the nitrogen offset that is anticipated to result from two natural attenuation projects for Muddy Creek and Cold Brook. The parcels and

wastewater flows reflect the amount needed to offset nitrogen loads from the proposed treatment effluent. The CWMP developed a number of criteria to compare the scenarios including capital cost, operation and maintenance, cost efficiency (shown below), a variety of technical criteria, institutional criteria and environmental criteria. Commission staff finds that the criteria ranking process is a thorough and fair method. The total criteria score (as weighted) of the scenarios (shown below in Table 2) indicate that scenarios 3A, 4A and 5A are the most favorable. The (7A) scenario including IA systems had the highest cost per nitrogen pound removal.

- The CWMP, less formally, evaluated the use of smaller facilities, sized at 100,000 gpd as an alternative. The Town used the selected decision criteria to determine that the use of more numerous 100,000 gpd facilities was not favorable, largely from a bottom line cost perspective. Table 3 shows the number of parcels and flow to be captured and treated. The amounts for three of the smaller southern embayments range from 26,000 to 95,000 gpd at build out. Smaller treatment facilities, while incurring a cost premium, can potentially be deployed over a shorter time frame with more flexibility for siting. The identification of sites to treat and dispose of wastewater at these lower volumes could also include parcels that are smaller than 5 acres. Similarly, non-traditional interventions like the Saquatucket dredging project, in which benthic material with high nitrogen concentration is proposed to be removed from the harbor, should be analyzed to determine whether they could provide faster removal of nitrogen in targeted areas to produce demonstrable water quality improvements, and thus should be incorporated more greatly into the plan.
- The CWMP used the percent septic nitrogen removal for the buildout condition. Commission staff suggests that the Town identify the extent of potential sewer collection areas for the existing development condition to prioritize how the system could be phased in through selected planning horizons as development proceeds from existing conditions to buildout conditions. Reporting the relative percent of nitrogen removed for each major watershed for phase of the plan should be part of the Adaptive Management Plan.

Table 2 Wastewater Scenarios

Scenario	Description	Parcels Sewered	Wastewater Flow	Cost $/Pound of NO3 removed	Total Score
1A	3 Sites (Allen to Saquatucket)	2992	670000	199	270
2A	3 Sites (Allen to Herring)	3092	682000	192	266
3A	1 Site in Herring River	3198	697000	146	145
4A	2 Sites HR and PB	3184	704000	175	223

5A	2 Sites HR and PB (Chatham)	3094	680000	170	204
6A	4 Sites	2968	667000	215	321
7A	IA Systems & four Sites	1643	417000	447	402
8A	1 Site and Ocean Outfall	2438	564000	252	366

Table 3 Sewershed Characteristics

Sewershed Characteristics for Each Watershed (Option 5A)	Parcels	Current Average Water Use (GPD)	Buildout Average Water Use (GPD)
Allan Harbor	234	52,100	57,000
Wychmere Harbor	123	26,300	29,000
Saquatucket Harbor	451	90,700	95,200
Pleasant Bay	1205	205,900	235,900
Herring River	2340	399,300	515,700

VII. Regional Approach

The CWMP includes a discussion about regional approaches:

- The CWMP considers sewer collection of a section of Dennis Port within the Herring River watershed. This aspect is included in all scenarios. The towns have also discussed the possibility of a shared treatment facility to be located in Dennis.
- Another regional aspect is the use of the Chatham facility to accommodate the flow from the East Harwich and the Pleasant Bay watershed. Treatment at the Chatham facility attains a nitrogen treatment efficiency of 3 ppm. This regional option would make use of early capacity at Chatham plant and reduce the overall construction cost to both towns through a shared facility. The Harwich effluent would be retained and disposed of at the Chatham facility until such a time that the Chatham sewer expansion project would require that capacity. The CWMP indicates that the Harwich will continue to seek a site to bring treated effluent back to Harwich for disposal in the Pleasant Bay watershed in the event that Chatham needs to use the entire disposal capacity. This would require both a disposal site and a force main. Additionally, the Muddy Creek habitat restoration/ nitrogen attenuation project is a collaborative one originally contemplated during DRI review of the Chatham CWMP, approved by Cape Cod Commission by decision dated March 29, 2009. Commission staff notes that the Chatham CWMP DRI decision contains findings and conditions relevant to continued implementation of the Muddy Creek project between the towns, and shared use of the Chatham facility. Specifically, under the decision, Commission staff will work with the staff to analyze the feasibility of expanding use and capacity of the Chatham facility; will review the IMA between the towns; and review the results of the Muddy Creek project through adaptive management

planning as it bears on the development of future sewer footprints in the towns, and ongoing 208 Plan consistency review.

- Finally, the towns of Harwich and Brewster have discussed, and will continue to discuss, a collaborative approach to meeting TMDL's in the shared Herring River watershed. The towns have previously collaborated on freshwater pond water quality improvement projects.

VIII. CWMP Implementation/ Phasing

The following is a synopsis and time frame, using the plan's proposed request for funding, of the Harwich preferred plan phased approach. In keeping with the adaptive management process described in the SEIR, after the Plan undergoes DRI review and is further implemented, the Commission will continue to review the Plan for consistency with the Cape Cod 208 Plan Update at regular milestones (perhaps five year intervals) identified during DRI review, as a condition of proceeding with subsequent phases or sub-phases of the Plan. Should the town be required to file Notices of Project Change for the Plan under MEPA, Commission staff recommends that such changes be reviewed as modifications to the DRI decision:

- Phase 1, 2013: focuses on implementation of two natural nitrogen attenuation programs. The first is the completion of the Muddy Creek Bridge under a Phase 1 Waiver to increase the existing opening to 24-feet in order to increase flushing and help restore ecological habitat. The second is the evaluation of options to improve the natural attenuation in the Cold Brook former cranberry bog network off Bank Street. (This phase was previously proposed to include the purchase of land for the PB-3 effluent recharge facility, but it did not pass 2016 Town Meeting vote). The implementation of a Hinckleys Pond restoration project has been deferred until a later time.
- Phase 2, 2016: design and installation of sewers in the Pleasant Bay watershed, which is the largest watershed in the Town with the highest percentage of septic system nitrogen removal required. This allows the Town to work with Chatham, utilize a regional approach to wastewater treatment and recharge, and to provide further protection to some of the Harwich drinking water supply wells. Phase 2 also provides sewer service to the East Harwich Village Commercial District (discussions and planning have been ongoing about rezoning this area as a 'smart growth' district, the 'East Harwich Village Center'). The recommended plan for the Cold Brook natural attenuation would also be implemented in this phase.
- Phase 3, 2021: focuses on the Pleasant Bay watershed and installing additional sewers in the area north of the Harwich Village Commercial District. A portion of the collection system area on the west side of the Pleasant Bay Watershed will be delayed until Phase 8 to allow for water quality monitoring and evaluation of the

impacts from sewering and the Muddy Creek bridge project. This phase may also include the implementation of the potential Seymour Pond restoration project. The design and construction of the delayed Chatham WPCF expansion will also be completed in this phase.

