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July 31, 2015

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

PROJECT NAME : Comprehensive Watershed Nitrogen Management Plan
PROJECT MUNICIPALITY : Mashpee
PROJECT WATERSHED : Cape Cod
EEA NUMBER : 12615
PROJECT PROPONENT : Town of Mashpee
DATE NOTICED IN MONITOR : June 24, 2015

As Secretary of Energy and Environmental Affairs, I hereby determine that the Final Environmental Impact Report (FEIR) submitted on this project **adequately and properly complies** with the Massachusetts Environmental Policy Act (MEPA) (M.G. L. c. 30, ss. 61-62I) and its implementing regulations (301 CMR 11.00). No further MEPA review is required.

Implementation of the Final Comprehensive Watershed Nitrogen Management Plan (CWMP) as described below in this Certificate will be achieved through adaptive management and includes alternative strategies that will be employed based on the results of monitoring and modeling. The FEIR provided an analysis of environmental impacts and measures to avoid, minimize, and mitigate impacts commensurate with this planning document. As discussed in more detail in this Certificate, a Notice of Project Change (NPC) will be filed with the MEPA Office for each phase of development to provide additional opportunities for public and agency review and to address significant modifications to the Recommended Plan (as identified in this Certificate) based on the adaptive management approach. Subsequent NPCs will provide refined analyses of environmental impacts and detailed mitigation measures. The NPCs will also provide

state and regional planning agencies, local boards, and members of the public the ability to review and comment on the Plan.

In the development of this long-term plan, the Town has emphasized lower cost solutions, compared to traditional wastewater management, and approaches suited to the seasonal fluctuations of wastewater generation in Mashpee. It has been developed in consultation with the Massachusetts Department of Environmental Protection (MassDEP) and the Cape Cod Commission (CCC). Comments indicate support for the Recommended Plan and recognize the time and effort the Town has invested in this process. State Agencies and the CCC also emphasize the availability of technical assistance and resources to support the Town's continued efforts. MassDEP comments indicate that the Town has provided adequate contingency plans based on traditional technologies to address concerns that the level of nitrogen reductions associated with some elements of the Plan may be challenging to achieve.

Project Description

The Final CWMP presents the Town of Mashpee's recommendations to manage wastewater and remove nitrogen to address the Total Maximum Daily Loads (TMDLs) established for Popponesset Bay and eastern Waquoit Bay. The FEIR summarizes the Town's wastewater management planning process and identifies planning, programs and projects that will be implemented over a 25-year period. It addresses the environmental impacts and costs of each element of the Recommended Plan. It proposes a combination of traditional and non-traditional wastewater management approaches, including expansion of wastewater treatment facilities (WWTFs) for treatment and discharge, new treatment facilities, shellfish aquaculture for nitrogen removal, land use controls, fertilizer management, a feasibility study for the Quashnet/Moonakis River, and consideration of demonstration projects. The latter projects include permeable reactive barriers (PRBs), wetland restoration projects, and development of an eco-toilet pilot program.

The Adaptive Management approach to implementation will likely result in changes to the Plan based on opportunities, changing technology, and results of modeling and long-term monitoring. Development of infrastructure will be phased and monitoring and modeling data will be evaluated in conjunction with the phasing to support evaluation of the effectiveness of the Plan. Elements of the plan include:

- The Plan relies heavily on potential for aquaculture to remove nitrogen loads and meet TMDLs for many of the embayments. Infrastructure components of the plan are identified to supplement the attainment of TMDLs through aquaculture and will be deferred until necessary to meet TMDLs in the Mashpee River and Quashnet River watersheds.
- Use of existing capacity or expansion and upgrades to create capacity for treatment and discharge at existing private WWTFs (New Seabury, Willowbend, Mashpee Commons, Southport and Stratford Ponds in Mashpee; Cotuit Meadows in Barnstable; and Forestdale School in Sandwich). This approach may minimize environmental impacts and should reduce infrastructure costs significantly.

- Expansion and modifications to Joint Base Cape Cod (JBCC) (formerly Massachusetts Military Reservation) WWTF for regional wastewater management, including Quashnet (Areas H, L, M) and Sandwich (Sand-1,-2,-3) (with a contingency of the use of Back Road Site if JBCC is not available or available at a reduced capacity).
- Construction of new wastewater treatment and recharge facilities.
- Development of a framework for regional cooperation with Barnstable, Falmouth and Sandwich. The Plan identifies Priority Planning Area (PPA) subareas within each town and associated wastewater treatment facilities that could be accommodated within the Plan.
- Development of a management structure for areas where septic systems and Innovative/Alternative systems will remain in use.

The FEIR included an updated project phasing schedule that assumes traditional infrastructure will be implemented to serve the areas of the Quashnet River watershed where shellfish aquaculture is not appropriate. The project is proposed to be implemented in phases from 2017 to 2041. Each phase includes the filing of an NPC to the MEPA Office and submission of Development of Regional Impact (DRI) modifications to the Cape Cod Commission (CCC). These documents will address changes to the Recommended Plan based on the adaptive management approach and provide additional opportunities for public and Agency review. The NPC for each phase will evaluate the effectiveness of shellfish propagation and propose contingency plans if aquaculture does not attain the identified targets. At the end of each phase, the Massachusetts Estuaries Project (MEP) models (land use and hydrodynamic) will be updated to calibrate with water quality and benthic flux sampling, and compliance reports will be generated.

Phase 1: 2017-2021

- File NPC and DRI modifications
- Shellfish propagation in Popponesset Bay (including the subwatersheds of Mashpee River, Shoestring Bay, Ockway Bay), and in Jehu Pond and Hamblin Pond (including Great River)
- Design and construction of Site 4 WWTF and related collection system for a portion of Subarea S2 (0.1 mgd)
- Design and construction of collection system to extend to properties neighboring the Wampanoag WWTF
- Feasibility study for connecting Quashnet and Combs schools to the Mashpee Commons WWTF
- Feasibility Study for Implementing Restoration of the Quashnet/Moonakis River, including hydrodynamic study to identify factors controlling tidal flow, nitrogen deposition/release, and opportunities for tidal flushing enhancement; and implement findings (if favorable)
- MEP model updates and compliance reporting; determine additional evaluations of existing WWTF leading into next phase of proposed improvements; coordinate with 208 Plan and run CCC MVP tool in conjunction with MEP Model to confirm updated water data and adaptive management approaches

Phase 2: 2022-2026

- File NPC and DRI modifications
- Continue shellfish propagation and expansion
- Design and construct JBCC improvements (or Back Road Site Facility if JBCC is not available)
- Design and construct sewer extensions to serve Mashpee (0.20 mgd from H, L, M) (or Back Road Sewer Extensions if JBCC not available)
- Connection of Quashnet and Coombs Schools to Mashpee Commons WWTF, upgrade as required
- If Quashnet/Moonakis restoration does not achieve 100% nitrogen removal TMDL and regional facility at JBCC is available, connect Sand-1, -2, and -3 (0.1 mgd) to address Quashnet River area and portions of Falmouth¹
- If shellfish removal targets are not achieved, implement the following projects:
 - o Site 4 expansion with new recharge to Willowbend
 - o Upgrade private WWTF at Willowbend, Stratford Ponds, South Cape Village, Windchime Point
 - o Mashpee River sewer extension (south of Route 28) and Popponesset Bay sewer extension (south of Route 28, south of Willowbend)
 - o Coordinate with Barnstable regarding incorporation of sections of Cotuit
- MEP model updates and compliance reporting; determine additional evaluations of existing WWTF leading into next phase of proposed improvements; coordinate with 208 Plan and potentially run CCC Multi-Variant Planner (MVP) tool in conjunction with MEP Model to confirm updated water data and adaptive management approaches

Phase 3: 2027 to 2031

- File NPC and DRI modifications
- Continue shellfish propagation
- If shellfish removal targets are not achieved, the following projects will be implemented:
 - o Upgrade Southport private WWTF
 - o Site 4 expansion (0.39 mgd) including extension of sewer service area to Mashpee River and Popponesset Bay (north of Route 28) subwatersheds
 - o Expand Willowbend WWTF service area
 - o Design and construct WWTF at Site 6 to initially serve Ockway Bay Area (portion of Area D1)
 - o Construct new discharge beds at New Seabury for Mashpee Commons and Site 6 effluent (0.71 MGD)
 - o Coordinate with Barnstable and Sandwich regarding incorporation of remaining areas within the Popponesset watershed
- MEP model updates and compliance reporting; determine additional evaluations of existing WWTF leading into next phase of proposed improvements; coordinate with 208 Plan and potentially run CCC MVP tool in conjunction with MEP Model to confirm updated water data and adaptive management approaches

¹ Future service area could include Falmouth (0.05 mgd from 13-17)

Phase 4: 2032 to 2036

- File NPC and DRI modifications
- Evaluate and implement if necessary the upgrade of Cotuit Meadows and Wampanoag Village private WWTF
- If shellfish removal targets are not achieved, the following projects will be implemented:
 - o Expansion of Site 6 (0.27 mgd total) and sewer collection systems to serve the southern third of Mashpee including Hamblin/Jehu Pond, Ockaway Bay, and Popponesset Island (Sub Areas A, C, D1, D2, E, and Fal-2 through Fal-11)
 - o Upgrade and expand New Seabury WWTF
- MEP model updates and compliance reporting; determine additional evaluations of existing WWTF leading into next phase of proposed improvements; coordinate with 208 Plan and potentially run CCC MVP tool in conjunction with MEP Model to confirm updated water data and adaptive management approaches

Phase 5: 2037 to 2041

- File NPC and DRI modifications
- Continue shellfish propagation
- If shellfish removal targets are not achieved, the following projects will be implemented:
 - o Remaining flow from Barnstable (B-37 and parts of B-38) and Sandwich (Sand-4, -5, -6) recharged outside of watershed or treated to levels required based on MEP modeling results
 - o Expand collection system to Subarea T (Main St/ Rt 130) to Site 4
 - o Expand collection system to Area A and C (Seconsett and Monomoscoy Islands)
 - o Expand collection system to Childs River Subarea H
- MEP model updates and compliance reporting

The implementation of the Recommended Plan is estimated to cost \$160 million for Mashpee and \$62 million for the three neighboring towns for a total capital cost of \$220 million. Alternative estimates are provided if aquaculture is not included and these include a capital cost of \$250 million for Mashpee and an additional \$110 million for the neighboring towns for a total of \$360 Million. The FEIR indicates that implementation of the Recommended Plan will result in an approximately 40 percent cost reduction compared to traditional infrastructure, although it is uncertain whether the projected results can be obtained and costs of aquaculture operations may not account for all required infrastructure and ongoing management and maintenance. The FEIR also identifies cost estimates for Phase 1 - \$34 Million with a present worth estimate of \$78 Million and build-out of the entire recommended plan - \$220 Million with a net present worth estimate of \$320 Million over 20 years at 3% interest.

Procedural History

The Town submitted an Environmental Notification Form (ENF) in October of 2001 to identify the planning process for the development of a CWMP. The Certificate on the ENF identified the four phases of the planning process and provided a Scope for the Needs Assessment Report (Phase 1). The Certificate on the ENF directed the Town to prepare and submit for review the first two reports prior to the submission of the Phase 3 (DEIR) and Phase 4 (FEIR) documents.

The Town submitted a NPC and a Needs Assessment Report to the MEPA Office in October 2007 in accordance with the MEPA regulations for a Lapse of Time, at 301 CMR 11.10(2). The NPC indicated that planning was delayed to support incorporation of the results of the MEP reports, which were released in 2004 and 2005. The NPC identified the nutrient loading limits and TMDLs developed through the MEP for coastal embayments located in Mashpee including Popponeset Bay, Waquoit Bay East, Hamblin Pond, Jehu Pond, the Mashpee River, Quashnet River, Great River, and Little River. It defined the PPA and quantified the amount of wastewater flow from the PPA to be approximately 2.7 million gallons per day (mgd). It provided information on existing wastewater facilities; physical features, land use and regulatory issues affecting wastewater facilities; and existing conditions related to environmental resources, nitrogen loadings and on-site septic systems. The Needs Assessment Report also identified the impacts of population growth in the PPA on wastewater collection, treatment and disposal facilities.

A second NPC was filed in 2012 due to a Lapse of Time. It indicated that EPA established TMDLs for nitrogen for the Popponeset Bay and the East Waquoit Bay estuaries (Quashnet River, Hamblin Pond, Little River, Jehu Pond and Great River). The TMDLs for Waquoit Bay (Childs River, Eel River) were being reviewed by EPA at the time the second NPC was filed.