- Phase 4, 2026 and 2029: will be done as two programs. Overall the phase will collect wastewater in the Northeast part of the Herring River watershed. The collected wastewater will be pumped to the new treatment plant to be constructed at Site HR-12 (landfill site) where the treated effluent would be recharged. The SBR treatment plant would initially be constructed for capacity of about 0.45 mgd which would treat collected flows from Phases 4, 5 and 6. Phase 4A will include the construction of the HR-12 treatment plant and 4B will include the construction of the sewers in the Herring River Watershed.
- Phase 5, 2033: will collect wastewater in the Northwest part of the Herring River watershed and near site HR-12. The collected wastewater will be pumped to the treatment plant at Site HR-12 where the treated effluent would be recharged.
- Phase 6, 2038: will collect wastewater in the Southeast part of the Herring River watershed. This phase will also install some of the planned sewers in the Allen and Wychmere Harbor watersheds in order to begin meeting TMDLs in those areas. Collected wastewater will be pumped to the HR-12 site for treatment and recharge. This phase may also include implementation of the potential Bucks and John Joseph Pond restoration projects.
- Phase 7, 2043: focuses on expanding the HR-12 treatment plant and installing the remaining required sewers in the Herring River watershed to meet TMDL. The treatment plant at Site HR-12 will be expanded to the full 0.9 mgd capacity in this phase.
- Phase 8, 2048: will install sewers in the Saquatucket watershed and the remaining areas of the Pleasant Bay watershed required to meet those TMDLs. Areas to be sewered near the Great Sand Lakes and the Campground will also be included in this phase. Sewer service areas in Phases 5, 6, 7 and 8 can be adjusted as needed to meet local needs and based on feedback from water quality monitoring.

IX. Adaptive Management

The adaptive management plan detailed in the CWMP contains the required fundamental aspects. The AMP will be further detailed in the CDRI under Commission review.

X. Cost

The 40 year CWMP is estimated to cost $230 million dollars. The CWMP evaluates several cost recovery models for just the first 3 Phases which is estimated to cost $47.8 Million dollars. The first Phase is planned to service 1,205 parcels in the East Harwich Pleasant Bay area. Based on a policy adopted by the Board of Selectmen, the average cost to every Harwich homeowner is estimated to be $254. The recommended cost policy will source funds from a combination of the Town's Water Infrastructure Investment fund, tax rate and user fees, in no set initial percentages such that the percentages could be adjusted through adaptive management and as later phases of the plan are proposed to be implemented. The CWMP includes other models where the cost would be somewhat lessened. The Commission will work with the Town to further evaluate other cost models and grants.

NATURAL RESOURCES

The Harwich CWMP is a phased plan for addressing water quality within the town, meeting nitrogen TMDLs and addressing wastewater management needs within the town. While the plan is designed to accommodate changing conditions through adaptive management, the CWMP identifies specific infrastructure projects which, if constructed, will have impacts on natural and coastal resources protected under the Cape Cod Commission Act. Components of these projects include the installation of sewer mains and pumping stations in several phases, construction of a wastewater treatment plant, construction of disposal beds, and pursuit of two natural attenuation projects. The following comments are meant to provide guidance on proposed project elements' consistency with the natural and coastal resources goals and minimum performance standards of Barnstable County's Regional Policy Plan. Many of the comments below should be addressed and incorporated into the town's adaptive management planning (AMP) as it is developed and implemented.

I. Wetlands

Significant wetland impacts associated with construction are not anticipated since the installation of sewer mains and pumping stations will be located within existing road rights of way. According to the SEIR, the impacts that may result from these installations will occur within previously disturbed areas, and construction-related considerations to protect wetlands may be addressed during local permitting. There are no wetlands on the HR-12 or PB-3 sites. The natural attenuation projects, by their nature, are located within natural wetland systems. The Muddy Creek restoration has been permitted and is in construction. Alterations to the Cold Brook to improve natural attenuation should be designed to balance this goal with other natural resource goals, such as habitat restoration, and to ensure that the ultimate benefits to the natural environment outweigh the impacts that may result from work within the retired cranberry bog/wetland system.

The pond restoration projects are discussed in a preliminary fashion in the SEIR and appear to involve chemical treatments to the ponds' waters rather than physical alterations such as dredging.

II. Wildlife and Plant Habitat

Significant impacts to wildlife and plant habitat associated with construction of the sewer mains are not anticipated since these installations will be located within existing road rights of way. Additional habitat evaluations may be warranted in the undisturbed wooded portion of site HR-12 to ensure that there are no vernal pools present. Portions of HR-12 are mapped rare species habitat, and to the extent these areas may be considered for disposal fields, the town should coordinate project planning, design and implementation with the NHESP. While PB-3 contains disturbed areas, this site should also be evaluated for habitat values as either vernal pools and/or rare species habitat may be present. These sites are not mapped as BioMap2 Core Habitat. Again, the Muddy Creek project has completed permitting and is in construction. Alterations to the Cold Brook bog system should aim to balance the town's goal of improved natural attenuation with the potential impacts to existing wildlife and plant habitat resources, and the benefits that may accrue from habitat restoration at this site.

III. Coastal Resources

There are not significant impacts to coastal resources anticipated from the planned projects. Again, impacts within coastal resource areas will occur within road rights of way, minimizing new impacts. The town should ensure that pumping stations located within land subject to coastal storm flowage are designed to withstand the impacts of flooding and sea level rise.

IV. 208 Consistency/ AMP Issues

- Fertilizer management: The town identifies some strategies for managing turf fertilizer use within the town. The CWMP notes the town's participation in the Pleasant Bay Alliance as one avenue for improving awareness and education about the link between water quality and fertilizer use within the Pleasant Bay watershed. The town also plans to implement town-wide educational strategies to improve understanding about fertilizer use. In order that the educational efforts prove effective, the town should provide, through adaptive management planning, more detail about how and to what extent the town will take on town-wide education, including of residents, seasonal homeowners, and the landscaping community. Such detail should also identify specific actions to be undertaken, and the parties responsible for undertaking such actions.
- Growth Management/ Land Use and Open Space Acquisitions: In order to manage new growth that might accompany sewer service, the CWMP identifies the potential for down-zoning and acquiring land for conservation restriction.

The CWMP identifies East Harwich Village Center as an area where the town would like to focus additional 'smart' growth; and relatedly, the plan identifies parcels throughout town where additional development may occur (under a 'buildout' scenario). However, the CWMP would benefit, in the Recommended Program section, from a more comprehensive statement about the town's perspective and vision for future growth in the town- Are there additional areas (outside of East Harwich) where the town would like to focus or anticipates new growth? Are higher densities proposed in these areas, facilitated by new wastewater infrastructure? If higher densities are desired in certain areas, what are proposed strategies to remain 'flow neutral' with this increased development potential? In addition, the CWMP has a general statement about the opportunity to purchase open space to reduce nitrogen-generation potential, but there are no strategic or priority lands acquisitions identified. At a minimum, the CWMP could reference relevant provisions in the town's Open Space and Recreation Plan (or a draft OSRP, under development) and capital planning documents. The CWMP should also discuss in greater specificity the costs to serve existing development versus new development town wide, and its build-out assumptions, and development projections based on those assumptions, for East Harwich.