The Alternatives Screening Analysis Report (ASAR) (Phase 2) was submitted in September of 2013. It projected that build-out of the PPA would result in approximately 2.9 mgd of wastewater flow. Approximately 2.2 mgd of future wastewater flow is attributed to the Town of Mashpee, 0.18 mgd to the Town of Barnstable, 0.39 mgd to the Town of Sandwich, and 0.12 mgd to the Town of Falmouth. It included an evaluation of alternative wastewater and nutrient management technologies to meet the wastewater management and TMDL reduction targets. Three potential alternative wastewater management options were presented for further evaluation:

1. Option 1A: Maximization of recharge outside the watersheds of the PPA. Continued use and expansion of existing WWTFs, and the construction of new WWTFs to treat the estimated future build-out wastewater flows from the PPA (2.7 mgd). Under Option 1A, approximately 1.55 mgd of treated effluent would be conveyed to recharge sites located out of the watersheds, including the proposed New Seabury and Rock Landing discharge sites. The Rock Landing discharge site would require the Town's abandonment of its Rock Landing water supply wells and corresponding Zone II water supply protection areas for use as a recharge site for treated wastewater flow. Most of the estimated future wastewater flows from those areas of Barnstable, Falmouth and Sandwich located in the Popponesett and Waquoit Bay East watersheds would be recharged outside of the watersheds. Approximately 0.5 mgd of flow from on-site I/A and Title 5 septic systems would be recharged in the watersheds.
2. Option 1B: Recharge within the watersheds and address flows from outside the community within Mashpee. This option assumes that the Town's Rock Landing water supply wells and Zone II areas would be preserved for continued water supply and would not be available for recharge of wastewater flow from the PPA. Option 1B involves the

expansion of existing WWTFs and the construction of new WWTFs to treat the future wastewater flow from the PPA and the recharge of 2.0 mgd of treated wastewater flow at existing and new recharge sites located in the watersheds. Most of the treated wastewater flows from Sandwich and Falmouth would be recharged in the watersheds. This option also incorporates continued use of Title 5 and I/A systems to recharge approximately 0.34 mgd of wastewater flow in the PPA watersheds, which is less compared to the other alternatives.

3. Option 1C: Outside communities handled the same, all Mashpee flows recharged within the watershed. Similar to Option 1B, this option also assumes the Town's Rock Landing water supply wells and Zone II areas would not be available for recharge of wastewater flow from the PPA. Option 1C includes the expansion of existing WWTFs and construction of new WWTFs to treat the wastewater flows from the PPA. Approximately 1.51 mgd of wastewater flow would be conveyed to recharge sites located in the watersheds and .423 mgd outside of the watersheds (including flows from Barnstable, Falmouth and Sandwich). This option also incorporates the continued use of Title 5 and I/A systems to recharge approximately 0.5 mgd of wastewater flow in the watersheds.

A Certificate on the ASAR was issued on November 1, 2013, which included the Scope for the DEIR. In June 2014, the Town filed a DEIR that identified Option 1A as the base condition for development of the Recommended Plan and identified modifications to Option 1A to include other nitrogen management techniques. The DEIR also included a comprehensive description of the Recommended Plan; identified phasing, potential environmental impacts, and mitigation measures; and identified several critical issues that must be addressed to finalize the Recommended Plan. The Certificate on the DEIR issued in September 2014 requested additional information regarding the Adaptive Management Plan, implementation and monitoring plan, and the decision making process regarding the incremental nitrogen reduction of various phases of the plan required to meet the TMDLs.

Permits and Jurisdiction

The project was required to undergo MEPA review and prepare a Mandatory EIR pursuant to Sections 11.03(5)(a)(3) of the MEPA regulations, because it would likely involve the construction of sewer mains ten or more miles in length. The project will require a Groundwater Discharge Permit, a Chapter 91 License, and a 401 Water Quality Certificate from MassDEP. It will undergo review by the Natural Heritage Endangered Species Program (NHESP) and the Massachusetts Historical Commission (MHC) for potential impacts to Priority Habitat and recorded archaeological sites and archaeologically sensitive areas. It may also require a Construction Access Permit from the Massachusetts Department of Transportation (MassDOT).

The project will require Orders of Conditions from the Mashpee Conservation Commission (and, on appeal only, Superseding Orders from MassDEP). The project may require Federal Consistency Review from Coastal Zone Management (CZM). It may also require a Section 404 Permit from the U.S. Army Corps of Engineers. The project will require a National Pollutant Discharge Elimination System (NPDES) General Permit from EPA for stormwater discharges from a construction site.

Because the Town is seeking Financial Assistance from the Commonwealth through the State Revolving Fund (SRF), MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations. The project is being reviewed under a Joint Environmental Review Process established between the Executive Office of Energy and Environmental Affairs (EEA) and the CCC.

Review of the FEIR

General

The Recommended Plan represents a targeted and incremental approach to wastewater management with an emphasis on identifying lower cost solutions compared to traditional wastewater management solutions. The Plan identifies opportunities for regional cooperation, including potential expansion of the JBCC WWTF. The 208 Water Quality Plan Update (208 Plan) was finalized and certified by Governor Baker in June 2015 during review of the CWMP; however, its development has been shaped by principles of the 208 Plan, such as regional cooperation and development of targeted watershed plans. Information gleaned from other CWMPs, including the Town of Falmouth's CWMP, has also been employed in the development of the Recommended Plan.

The FEIR includes a comprehensive description of the Recommended Plan; identifies required permits and approvals, phasing and scheduling, alternative strategies for nitrogen reductions, and provides cost estimates for the Plan, Phase 1 and individual elements. It is supported by technical appendices and conceptual plans for infrastructure projects. The MEP watershed embayment model and the CCC's watershed management tool (Watershed-MVP) were used to evaluate nitrogen loading and reductions associated with proposed strategies. It identifies criteria developed to evaluate strategies, including costs (capital, operation and maintenance), effluent quality, consistency with regulatory requirements, energy use, and ease of implementation and operation. The FEIR provided an analysis of environmental impacts and measures to avoid, minimize, and mitigate impacts commensurate with a high-level planning document that will evolve over time. As discussed below, subsequent NPCs will be filed to address changes to the Recommended Plan based on the adaptive management approach and to provide additional detail on each Phase as design progresses.

Comments provided on the FEIR indicate support for the Recommended Plan and recognize the time and effort the Town has invested in this process. State Agencies and the CCC also emphasize the availability of technical assistance and resources to support the Town's continued efforts. CZM, DMF, and NHESP identify additional information that should be addressed in NPCs and/or permit applications as project design progresses to ensure projections and assumptions regarding project cost and nitrogen remediation efforts are realistic and accurate.

Guidance for Future NPCs

The Recommended Plan will change over time in response to technological advances and the results of modeling and long-term monitoring. The Town indicates that each phase of the

Recommended Plan will include the filing of an NPC with MEPA and DRI modifications to the CCC to address these changes and provide additional opportunity for public and Agency review. I expect that each NPC will provide refined environmental impacts, detailed mitigation measures, and, if applicable, describe how the project phase has changed since review of the FEIR. Each NPC should provide an update on public participation activities and consultation with CCC, State Agencies and adjacent communities and identify progress towards the development of Memorandum of Understanding (MOU) between municipalities and towards any regional commitments. It should describe the entities responsible for the planning and implementation of the Recommended Plan. Each NPC should provide an update on consultation with municipalities regarding coordination of nitrogen reduction efforts and identify any progress towards development of the JBCC WWTF as a regional facility. Each NPC should also include phase-specific mitigation measures and phase-specific draft Section 61 findings for each required State Agency Action. The following sections of this Certificate identify additional items that should be addressed in subsequent NPCs for each project phase.

Adaptive Management

The Recommended Plan is centered on an Adaptive Management Plan (AMP) to provide incremental and targeted reductions in nitrogen with regular evaluation and re-evaluation of Plan components based upon a robust water quality monitoring program and associated modeling. CCC comments indicate that its review will further refine the scope of the AMP and will identify hydrogeological assessments for potentially affected resources and long-term hydrologic balance and nitrogen budgets, and encourage use of the Popponesset system and its subwatersheds as an initial targeted watershed.

The FEIR described the monitoring and modeling that will form the basis of the AMP and provide the foundation for measuring performance. The monitoring plan includes shellfish (oyster and quahog) harvest goals, nitrogen filtering and denitrification associated with quahog replenishment, nitrogen in water column, results of the Quashnet/Moonakis River study, and the feasibility of the JBCC WWTF regional option. As the results of the monitoring plan will be used to inform the AMP, the FEIR did not fully characterize the incremental nitrogen reduction of future phases as required to achieve TMDL compliance. The FEIR identifies components of the monitoring and modeling program for the Recommended Plan but did not clearly specify the frequency of sampling and data collection. NPCs should include detailed monitoring plans that specify which data will be collected and the frequency of sampling and collection. NPCs should also identify nitrogen reduction goals for future phases based on the results of the shellfish aquaculture in achieving compliance with TMDL goals. Through the development of the 208 Plan, the CCC has developed watershed tools to help assess proposed nitrogen load reductions, assign and select priorities, and take advantage of regional efforts. The Town should coordinate closely with the CCC and use available tools to evaluate potential collection areas and non-traditional technologies as appropriate.

The FEIR includes a commitment to provide compliance documents, including monitoring data and reports, to MassDEP, DMF, CZM, MEP, the CCC, and neighboring communities. The reports will be provided every five years. I note comments from CCC that recommend all monitoring to be compiled and formatted for consolidated real-time review, or at

least on an annual and five-year basis. I encourage the Town to form a technical advisory committee to meet frequently and base its decisions on monitoring results.

Draft 208 Water Quality Plan and Regional Management

The FEIR includes a summary of the 208 Water Quality Plan and addressed how its development and recommendations have influenced the Recommended Plan. Comments from MassDEP and CCC indicate that the Recommended Plan is generally consistent with the 208 Plan. The FEIR indicates that use of CCC watershed tools and the project's consistency with the Section 208 plan will be evaluated for each phase of the project.

The FEIR included an update on consultation with municipalities regarding development of MOUs and the use of the JBCC as a regional facility. A draft *Inter-municipal Agreement (IMA) for Development and Implementation of a Regional, Watershed Based Wastewater Management Plan for the Popponesset Bay Watershed* (dated October 2012) has been developed and circulated between Barnstable, Mashpee, and Sandwich. The IMA has not been executed. Development of an IMA for Waquoit Bay has not been initiated. The Town has been actively coordinating with MassDevelopment to determine how the future use of the JBCC WWTF will be managed and operated. NPCs should provide an update on the development of IMAs with adjacent communities and the use of the JBCC WWTF as a regional facility.

Wastewater Treatment

Future NPCs should provide a more detailed analysis of environmental impacts of proposed wastewater facilities, recharge locations, and expansion of collection systems as project design for each phase progresses and required infrastructure components are determined pursuant to the AMP. The FEIR included correspondence from New Seabury, Willowbend, and Mashpee Commons indicating their willingness to work with the Town toward implementing the portions of the Recommended Plan that involve their properties.

NPCs should clarify nitrogen reduction associated with each phase of the Plan as monitoring/modeling results become available and describe what elements are necessary to achieve TMDLs. For instance, part of the Plan includes phasing in upgrades to achieve higher levels of treatment (i.e. 3 mg/Liter (L) of Total Nitrogen (TN) compared to 6 to 10 mg/L of TN). NPCs should clarify whether the level of treatment is assumed to achieve the TMDL or if a certain level of treatment will be targeted as a contingency measure.

Shellfish Propagation

The FEIR included a shellfish propagation plan that provided general information on the cost of implementation and noted that the infrastructure for implementation, management, and maintenance is currently in place and will be expanded as needed. The FEIR indicated that the Aquacultural Research Corporation (ARC) in Dennis can provide the necessary amount of seed for the project with a year or two of advance notice. Comments from CCC and CZM question whether this would impact ARC's ability to meet the demand of other communities and

encourage consideration of an alternative seed source. I encourage the Town to seek a secondary source.

The FEIR clarified that the costs conservatively assume no natural reseeding occurs and that shellfish are reseeded each year. It remains unclear whether the costs provided in the FEIR include hiring staff, costs associated with bivalve husbandry (vessels, gas, cages, upwellers, etc), and the cost of enforcement. Future NPCs should provide additional information regarding the expansion of infrastructure/staffing and associated specific itemizations (boats, gas, cages, additional staff, upweller, etc) so that the public and agencies can evaluate whether these costs are reasonable compared to known industry costs. As shellfish propagation plans are further refined, the NPC should identify measures to avoid, minimize and mitigate impacts, including impacts to recreation and navigation. Implementation of the Plan depends heavily on harvesters returning to shellfishing. I anticipate that subsequent NPCs will provide additional information to support this assumption and describe the actions that will be taken to encourage commercial harvesting.

The FEIR included decision points for implementing contingency plans, including identification of thresholds regarding nitrogen removal and shellfish implantation. Specifically, the FEIR provided shellfish live harvest and shellfish harvest nitrogen goals to be used as decision points to indicate if shellfish aquaculture is trending towards achieving compliance with TMDL goals. Shellfish harvest data will be compared to this data to characterize the amount of nitrogen load removal expected and the results will be used to evaluate implementation of the next phase of traditional infrastructure or other nitrogen reduction approaches to achieve the TMDLs. I note comments from DMF which raise concerns regarding the potential variability in nitrogen content and size at harvest. The Town should provide supporting data based on existing commercial harvests to support these estimates in future NPCs. The FEIR included a shellfish sampling/monitoring program that is based on commercial harvest data as reported by shellfish dealers to DMF and recreational harvest data as monitored by the Town. The Town proposes to collect this data from existing surveillance cameras and patrols by the Shellfish Constable. NPCs should clarify how video monitoring will be used to estimate recreational landings as this data is a key component of the nutrient removal estimates. The NPC should also include a discussion of how the recreational estimate will be calculated and its overall contribution to the total yield.