- Innovative and Alternative Technologies Committee: The CWMP identifies the need for a group to track innovative and alternative technologies, but does not identify how that group would be involved in the adaptive management plan and how alternative technologies will be incorporated into the town's wastewater management approach.
- Shellfish Aquaculture: Harwich has had an active shellfish program for many years. The CWMP indicates an interest in determining whether the shellfish program has had an impact on nitrogen management, but as this initiative is not detailed in the SEIR, the SEIR does not indicate whether there is room for additional seeding in the town's water bodies, or opportunities for aquaculture grants or other expansion of the program. The referenced figure 13-5 is missing from both the hard and electronic copies of the CWMP.

HERITAGE PRESERVATION/ COMMUNITY CHARACTER

Figure 14-12 of the Harwich CWMP SEIR identifies the location of historic properties that have been inventoried or designated within historic districts in the town. Harwich also has numerous historic buildings that have not yet been inventoried. Because the proposed sewer work will occur primarily within road layouts, it is not expected to impact these historic properties. While there is potential for increased development pressure on some historic properties where sewer installation would allow more development on a lot, it appears that most of the areas proposed for sewering have already had historic inventory work done.

As noted in the SEIR, Massachusetts Historical Commission will require review of each phase as it is designed so that impacts to historic and archaeological resources can be considered at a more detailed level. This also allows additional historic inventory work completed in the interim period to be considered when the designs are reviewed. When siting any above ground structures related to the project, such as pumping stations, historic areas should be considered carefully and siting such structures adjacent to historic buildings should be avoided.

TRANSPORTATION

The CWMP proposes approximately 92 miles of new sewer mains to be installed within existing roadways. The CWMP recognizes the Cape Cod Commission's recommendations regarding the coordination of sewer installation work, that is, that potential impacts on the transportation network related to construction or expansion of any treatment facilities be considered by the Town at the appropriate stage in the design process. It also recommended that the Town coordinate sewer construction activities with planned roadway improvement projects to minimize traffic disruptions and reduce overall costs. The CWMP states that potential traffic impacts and mitigation methods will be looked at in greater detail during the design of the individual CWMP components, including coordinating other needed roadway improvements with the sewer project where such coordination is logical and cost-effective for the Town.

P.O. Box 25

Brewster, MA 02631

April 29, 2016

Richard Roy, Chairman

Cape Cod Commission Subcommittee

P.O. Box 226

Barnstable, MA 026390

Subject: Town of Harwich CWMP Joint Review Hearing MEPA/CCC

Dear Mr. Roy,

I attended the Town of Harwich CWMP SEIR Joint Hearing, MEPA/CCC on April 28, 2016. It was my first time attending a Harwich hearing on this matter. I live in Brewster. I am writing you as a concerned citizen.

I was thoroughly impressed with the extensive, comprehensive approach to limit nitrogen to the surrounding embayments. However, the 208 Plan does not address phosphorus with the same intensity. As phosphorus, not nitrogen, is the controlling nutrient for algae bloom in our Cape Cod ponds more emphasis needs to be given to limiting phosphorus pond contamination.

It is well established that algae, in the absence of a nitrogen source, can synthesize nitrogen from the air to be incorporated into algae growth. Algae cannot synthesize phosphorus from the air. Limiting nitrogen sources only to ponds will not decrease algae blooms. If the Town of Harwich wishes to address its pond algae problem long term, it must address the phosphorus pond nutrient contamination problem with the same intensity it is addressing the nitrogen nutrient contamination problem to its embayments.

As the major source (over 60%) of phosphorus contamination of Harwich ponds is transferred to the ponds by surface waters, storm surface runoff to ponds needs to be addressed. At the meeting last night, it was stated that the cost/benefit to reduce the nitrogen load to Harwich ponds was not favorable. I wonder if the cost/benefit of limiting the phosphorus load to ponds was considered. Again, this is the major source of phosphorus to ponds.

At last night's meeting, David Young, PE, BCEE, stated that dredging removes a residual source of nutrients found in the sediment, but it does not lower future source contamination of nutrients to the pond. In the same way, alum was added to Long Pond four years ago to lower phosphorus levels (aluminum phosphate binding), not nitrogen levels. Adding alum does not prevent future nutrient source contamination of Long Pond. Long Pond remains an impaired pond.

Requiring a vegetative buffer along ponds edges greatly limits surface water runoff into the pond. In addition, limiting fertilizer applications and composting near ponds also reduce phosphorus entering the nearby surface waters.

In contrast to septic system source nitrogen transfer to ground water of 80%, septic system source phosphorus transfer accounts for about a third of all sources to ponds. Although Cape Cod sand is high in iron and magnesium, which adsorb phosphorus, that ability is finite. Once the sand between the septic system drain field and the nearby surface water reaches its phosphorus adsorption capacity, additional septic system source phosphorus will continue to the nearby pond forever!

A phosphorus breakthrough analysis (PBA) considers 12 factors to calculate an individual phosphorus breakthrough year. The individual PBA will identify those septic systems that are polluting nearby ponds now or will pollute nearby ponds in the near future. All information needed to complete a PBA can be obtained

from the septic system plan on file with the Board of Health. Identifying and remediating polluting septic systems should be a priority.

In Summary, limiting nitrogen to Harwich Ponds will not prevent algae blooms. Phosphorus has to be limited to control algae growth and should play a prominent part in future plans to maintain the water quality in all Harwich waters.

Please feel free to contact me if I can be of future assistance. Thank you for listening to my concerns.

Sincerely yours,

Carmen S. Scherzo, DVM

Home phone: 508-896-0003

Cell phone: 201-320-0313

Email: JHSCSS@aol.com

Cc: Peter DeBakker, Chairman, Wastewater Implementation Committee, 732 Main Street, Harwich, MA 02645

David F. Young, P.E., BCEE, Vice President, CDM Smith, 75 State Street, Suite 701, Boston, MA 02109

Tom Vautin, President of Brewster Pond Coalition.
Tom.vautin@brewsterponds.org

May 5, 2016

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

Attention: Anne Canaday

RE: Harwich Final Comprehensive Wastewater Management Plan/Single Environmental Impact Report (EEA # 15022)

Dear Secretary Beaton:

The Association to Preserve Cape Cod (APCC) is the Cape's leading nonprofit environmental education and advocacy organization. Founded in 1968 and today representing over 5,000 members across the region, APCC's mission is to preserve, protect and enhance the natural resources of Cape Cod. APCC has reviewed the Harwich Final Comprehensive Wastewater Management Plan (CWMP)/Single Environmental Impact Report (SEIR) and submits the following comments.