The FEIR included a general discussion of the limitations and risks of shellfish aquaculture. I note comments from MassDEP and DMF which raise concerns about relying on shellfish as the primary nutrient remediation technique. In addition, CZM comments request additional information regarding cost estimates. The Town should consult with MassDEP, CCC, CZM, and DMF prior to the filing of NPCs. The NPC should provide refined mapping that depicts the total area and extent of oyster and quahog culture, seeding, and reef areas. In addition, based on the importance of shellfish to the nutrient remediation plan, NPCs should include more specific Operations and Maintenance (O&M) plans developed in consultation with DMF that identify specific strategies to reduce or mitigate shellfish mortality due to disease.

Non-Wastewater Nutrient Management Projects and Programs

The Recommended Plan will be strengthened through additional consideration of other non-wastewater nutrient management strategies and assessment of the potential effectiveness of such strategies. The FEIR clarified that the following non-traditional projects and programs have been or will be incorporated into the Recommended Plan: stormwater management (via continued implementation of the Town's existing Stormwater Management Bylaw), fertilizer management (via implementation of the Town's existing Nitrogen Control Bylaw), and development of a growth neutral/flow neutral policy. NPCs should provide an update on progress made towards developing a framework for a growth neutral/flow neutral bylaw and, when available, provide a draft bylaw for review. The FEIR noted that Permeable Reactive Barriers, wetland restoration projects, an ocean outfall, floating wetlands, and eco-toilets are not currently considered in the Recommended Plan; however they may be considered in the future pending the results of ongoing demonstration projects and the approved 208 Plan. NPCs should re-evaluate the use of these technologies in the Recommended Plan when this information becomes available.

Water Quality Monitoring and Adaptive Management

As noted previously, the Proponent has committed to provide TMDL compliance reports to MassDEP, DMF, CZM, and other agencies/organizations. The FEIR clarified that these reports will also be provided to the CCC. The FEIR identifies regulatory requirements for monitoring and identifies water quality parameters that will be monitored. The FEIR clarified that the Mashpee Water Quality Monitoring program will continue the same sampling protocols, stations, and analytical methods that were used to provide data for the MEP and TMDL reports for the Popponesset Bay and Waquoit Bay systems.

Wetlands and Rare Species

The Recommended Plan will impact inland and coastal wetland resources. Overall, the Plan should improve water quality with related improvements in estuary health and habitat. The FEIR provided conceptual plans for proposed facilities and collection systems and identified on- and off-site resources including wetlands, floodplains, vernal pools, water supply protection areas, and rare species habitat. The Town has proposed to site facilities to avoid significant impacts. NPCs should quantify temporary and permanent impacts to wetland resource areas resulting from shellfish propagation and proposed development of infrastructure, including expansion of sewer service areas, for each phase of the project. NPCs should describe measures that will be implemented to avoid and minimize, or mitigate, adverse impacts to wetlands and buffer zones. The FEIR indicated that stormwater management systems will be designed to comply with the MassDEP Stormwater Management Handbook. NPCs should provide specific information regarding how the proposed stormwater management systems will be designed and constructed consistent with MassDEP's stormwater management regulations and standards for each phase. NPCs should also describe specific best management practice (BMP) measures to manage stormwater during project construction.

The sites for new facilities, and many of the expansions, are located within *Estimated and Priority Habitat* for rare species. The FEIR included a commitment to consult with NHESP as project design progresses. Comments from NHESP note that additional information is needed to assess impacts at each project site and indicate that construction of a WWTF at the Back Road Site (if required) may result in a “take” of state-listed species. I strongly encourage the Town to submit phase-specific plans for any proposed work located within rare species as early as possible for NHESP’s review. NPCs should contain an update on consultations with NHESP regarding the design of facilities and identify commitments to avoid adversely impacting state-listed rare species habitat. If the NHESP should subsequently find that the project will result in a “take”, the NPC should explain the impacts and evaluate avoidance/mitigation strategies.

Climate Change

The Recommended Plan represents a significant investment of State and local resources and is the basis for design and construction of long-term infrastructure. As a coastal community, it is critical that these resources are sited, designed and constructed to adapt to expected sea level rise and its impacts so that the targeted benefits and investments will be protected over the long-term. Planning for energy efficiency, long-term water quality improvements and infrastructure should be addressed in NPCs; planning should not be deferred to permitting.

Greenhouse Gas (GHG) Emissions

In accordance with the MEPA GHG Policy, subsequent NPCs should consider GHG emissions in the evaluation of design measures for proposed new and upgraded WWTFs, pump stations, and collection systems. The purpose of the policy is to provide a framework by which projects quantify carbon dioxide (CO₂) emissions and identify measures to avoid, minimize or mitigate such emissions. NPCs should include a GHG analysis that clearly demonstrates which measures will be adopted to achieve a high level of energy efficiency for the proposed facilities and treatment processes and to quantify potential GHG emissions reductions (in tons per year (tpy) of CO₂). A project at this early stage of development provides a multitude of opportunities for considering and comparing alternatives, facilities, and equipment that could minimize energy consumption and substitute renewable energy sources for fossil fuel sources. Providing a scope for the GHG analysis at this time is difficult given the adaptive and phased nature of the project. Therefore, the Town should consult with the MEPA Office and the Department of Energy Resources (DOER) prior to filing each NPC to ensure compliance with the current GHG Policy.

The FEIR included a commitment to evaluate the following GHG emission reduction strategies as project design processes: energy recovery, incorporation of solar PV systems, sub-metering and dissolved oxygen monitoring at WWTFs, lighting optimization measures, reduced ventilation and heating requirements, geothermal, variable frequency drives, process optimization, and Infiltration/Inflow (I/I) reduction measures. Other measures that should be evaluated in subsequent NPCs include alternative technologies, increasing piping sizes to reduce friction loss, and use of premium efficiency pumps and motors. NPCs should evaluate the feasibility of incorporating solar photovoltaic (PV) into the Recommended Plan. MassDEP, DOER and the Clean Energy Center (CEC) can provide resources to assist with the analysis, including a DOER spreadsheet to calculate potential project costs, payback periods, and returns

on investment. Each NPC should state assumptions with regard to available area for PV equipment, efficiencies, etc. Staff from the MEPA Office, MassDEP and the DOER are available to provide guidance and technical assistance for this effort.