The Harwich CWMP recommends a wastewater management plan that primarily relies on sewering to treat wastewater impacting the town's nitrogen-impaired estuaries as well as some of the town's phosphorus-impaired ponds. It proposes to utilize a treatment facility to be built at the Harwich landfill site and to also coordinate with the town of Chatham to use that town's existing Chatham Water Pollution Control Facility. The facility at the Harwich landfill, identified as HR-12 in the plan, will treat wastewater flow from all areas of the town that are to be sewered except for flow from the Pleasant Bay watershed, which will be sent to the Chatham facility for treatment. HR-12 will recharge the treated effluent onsite. Pleasant Bay watershed flow will initially be recharged at the Chatham facility, but a recharge site within Harwich's portion of the Pleasant Bay watershed may be used if future use of the Chatham recharge site is no longer possible.

In addition to sewering, the CWMP includes plans to increase natural attenuation at two locations in order to reduce nutrient loading: the Cold Brook area in the Saquatucket Harbor watershed and the nearly-completed inlet widening project at Muddy Creek in the Pleasant Bay watershed. The plan also recommends non-infrastructure nutrient management that includes an educational program to manage fertilizer use, a stormwater management program that incorporates best management practices, open space acquisition, and the potential for non-specified land use changes to reduce nutrient impacts. In addition, the CWMP describes the possible exploration of alternative treatment options, such as a permeable reactive barrier pilot program.

Adaptive Management

The Harwich CWMP relies on an adaptive management component to guide future implementation of the plan. Any necessary modifications to the CWMP will be based on determinations by a technical review committee, water quality monitoring, habitat monitoring, wastewater treatment plant/groundwater discharge reporting, CWMP implementation and funding status, community growth status reports, and CWMP-recommended program modifications. APCC supports a comprehensive approach to adaptive management that consistently monitors the success of the program and that can identify where modifications to the program need to occur. A comprehensive monitoring program is particularly critical in ensuring that the plans objectives are being met.

The CWMP proposes to implement the town wastewater plan in eight phases, concentrating on the areas of greatest impact first. APCC supports a phased implementation, which helps spread out the costs but also allows for monitoring to verify whether desired results are being achieved and to formulate changes to the plan through adaptive management as necessary.

Consistency with the 208 Plan

The CWMP is largely consistent with the Cape Cod Section 208 Areawide Water Quality Management Plan Update. In particular, the CWMP conforms to the 208 Plan's emphasis on regional collaboration to achieve watershed solutions. APCC commends the town of Harwich for recognizing the economic and environmental benefits of pursuing cooperative wastewater management initiatives with neighboring towns that share a common watershed. In addition to the agreement being worked out to utilize the Chatham wastewater treatment facility, Harwich and Chatham are completing the previously-mentioned joint project to widen the Muddy Creek inlet, which will improve nitrogen flushing within that subwatershed of Pleasant Bay. Harwich has also initiated dialogue with Dennis and Brewster on opportunities to work together to meet MEP and TMDL nitrogen reduction thresholds in the Herring River and Swan Pond watersheds. APCC strongly supports the adoption of regional solutions to address the Cape's wastewater problem and encourages the town to continue pursuing these and other cooperative efforts.

Buildout Assumptions

In comments submitted to EEA for the Harwich Draft CWMP, APCC expressed concern about buildout assumptions for East Harwich of 250 residential units and 500,000 sf of commercial space above the MEP buildout estimates. We believed the town's buildout assumptions were under-represented by projected wastewater flow and did not necessarily reflect public sentiment for growth in that area. The Final CWMP/SEIR shows a reduced buildout estimate of 200 residential units and 250,000 sf of commercial above MEP buildout estimates, but at the same flow projected in the Draft CWMP for the larger buildout. These buildout estimates, which represent a 30 percent increase in wastewater flow for the area, would necessitate significant changes to existing zoning.

APCC continues to be concerned that buildout assumptions factored into the CWMP are based on growth levels that the community as a whole does not support. If sewering capacity is built based on these assumptions, it could accommodate and therefore perpetuate unwanted growth in East Harwich. This potential secondary growth translates into impacts on natural resources and increased wastewater infrastructure costs. A similarly large buildout estimate above MEP estimates has been factored into plans for village centers in the Herring River watershed, with a projected flow increase of 32 percent. Overall, the CWMP projects an approximately 26 percent increase in the town's wastewater flow over the current flow, based on these buildout assumptions.

The above-mentioned buildout estimates have been included in the wastewater infrastructure plan without any specific recommendations for strategic land use planning that would help offset growth impacts by reducing growth pressures outside of growth centers and thereby reducing the costs of wastewater infrastructure and treatment. APCC strongly recommends that the town identify and pursue land use options that would reduce wastewater impacts and help lower the costs of the proposed wastewater management plan. The CWMP states that a 25 percent reduction in wastewater infrastructure could result in a program cost of $180 million, as opposed to the over $220 million projection based on maximum buildout. This significant cost savings should be a very compelling incentive for the town to pursue land use planning strategies that will reduce growth impacts.

Stormwater Management and Fertilizer Use

According to the CWMP, stormwater contributes approximately five to nine percent of the controllable nitrogen entering Harwich's coastal waters. It is also a source for phosphorus in freshwater ponds. In addition to developing stormwater BMPs as described in the CWMP, APCC recommends that the town review its bylaws and regulations to determine where improvements can be made to increase the effectiveness of stormwater management to further reduce nutrients and other pollutants from entering water bodies.

Town-wide, fertilizers contribute between seven and 16 percent of the controllable nitrogen load to coastal estuaries, according to the CWMP. In the Muddy Creek subwatershed, fertilizers are responsible for 25 percent of the nitrogen load. The town elected not to adopt a fertilizer bylaw, but has instead decided to promote education as a fertilizer management tool. APCC strongly encourages a vigorous education and outreach program to reduce fertilizer use throughout the town. This program should emphasize low impact native landscaping and other alternative options to reduce lawn size and fertilizer use.

Drinking Water Quality

The CWMP reports that the quality of Harwich's drinking water supply is good, and therefore drinking water protection is not a factor in the town's sewering plans. However, public water wells located in the Pleasant Bay watershed do show an increase in nitrate concentrations, although still below the threshold for safe levels.

This recent elevation in nitrate levels does indicate that development and wastewater is, to some degree, impacting the town's water supply. It also increases concerns over other wastewater-borne contaminants, including contaminants of emerging concern. Plans to schedule sewering of this area of the Pleasant Bay watershed in the early phases of the sewering program should also be a benefit to the water supply, according to the CWMP. APCC encourages the town to also pursue additional open space acquisition and land use protection strategies to help ensure the town's drinking water quality will continue to be protected and improved.

Climate Change Resiliency

The CWMP has identified certain areas of town with shallow depth-to-groundwater south of Rt. 28 along the southern coast. Due to Title 5 and board of health compliance issues based on high groundwater and small lot sizes, the town has included these low-lying areas in the sewering plan. The CWMP states that sewer lines and pumping stations built within existing flood zones will be designed to withstand flood conditions. The CWMP does not explain how or if infrastructure design for these locations will account for predicted sea level rise and the impact it will have on the extent of future surface flooding. Design plans that address future flood risk, not just current flood risk, should be specified.

The sewering design should also consider anticipated changes to the water table as a result of sea level rise. A groundwater modeling study of the mid-Cape Cod region conducted over the past two years by the U.S. Geological Survey and commissioned by APCC predicted significant impacts to in-ground infrastructure and the function of natural systems due to changes in the interface between salt water and the water table, based on expected sea level rise. It can be expected that in low-lying coastal areas of Harwich, predicted sea level rise will increase the number of properties experiencing Title 5 compliance issues due to a high water table compared to the number of properties currently experiencing such problems.

Habitat Protection

The CWMP states that further coordination with the state's Natural Heritage and Endangered Species Program needs to take place to ensure that state listed species are not adversely impacted by the wastewater treatment facility, pumping stations or other aspects of the project. In addition to avoiding impacts on state listed species, the town should commit to avoiding any impacts on areas designated as Biomap2 Core Habitat or Critical Natural Landscapes.

APCC thanks the Secretary for the opportunity to provide comments.

Sincerely,

Ed DeWitt
Executive Director

Don Keeran
Assistant Director

cc: Cape Cod Commission

Commonwealth of Massachusetts

Division of Marine Fisheries

251 Causeway Street, Suite 400
Boston, Massachusetts 02114
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David E. Pierce
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Commissioner
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Deputy Commissioner

May 5, 2016

Secretary Matthew A. Beaton
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Anne Canaday, EEA No. 15022
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Secretary Beaton:

The Division of Marine Fisheries (*MarineFisheries*) has reviewed the Final Comprehensive Wastewater Management Plan (CWMP) and Single Environmental Impact Report (SEIR) by the Town of Harwich. Wastewater management is described for the Allen Harbor, Wychmere Harbor, Saquatucket Harbor and Herring River watersheds on Nantucket Sound as well as the Pleasant Bay watershed. Based on the Massachusetts Estuaries Project (MEP) assessments, all of these systems currently far exceed (>50%) nitrogen loading thresholds established in the MEP watershed reports. For each watershed, wastewater was identified as the dominant controllable source of nitrogen (>65%). Fertilizer and stormwater runoff from impervious surfaces were listed as the predominant secondary controllable sources of nitrogen. Estimated atmospheric deposition of nitrogen varied among watersheds. Estimates for Allen Harbor, Wychmere Harbor, and Saquatucket Harbor were relatively low and comparable to all anthropogenic sources except wastewater while the estimate for Herring River was intermediate and secondary only to wastewater inputs. For Pleasant Bay, atmospheric deposition was essentially equal (41% vs. 42% of total nitrogen loading) to wastewater inputs.

To address the identified high levels of nitrogen loading in all five watersheds, the CWMP includes a 40-year program consisting of 8 phases. Much of the proposed plan for reductions in nitrogen loading involves wastewater collection and treatment through increased sewering and tie in to the existing Chatham wastewater treatment facility as well as a proposed new facility at the Harwich landfill site. Additional components include the Muddy Creek inlet widening project and the creation of ponds conducive to denitrification in Cold Brook. Non-infrastructure components of the plan include a variety of public outreach programs. Existing marine fisheries resources and potential project impacts to these resources are outlined in the following paragraphs.

The estuaries included in the CWMP provide habitat for a variety of finfish, shellfish, and other invertebrate species. These embayments provide spawning and nursery habitat for winter flounder (*Pseudopleuronectes americanus*). Pleasant Bay also provides important nesting and nursery habitat for horseshoe crabs (*Limulus polyphemus*). Diadromous fish species also use

these systems to varying degrees for spawning, foraging, and/or juvenile development. Alewives (*Alosa pseudoharengus*) occur in Cold Brook, Muddy Creek, Saquatucket Harbor, and the Herring River. American eels (*Anguilla rostrata*) have been identified in all of these systems except Saquatucket Harbor. Muddy Creek and the Herring River also support Atlantic tomcod (*Microgadus tomcod*) and white perch (*Morone americana*) populations. The Herring River also supports a spawning run of blueback herring (*Alosa aestivalis*) [1]. All of these systems contain mapped habitat for quahogs (*Mercenaria mercenaria*) as well as a variety of other shellfish species of commercial and recreational importance. Shellfishing is currently Prohibited due to bacterial contamination in regions in Harwich within the Bass River, Allen's Harbor, Saquatucket Harbor, Wychmere Harbor, and Muddy Creek.

MarineFisheries offers the following comments for your consideration:

- Appropriate monitoring is a key component to the CWMP as accurate assessments of water column nitrogen concentrations are needed in adapting the long term nitrogen management plan. The Final CWMP provides a general description of the proposed water quality monitoring protocol and states that a formal water quality monitoring plan will be submitted to the Technical Review Committee (TRC) for review and comment (CWMP 13-42).
- The proposed seasonal sampling frequency for sentinel and check stations listed in the CWMP is likely inadequate for characterizing water quality in these systems. *MarineFisheries* recommends that the formal monitoring plan include more frequent sampling during the growing season for all watersheds.
- Comprehensive monitoring is particularly important in areas where natural attenuation projects are proposed. For example, an additional check station should be included in Pleasant Bay near the mouth of Muddy Creek to assess any potential impacts to the Bay in response to increased flushing resulting from the inlet widening project.
- The Cold Brook project is projected to increase nitrogen attenuation from 35 to 50% (CWMP 13-21), but the monitoring plan only includes a single sentinel station in the center of Saquatucket Harbor (CWMP Figure 6-14). Additional stations should be established in Cold Brook and near its confluence with Saquatucket Harbor. *MarineFisheries* requests a copy of the formal water quality monitoring plan for further review.
- *MarineFisheries* recommended further assessment of the Town's boat pumpout capacity in a comment letter on the draft CWMP/Expanded Environmental Notification Form. The Final CWMP notes the need for the Town to regularly review its ability to provide this service to marinas throughout Harwich (CWMP 13-40). The Plan should provide more specific information on the pumpout program. For example, the Plan should include estimates of the current volume of boat wastewater handled through the existing pumpout program as well as the existing infrastructure's capacity to handle higher volumes.

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

Sincerely,

David E. Pierce
Director

cc: Harwich Conservation Commission
Heinz Proft, Harwich Shellfish Constable
Rob Musci, CDM Smith, Inc.
Christopher Boelke, Sue Tuxbury & Alison Verkade, NMFS
Robert Boeri, CZM
Ed Reiner, EPA
Ken Chin, DEP
Richard Lehan, DFG
Kathryn Ford, Terry O'Neil, Tom Shields, Christian Petitpas, DMF

References

1. Evans NT, Ford KH, Chase BC, Sheppard J (2011) Recommended Time of Year Restrictions (TOYs) for Coastal Alteration Projects to Protect Marine Fisheries Resources in Massachusetts. Massachusetts Division of Marine Fisheries Technical Report, TR-47.