Upon completion of the construction of proposed improvements and upgrades and new wastewater management systems and facilities, the Town will be required to provide a certification to the MEPA Office signed by an appropriate professional (e.g., engineer, architect, general contractor) indicating that the all of the GHG mitigation measures committed to by the Town as described in the DEIR, or as modified as part of the MassDEP permitting process, have been incorporated into the projects. This certification should be supported by project plans. For those measures that are operational in nature the Town will be required to provide an updated plan identifying the measures, the schedule for implementation and how progress towards achieving the measures will be obtained. Draft Section 61 Findings in subsequent NPCs should include this self-certification requirement.

Adaptation, Resiliency and Coastal Hazards

Current rates of sea level rise, as well as projections for accelerated rates of sea level rise, pose significant threats to coastal development and resource areas by increasing storm surge heights and coastal flooding events. The FEIR provided updated floodplain mapping (revised July 16, 2014) and sufficient information to identify many elements of the project that are clearly outside of flood zones and unlikely to be affected. Subsequent NPCs should consider modeling results produced by the United States Geological Survey (USGS) and modeling being conducted by the Association for the Preservation of Cape Cod (APCC) to assess potential changes to groundwater elevations posed by sea level rise and address any potential impacts to project elements as this could affect wastewater discharge locations. NPCs should identify specific measures that have been incorporated into the design or operation to facilitate adaptation and create resiliency. The Town should refer to the CZM report, *Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning*, to guide selection of appropriate sea level rise scenarios.

Future Build-Out

MassDEP comments note that this Final Plan may make the Town eligible for a zero percent interest loan under the Massachusetts Clean Water Trust. The Final Plan's projection for future wastewater flow in impaired watersheds at build-out is 1.88 mgd. This build-out will be used by the Town to guide development of a growth neutral bylaw, which is necessary in order to remain eligible for funding. MassDEP notes that the calculation of future flow accounts for contribution to watersheds requiring nitrogen mitigation and does not necessarily account for growth in other areas of Mashpee that discharge to Nantucket Sound. As the Plan relies heavily on adaptive management, adjustments to growth neutral policies may be necessary and should be addressed in subsequent NPCs if applicable.

Construction Period Impacts

The FEIR provided a general discussion of construction period mitigation measures to address public safety, sedimentation and erosion, recycling, construction noise, dust controls, traffic control, and construction access. To the extent warranted, subsequent NPCs should include a draft Construction Management Plan (CMP) that provides a description of schedule, sequencing, site access, truck routing, and best management practices (BMPs) that will be used to avoid and minimize adverse environmental impacts (including coastal resources). I strongly encourage the Town to commit to participating in the MassDEP Diesel Retrofit Program and to use ultra low sulfur diesel (ULSD) in off-road engines.

Mitigation Measures/Section 61 Findings

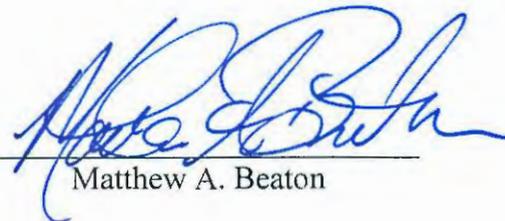
The FEIR included a summary table of the State Agency Permits required for Phase 1 and a separate chapter on mitigation measures and draft Section 61 Findings. As a long-term planning document, the Section 61 Findings identify general commitments to avoid, minimize and mitigate impacts. Identification of more specific commitments is deferred to subsequent NPCs, design and permitting. Subsequent NPCs should include phase-specific mitigation measures and proposed and/or revised Section 61 Findings for all State Agency Actions. It should identify all mitigation measures, including GHG commitments; provide a schedule for implementation, and identify parties responsible for funding and implementing said measures.

Conclusion

Based on a review of the FEIR, comment letters and consultation with State Agencies, I find that the FEIR adequately and properly complies with MEPA and its implementing regulations. The FEIR adequately describes the environmental impacts, and proposed mitigation avoidance, minimization, and mitigation strategies commensurate with this long-term planning document. The Town will file a NPC for each phase of the project as the Adaptive Management Approach will result in changes to the Recommended Plan over time. It includes contingency plans, including investment in more traditional wastewater management, to address concerns that non-traditional measures may not achieve nitrogen reduction targets. Outstanding issues can be addressed as project design proceeds and NPCs are reviewed. As permits and approvals for each phase of the Project are issued, the Town and State Agencies should forward copies of the final Section 61 Findings to the MEPA Office for publication in accordance with 301 CMR 11.12.

July 31, 2015

Date



Matthew A. Beaton

Comments received:

- 07/17/2015 Department of Environmental Protection – Southeast Regional Office (DEP)
- 07/17/2015 Division of Fisheries & Wildlife – Natural Heritage and Endangered Species Program
- 07/24/2015 Office of Coastal Zone Management (CZM)
- 07/24/2015 Division of Marine Fisheries (DMF)
- 07/27/2015 Cape Cod Commission (CCC)

MAB/PC/pc

MEMORANDUM

TO: Anne Canaday, Environmental Reviewer, MEPA Unit

THROUGH: Jonathan Hobill, Regional Engineer, Bureau of Water Resources
Millie Garcia-Serrano, Regional Director
Deputy Regional Director, BWSC
David Johnston, Deputy Regional Director, BWR
Maria Pinaud, Deputy Regional Director, BAW
Jennifer Viveiros, Deputy Regional Director, ADMIN

CC: Jim Mahala, Acting Chief, Wetlands and Waterways
Jeffrey Gould, Chief, Wastewater Management
Brian Dudley, Chief, Wastewater Management – Cape Cod

FROM: George Zoto, SERO MEPA Coordinator

DATE: July 17, 2015

RE: FEOR EOEEA # 12615 - MASHPEE – Comprehensive Watershed
Nitrogen Management Plan Project,
Town of Mashpee

"For Use in Intra-Agency Policy Deliberations"

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) for the proposed CWMP for the Town of Mashpee, Massachusetts (EOEEA #12615). The project proponent provides the following information for the project:

The CWMP is the culmination of multiple documents, the last of which is the Final Recommended Plan and Final Environmental Impact Report (FRP/FEIR or The Plan). This report is the last of four documents required as part of the Massachusetts Environmental Policy Act (MEPA)/Cape Cod Commission (CCC) Development of Regional Impact (DRI) joint review process.

The plan is predicated on the use of shellfish in the following areas: Popponeset Bay/Popponeset Creek, Ockway Bay, Mashpee River and Shoestring Bay on the Popponeset Bay watersheds side and in Hamblin Pond, Little River, Jehu Pond and Great River on the Waquoit Bay side. Removal of the remaining balance of nitrogen will rely on a combination of traditional infrastructure (sewers), stormwater improvements through current best management practices (BMPs) and fertilizer reduction through the new bylaws/regulations in Mashpee and Falmouth.