DP/JL/sd

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

May 6, 2016

Matthew A. Beaton, Secretary
Environment and Energy
Executive Office of Environmental Affairs
ATTN: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: HARWICH– SEIR Review
EOEEA # 15022
Comprehensive Wastewater
Management Plan ("CWMP")

Dear Secretary Beaton,

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Single Environmental Impact Report (SEIR) for the proposed CWMP to be located in Harwich, Massachusetts (EOEEA #15022). The project proponent provides the following information for the project:

The CWMP presents a 40 year phased plan with a primary focus on mitigating nitrogen enrichment to the Herring River, Allens Harbor, Saquatucket Harbor, Wychmere Harbor and Pleasant Bay watersheds. The CWMP also addresses phosphorus management of freshwater ponds and areas of Harwich with specific difficulties meeting the minimum standards of the Massachusetts on-site sewage treatment and disposal regulations (310 CMR 15.000, Title 5 of the State Environmental Code).

Wastewater Management

The Final Harwich Comprehensive Wastewater Management Plan/Single Environmental Impact Report (SEIR) builds upon the draft plan presented in 2013 as an Expanded Environmental Notification Form (EENF). MassDEP is pleased to see that the SEIR continues to advocate for regional solutions with Chatham and, further, that since the EENF was submitted, Harwich has initiated discussions with Dennis on opportunities for inter-municipal collaboration. Since development of the EENF, at the direction of MassDEP the Cape Cod Commission has completed a Section 208 Wastewater Management Plan Update pursuant to the Federal Clean Water Act. The 208 Plan Update represents a watershed-based approach to restore embayment water quality on Cape Cod that recommends strategies, regulatory reforms and a process for

communities to reduce or eliminate excess nitrogen. From MassDEP's perspective, the CWMP reflects the overall goals of the 208 Plan Update.. The Cape Cod Commission will make determination of 208 consistency in conjunction with its Development of Regional Impact (DRI) review which will commence after issuance of the Secretary's Certificate.

The document represents a thorough evaluation of Harwich's needs for wastewater and nutrient management. Much of the recommended plan is driven by the findings of the Massachusetts Estuaries Project (MEP) which documented resource impairment from excess nitrogen loads in the five embayments listed above. Based on the amount of nitrogen reduction necessary, the CWMP recommends targeted sewering, using a hybrid system of gravity and low pressure sewers, with the remaining non-sewered areas relying on conventional on-site sewage treatment and disposal. A portion of the town's wastewater flow in the Pleasant Bay watershed will be directed to Chatham's wastewater treatment facility. Wastewater flow from the remaining watersheds (Allens Harbor, Wychmere Harbor, Saquatucket Harbor and the Herring River) will be treated at a new sequencing batch reactor (SBR) wastewater treatment facility and new infiltration beds both located at the Harwich Department of Highways and Maintenance property at the former landfill site in the Herring River watershed (designated as site HR-12).

Regional approaches

The SEIR describes opportunities for regional cooperation along several fronts. First, discussions with Chatham continue regarding the use of the Chatham facility to accommodate some of Harwich's wastewater flow in the near term. Beyond, it is encouraging that there is a recognition of long term needs and preliminary plans for Harwich to consider funding a portion of the expansion and/or use of the Chatham facility when that need may arise in order to continue allowing Harwich access to the Chatham facility. The pending completion of flushing improvements for Muddy Creek results in improvements that will be benefit to both Harwich and Chatham, as the Muddy Creek subwatershed is shared by both towns.

The EENF had described inter-municipal cooperation with Dennis particularly in respect to the shared Herring River watershed. However, the SEIR suggests that there is potential for a more far reaching cooperation with Dennis than merely the shared areas of the Herring River watershed. Additionally, the SEIR discusses future options for cooperation with Brewster with respect to both the Herring River and Pleasant Bay watersheds.

Alternative Approaches

There are two proposals for alternative approaches for nutrient reduction described in the SEIR carried over from the CWMP. One is to provide for improved flushing at the Muddy Creek culverts running under Route 28. Modeling through the MEP has shown that a 24 foot wide culvert will provide benefit to water quality in the Muddy Creek subwatershed which may result in a reduction of the amount of conventional infrastructure that would ordinarily be needed to meet target thresholds within the subwatershed. This project is almost completed and will be functional by June 2016. MassDEP and the town will work together to develop an appropriate monitoring plan to determine if the anticipated improvements in water quality actually occur.

The SEIR discusses additional mitigation required to meet the target thresholds if the project does not result in the projected water quality improvements.

The second proposal is to modify or manipulate flow through the Bank Street cranberry bogs to increase nitrogen attenuation from a measure 35% to a projected 50%. Enhanced natural attenuation at this site will be considered as a demonstration project which will require appropriate review and permitting under the Wetlands Protection Act and related regulations. The town and MassDEP should discuss permitting requirements at the earliest opportunity. Should the project be permitted, the town will need to develop a design and monitoring protocol with MassDEP so that the effectiveness of the modifications is adequately documented in order to secure credit for the anticipated additional nitrogen removal. The SEIR provides a discussion of alternate mitigation strategies if the enhanced attenuation does not meet expectations.

MassDEP recommends that Harwich file a NPC for any innovative nitrogen mitigation proposed.

A more detailed discussion of wetlands requirements are provided in another section of these comments.

Wastewater Infiltration

The CWMP provides a hydrogeological report for the proposed infiltration sites HR-12, SH-2 and PB-3. MassDEP will need more time to thoroughly review the findings; however, the recommended discharge sites will be fully evaluated during the permitting process. As part of the recommended plan, only sites HR-12 and PB-3 were carried forward.

Site PB-3 was comprised of several privately owned properties. A warrant article to purchase the properties passed at the 2015 Annual Town Meeting but was subsequently defeated on a town-wide ballot vote. Further investigation is ongoing to find appropriate sites within the Pleasant Bay watershed. There are two sites under consideration but will require more detailed site evaluations which can be accommodated under the permitting process.

With regard to site HR-12, the entire parcel is under a site assignment by the Divison of Solid Waste. All provisions of the solid waste program and its regulations will have to be met to allow siting of a wastewater treatment facility and disposal beds.

Buildout Analysis

The report has provided a thorough evaluation of existing and buildout conditions. Additional evaluation may be needed for buildout assumptions depending upon how proposed zoning changes, particularly for the East Harwich Village Center, are enacted.

Wetlands and Waterways

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The Harwich CWMP contains two proposed alternative nutrient control strategies that will result in direct alteration of wetland resource areas. The Town proposes to implement the CWMP in phases and Phase I includes the replacement of the two 4-foot wide existing culverts with a 24-

foot wide bridge at Route 28 to increase flushing of Muddy Creek and restore ecological habitat. This project has been permitted and is at, or near, completion. The Department commends the Town for pursuing this ecological restoration project.

In addition to the Muddy Creek culvert improvements, modifications to Cold Brook and associated wetlands to maximize residence time of groundwater are proposed to achieve 15% of the total nitrogen attenuation required in the Saquatucket Harbor estuary. Specifically, construction of depositional ponds in abandoned cranberry bogs off of Bank Street is proposed for the retention of pollutants. The SEIR, however, does not provide any additional information or quantification of wetland impacts on this alternative. The SEIR states that additional study is needed.

In addition, the SEIR states that Hinkleys Pond, Seymour Pond, Bucks Pond and John Joseph Pond may also be restored but no specifications or quantification of wetland impacts were provided. The SEIR states that the exact nature of the pond restoration projects is unknown at this time but may include the addition of alum for phosphorous control.

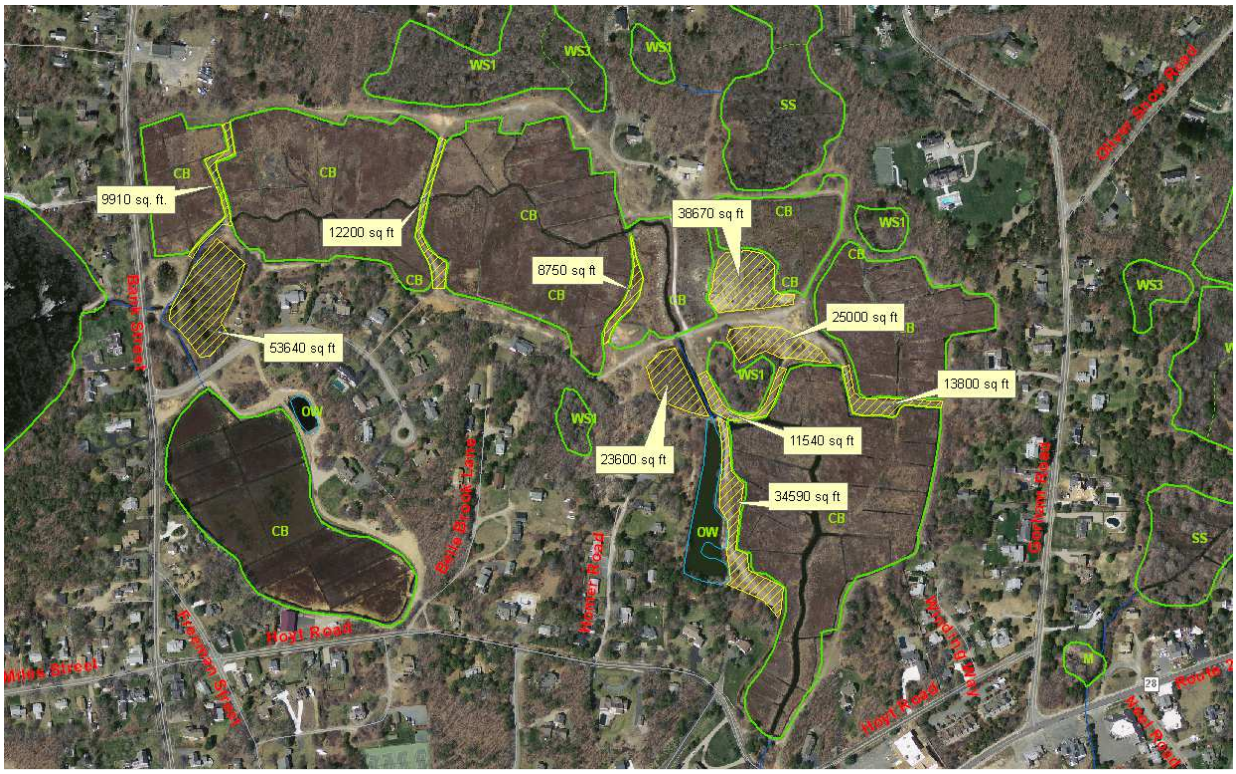
The proposed modifications to Cold Brook and associated bordering vegetated wetlands raises concerns about impacts to these resource areas, and may require a wetland variance. A wetland variance may require further evaluation of alternatives through the MEPA process. MassDEP believes that potential alternatives exist (e.g., natural succession, different restoration techniques and wetland creation) that may better meet the goals of wetland protection while still meeting water quality restoration goals. Some of these alternatives may also serve the purpose of expediting wetland permitting.

Abandoned cranberry bogs, if left alone, will revert to marshes and/or shrub/forested swamps through natural succession and provide pollution prevention benefits and promotion of other public interests. This can be directly observed by the succession of abandoned cranberry bogs to the east of Gorham Road to a more natural wetland systems (see photo below). The succession of abandoned cranberry bogs to a natural shrub or forested system may provide nitrogen attenuation not currently considered in the proposed strategy.

Abandoned cranberry bogs succession to natural wetlands east of Gorham Road

Strategies that allow for natural succession, restore wetland diversity in the bog, increase retention time, along with possibly increasing the groundwater interface could also be considered. Acceptable restoration strategies include natural plantings of woody species, elimination of manmade ditches and increasing sinuosity of the main channel (and possibly creation of sinuous tributaries from some of the larger ditches). The project proponent should review the Watershed Assessment of River Stability & Sediment Supply (WARRS) river restoration method recommended by EPA. http://water.epa.gov/scitech/datait/tools/warsss/

MassDEP also strongly recommends that the project proponent consider wetland creation as a viable alternative to the alteration of existing wetlands in and around the abandoned bog. There appear to be a number of upland areas that may allow for successful wetland creation in and around these abandoned cranberry bogs that should be investigated further (see photo below). There may also be ways to increase the groundwater connection within the bog network that is short of fully converting the bogs to depositional ponds.



Areas with yellow hatch marks are potential wetland creation areas needing investigation

Any one strategy or combination of strategies described in the preceding paragraph may serve to achieve a similar or greater nitrogen attenuation increase of the 15% desired. Research has confirmed that wetlands provide good nitrogen attenuation which supports the goals of not only protecting existing wetlands for natural succession, but also for creating additional acreage. However, there appears to be limited research on the nitrogen attenuation capability of specific wetland types, including cranberry bogs, marshes and shrub and forested wetlands, and on the amount of nitrogen attenuation that would result from acceptable restoration strategies that would increase retention time. Demonstration projects may be approved on a case by case basis to support development of data.,MassDEP recommends that the proponent meet with MassDEP prior to selecting the proposed strategy and proceeding to the permitting phase to discuss potential permitting pathways and permitting challenges presented by various paths forward.

All strategies should be monitored to document actual nitrogen attenuation through a monitoring system designed to measure upgradient (inflow) and down gradient (outflow) nitrogen loads. Downgradient salt marshes should also be monitored before and after work using MassDEP/Coastal Zone Management's Salt Marsh Quality Assurance Project Plan (QAPP) protocol and monitoring data collected should be submitted to MassDEP Wetlands Program. http://www.mass.gov/dep/water/resources/wfieldwk.htm#qapps

MassDEP supports further examination of the nitrogen attenuation alternatives to fully consider both their potential nitrogen reduction benefits and impacts on other natural resource goals. MassDEP is willing to work with the project proponent prior to permitting to evaluate alternatives and monitoring strategies to achieve the maximum nitrogen attenuation possible.