MassDEP -SERO Wastewater Management Comments on the Town of Mashpee Sewer Commission "Final Recommended Plan/Final Environmental Impact Report"

MassDEP provided detailed comments on the "Draft Recommended Plan/Draft Environmental Impact Report" and found it to be a well reasoned plan utilizing a mixture of non-traditional approaches and traditional infrastructure all within the framework of adaptive management, consistent with the recently updated Section 208 Wastewater Management Planning document for Cape Cod. The Final Plan also provides an adequate contingency plan using traditional technologies should the non-traditional approaches not meet performance expectations.

The Final Plan has adequately addressed the comments on the Draft Plan and warrants MassDEP's approval for the culmination of Mashpee's Comprehensive Wastewater Management Planning process.

MassDEP states that for purposes of potential qualification for a 0% interest loan under the Massachusetts Clean Water Trust, the Final Plan represents a Comprehensive Wastewater Management Plan. Additionally, the Final Plan's projection for future wastewater flow at buildout in impaired watersheds is 1.88 MGD. The calculation of future flow accounts for contribution to watersheds requiring nitrogen mitigation and does not necessarily account for growth in other areas of town that discharge to Nantucket Sound. Since this plan relies heavily on adaptive management, some adjustments to growth neutral policies may be necessary and, if proposed, should be subject to further MEPA review as a Notice of Project Change.

Proposed s.61 Findings

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

The MassDEP Southeast Regional Office appreciates the opportunity to comment on this proposed project. If you have any questions regarding these comments, please contact George Zoto at (508) 946-2820.



Commonwealth of Massachusetts

Division of Fisheries & Wildlife

Jack Buckley, Director

July 17, 2015

Matthew A. Beaton, Secretary
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Anne Canaday, EEA No. 12615
100 Cambridge St.
Boston, Massachusetts 02114

Project Name: Comprehensive Watershed Nitrogen Management Plan
Proponent: Town of Mashpee Sewer Commission
Location: Town of Mashpee
Document Reviewed: Final Recommended Plan / Final Environmental Impact Report
EEA No.: 12615
NHESP No.: 12-31134 (formerly 01-9528)

Dear Secretary Beaton:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the "Division") has received and reviewed the proposed *Final Recommended Plan / Final Environmental Impact Report* (FEIR) for the Town of Mashpee Sewer Commission's Comprehensive Watershed Nitrogen Management Plan and would like to offer the following comments regarding state-listed rare species and their habitats.

As provided in the Division's previous comments, the ponds, bays, and estuarine waters of the Town of Mashpee provide critical foraging, breeding, migration, and over-wintering habitats for a suite of state-listed species that rely on aquatic and/or marine habitats for at least one stage of their life cycle. These species and their habitats may directly benefit from reduced levels of dissolved nitrogen and improved water quality, and we commend the Town for its efforts to improve water quality within these critical habitats.

Portions of the Town are mapped as *Priority* and *Estimated Habitat* for at least twenty-seven (27) state-listed species, in accordance with the 13th Edition of the MA Natural Heritage Atlas. All projects or activities proposed within *Priority* and *Estimated Habitat*, which are not otherwise exempt pursuant to 321 CMR 10.14, will require review through a direct filing with the Division for compliance with the Massachusetts Endangered species Act (MGL c. 131A) and its implementing regulations (MESA; 321 CMR 10.18) and/or the rare wildlife provisions of the Wetlands Protection Act Regulations (WPA; 310 CMR 10.37 & 10.59).

To the extent possible, the Division has evaluated the Recommended Plan outlined within the FEIR and is supportive of the Town's goal of improving wastewater and nitrogen management. However, we note that potential impacts from infrastructure improvements to state-listed *upland* species should also be considered during the planning process and avoided and/or minimized to

www.mass.gov

Division of Fisheries and Wildlife

Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7890

An Agency of the Department of Fish and Game

the greatest extent possible. State-listed upland species include, but may not be limited to, the Eastern Box Turtle (*Terrapene carolina*, state-listed as "Special Concern") and Grasshopper Sparrow (*Ammodramus savannarum*, state-listed as "Threatened") identified in the FEIR.

The Division would encourage the Town to consider design and implementation alternatives that avoid and minimize impacts to state-listed species and their habitats. For example, re-use of existing wastewater treatment facilities - as proposed in the FEIR for Joint Base Cape Cod, Cotuit Meadows, Forestdale School, Mashpee Commons, Wampanoag Village and Windchime - will likely minimize impacts provided that no or minimal land alteration is proposed outside of already developed areas. Re-use of existing developed areas may also enable portions of the Recommended Plan to qualify for one or more exemptions pursuant to 321 CMR 10.14. The Division notes that each element of the Recommended Plan will need to be reviewed on a species specific basis, and that additional information will be needed to assess impacts at each project site. Therefore, we recommend that the Town initiate pre-filing consultations with the Division as early as possible to proactively identify and address any concerns related to state-listed species and their habitats.

In advance of receiving site specific project plans, and based on the conceptual information provided in the FEIR, the Division has provided additional comments on several elements of the Recommended Plan. Please note that these comments should be considered preliminary in nature until the Division has received and reviewed an official filing(s) pursuant to the MESA.

Shellfish Aquaculture

As described in Section 6.2.1 of the FEIR, the Recommended Plan proposes to expand shellfish aquaculture and harvesting for nitrogen removal and broader water quality improvement in Shoestring Bay, Ockway Bay, Popponesset Creek, Mashpee River, Great River, Little River Jehu Pond and Hamblin Pond. Portions of Shoestring Bay, Ockway Bay, Great River, Little River, Jehu Pond and Hamblin Pond are mapped as *Priority* and *Estimated Habitat* for one or more state-listed bird species, while portions of the Mashpee River are mapped for state-listed birds, fishes and odonates. The Division does not anticipate having significant concerns regarding the expansion of shellfish aquaculture in these water bodies, but notes that additional, site specific information would be needed to fully assess impacts to state-listed species and their habitats.

Potential Wastewater Treatment Facility at Back Road Sites

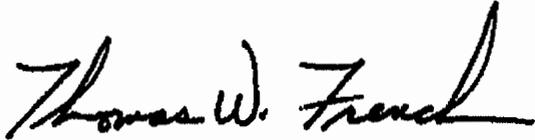
As described in Section 6.2.3 and shown on Figure 6-14 of the FEIR, the Recommended Plan proposes to construct a wastewater treatment facility at the Back Road Sites should use of the existing Joint Base Cape Cod facility not be a feasible alternative or not be able to accommodate the full extent of flows requiring treatment. Portions of the Back Road Sites are mapped as *Priority* and *Estimated Habitat* for a state-listed reptile. Based on a review of the information submitted in the FEIR and the information contained within our database, the Division anticipates that construction of a wastewater treatment facility at the Back Road Sites has the potential to result in a "take" of state-listed species.