Finally, the Massachusetts Natural Heritage and Endangered Species Program (NHESP) identified state-listed rare species in the vicinity of several project components. During implementation of the CWMP, the project proponent must comply with 310 CMR 10.59, 310 CMR 10.32(6) and related performance standards for other resource areas, and 310 CMR 10.37 to ensure that there is no short or long term adverse effect on estimated habitats of rare wildlife.

Bureau of Waste Site Cleanup

Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed project area. A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000].

The Comprehensive Wastewater Management Plan proposed for the Town of Harwich includes nitrogen attenuation projects, sewered components, and two centralized treatment facilities. The entire project has been divided into eight construction phases spanning a total of approximately 40 years. Given the scale and duration of the project it is possible that listed MCP disposal sites may be encountered over the course of the project. Interested parties may view a map showing the location of BWSC disposal sites using the MassGIS data viewer (Oliver) at: http://maps.massgis.state.ma.us/map_ol/oliver.php Under "Available Data Layers" select "Regulated Areas", and then "DEP Tier Classified 21E Sites". The compliance status and report submittals for specific MCP disposal sites may be viewed using the BWSC Waste Sites/Reportable Release Lookup at: http://public.dep.state.ma.us/SearchableSites2/Search.aspx

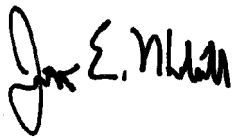
The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) should be retained to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

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 Town of Harwich is to be commended on its continuing efforts to address its wastewater and nitrogen mitigation challenges in a comprehensive manner that incorporates regional solutions, innovative and traditional approaches and is sensitive to the needs of the environment and the financial constraints of the community.

Very truly yours,



Jonathan E. Hobill,
Regional Engineer,
Bureau of Water Resources

JH/
Cc: DEP/SERO

ATTN: Millie Garcia-Serrano, Regional Director
David Johnston, Deputy Regional Director, BWR
Maria Pinaud, Deputy Regional Director, BAW
Gerard Martin, Acting Deputy Regional Director, BWSC
Jennifer Viveiros, Deputy Regional Director, ADMIN
Jim Mahala, Chief, Wetlands and Waterways
Allen Hemberger, Site Management
Brian Dudley, Chief, Wastewater

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Charles D. Baker
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Karyn E. Polito
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Matthew A. Beaton Secretary

Judith F. Judson
Commissioner

May 10, 2016

Matthew Beaton, Secretary
Executive Office of Energy & Environmental Affairs
Attn: MEPA Unit
100 Cambridge Street
Boston, Massachusetts 02114

RE: Harwich CWMP; SEIR; Stationary Sources; DOER Comments

Cc: Arah Schuur, Director of Energy Efficiency Programs, Department of Energy Resources
Judith Judson, Commissioner, Department of Energy Resources

Dear Secretary Beaton:

It is the intent of this review to both ensure that the information submitted conforms to the application of the MEPA GHG Policy and Protocol (the Policy) as have been agreed upon for this project, and to point out areas and aspects of the design and proposed mitigation as described in the GHG related content that may present opportunities for further reductions in both energy usage and GHG emissions. Where these opportunities appear to exist, these comments also suggest measures and/or approaches that the DOER expects will be evaluated for adoption towards the achievement of further reductions in both energy and source GHG emissions.

H-12 Waste Water Treatment Facilities (WWTF)

WWTF's are energy intensive facilities which often represent one of the largest sources of direct and indirect stationary sources within a district or municipality. In recognition of this, the DOER has proposed that MEPA establish a protocol for any CWMP which requires an EIR and which includes one or more new WWTFs that requires the proponent to use the target finder feature of

the EPA Energy Star Portfolio Manager for WWTFs in order to establish a benchmark for the maximum allowable energy intensity (kBbtu/gpd) for any proposed new facility that will result in an ESPM ranking of 50, which represents the median energy intensity for the facilities in the same climate zone with similar operating characteristics. In this way, the detail designers of the eventual plant will have the benefit of well defined upper limit values for both the kBtu/gpd site and source with which to comply as they proceed with the final design. This should help to ensure that no new plants are designed and built that subsequently prove to be unable to meet what should be a minimal standard of efficiency.

In the case of this SEIR, the proponent has followed the direction provided in the EENF certificate and has used the ESPM target finder feature to establish energy intensity values or 2.70 kBtu/gpd site and 8.48 kBtu/gpd source, associated with the ESPM rank of 50.

The statement is made on page14-40 that the as-proposed plant will achieve an ESPM ranking of at least 50. However, this statement is qualified by the need to credit on-site renewable energy and the purchase of green energy credits against the plant's designed energy intensity in order meet this threshold. No explanation is provided in the SEIR as to the reasons why the as-proposed plant could not be designed to attain a ranking of 50 without these credits.

Table 14-6
The ESPM performance rank of 11 for the as-proposed case is confusing, as it is lower than the rank of 50 for the baseline case, which is clearly unacceptable. In any case, the DOER does not see the value or relevance of showing an extrapolation of existing low ranking plants to predict the performance of the as-proposed plant.

Selection of the Recommended Treatment Option:
O&M cost appear to be dominated by energy costs and therefore are an indicator of energy intensity. The DOER commends the project on selection of the SBR as the recommended treatment option with the lowest O&M cost as shown in Table 12-10.

Pumping Stations:

33 new pumping stations are proposed for the collection system. A description of the base and mitigated cases for the as-proposed pumpingstations as well as the quantification of the estimated kWh and GHG emissions for both cases are not included in this section.

Section 61:

The commitment that the as proposed H-12 WWTF will be designed on the basis of attaining an ESPM rank of at least 50 is missing.

The list of mitigation measures under the heading of "all WWTF related equipment", as shown on page 14-42, should be added to the list of mitigation measures included in this section.

Due to these considerations, the DOER recommends that the proponent should be required to file a supplement to the SEIR containing the following:

1) A clear commitment that the as-proposed H-12 facility will be designed to attain an ESPM ranking for WWTFs of no less than 50, without credit taken for on-site renewable energy generation or purchased green energy credits.
2) Revise Table 14-6 to include only the as-proposed unmitigated plant with a rank of 50, and the as-proposed mitigated plant (target only) with a rank of 51.
3) A description of the base and as-proposed mitigated pumping stations and a quantification of both the estimated energy consumption and related GHG emissions for both cases.
4) Revision of Section 61 findings to include the list of mitigation measures under the heading of "all WWTF related equipment", as shown on page 14-42.

Sincerely,

John Ballam

John Ballam
Manager, Engineering & CHP Program
Massachusetts Department of Energy Resources