If construction of a wastewater treatment facility at the Back Road Sites is proposed and is determined to result in a "take," it may be possible to redesign the project to avoid a "take." If redesign is not possible, please note that projects resulting in a "take" of state-listed species may be permitted only if they meet the performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23). The CMP must demonstrate that the project has avoided, minimized and mitigated impacts to state-listed species consistent with the following performance standards: (a) the applicant has adequately assessed alternatives to both temporary and permanent impacts to state-listed species; (b) an insignificant portion of the local population would be impacted by the project; and (c) the applicant agrees to carry out a conservation and

management plan that provides a long-term Net Benefit to the conservation of the state-listed species impacted.

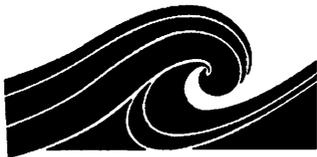
We appreciate the opportunity to comment on this project and look forward to working with the Town to proactively address any potential concerns related to state-listed species and their habitats. If you have any questions about this letter, please contact Jesse Leddick, Endangered Species Review Biologist,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

Sincerely,

A handwritten signature in black ink that reads "Thomas W. French". The signature is written in a cursive style with a long, sweeping underline.

Thomas W. French, Ph.D.
Assistant Director

cc: J. Jefferson Gregg, GHD Inc.
Thomas Fudala, Town of Mashpee Sewer Commission
Town of Mashpee, Shellfish Commission
Town of Mashpee, Board of Selectmen
Town of Mashpee, Department of Public Works
Town of Mashpee, Conservation Commission
DEP Southeastern Regional Office, Wetlands Program



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

MEMORANDUM

TO: Matthew A. Beaton, Secretary, EEA
ATTN: Page Czepiga, MEPA Unit
FROM: Bruce Carlisle, Director, CZM
DATE: July 24, 2014
RE: EEA-12615, Comprehensive Watershed Nitrogen Management Plan; Mashpee

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Final Recommended Plan/Final Environmental Impact Report, noticed in the *Environmental Monitor* dated June 24, 2015, and offers the following comments.

Project Description

The Final Recommended Plan/Final Environmental Impact Report present the recommendations of Mashpee's wastewater management planning process to address the nitrogen Total Maximum Daily Loads (TMDLs) and includes shellfish aquaculture, wastewater treatment at existing and new facilities, coordination with adjoining towns, continued use of septic systems, development of future demonstration projects, and coordination with the Cape Cod 208 planning efforts. Demonstration projects include permeable reactive barriers, wetlands restoration, and the use of eco-toilets. The proposed project area comprises Hamblin Pond, Jehu Pond, Popponesset Bay, Ockway Bay, Shoestring Bay, the Great River, the Little River, the Mashpee River, John's Pond, Mashpee-Wakeby Pond, Santuit Pond, and the Quashnet River.

Project Comments

A major component of the proposed plan involves the mitigation of the majority of the waterways nitrogen loading by the annual planting of shellfish (oysters and quahogs) in Popponesset Bay/ Creek, Ockway Bay, Mashpee River, Shoestring Bay, Hamblin Pond, Jehu Pond, and the Great River. CZM requests that the estimated total area, including maps, showing the extent of oyster and quahog culture, seeding, and reef areas required to accommodate the large numbers of shellfish, be provided.

The plan also contains general information regarding the cost of implementing these oyster/quahog activities. CZM, in its previous comments, indicated that it was unclear whether the costs for these activities, including the cost of replacing lost individuals, hiring staff, all costs associated with bivalve husbandry (vessels, gas, cages, upwellers), and the cost of enforcement were included. In its response, the Town responded by saying that the program would be implemented with exiting Town staff on existing salaries. It may be unrealistic to expect that a 9-million individual oyster and 26.5-million individual quahog program can be performed with existing staff and equipment. CZM again requests that the town provide specific itemizations broken down (boats, gas, cages, additional staff, upweller, etc.) so that the public and agencies can evaluate whether these costs are reasonable compared to known industry costs.



The town should be commended for several aspects of its progressive planning related to the mitigation of nutrients including: 1) fertilizer management by-law, 2) investigating the formation of a flow/growth neutral policy, and 3) upgrading the town's wastewater treatment facilities. CZM believes that more communities should be encouraged to implement flow/growth neutral policies.

Federal Consistency

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

BKC/rlb/tc

cc: Steve McKenna, CZM Cape and Islands Regional Coordinator
Jim Mahala, Acting Section Chief, MassDEP SERO



David E. Pierce
Acting Director

Commonwealth of Massachusetts

Division of Marine Fisheries

251 Causeway Street, Suite 400

Boston, Massachusetts 02114

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Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

George N. Peterson, Jr.
Commissioner

Mary-Lee King
Deputy Commissioner

July 24, 2015

Secretary Matthew A. Beaton
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Page Czepiga, EEA No. 12615
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Secretary Beaton:

My staff has reviewed the Final Recommended Plan/Final Environmental Impact Report (the Plan) by the Town of Mashpee Sewer Commission. I offer the following comments and suggestions.

The Plan includes shellfish aquaculture, wastewater treatment at existing and new facilities, coordination with adjoining towns, continued use of septic systems, development of future demonstration projects, and coordination with the Cape Cod 208 planning efforts. Future demonstration projects include permeable reactive barriers, wetlands restoration, and eco-toilets. The project area comprises Hamblin Pond, Jehu Pond, Popponesset Bay, Ockway Bay, Shoestring Bay, the Great River, the Little River, the Mashpee River, John's Pond, Mashpee-Wakeby Pond, Santuit Pond, and the Quashnet River.

The Plan is predicated on the annual planting of shellfish in Popponesset Bay/Creek (4.87 mil quahogs), Ockway Bay (2.45 mil quahogs), Mashpee River (5 mil oysters), Shoestring Bay (4 mil oysters), Hamblin Pond (11.37 mil quahogs), Jehu Pond (3.5 mil quahogs), and the Great River (3.27 mil quahogs). The Plan bases abundance in each location on the nitrogen reduction required to meet TMDL standards and assesses a per animal nitrogen content of 0.5 g N per oyster and 0.3 g N per littleneck quahog. The town assumes 80% survival of 1-inch seed for quahogs and 50% for oyster spat set on shell. Harvest will be through existing and new commercial harvesters, recreational harvesters, and by the Mashpee Wampanoag aquaculture facility.

The rivers and embayments within the Popponesset Bay and Waquoit Bay East watersheds provide foraging, spawning, and/or nursery habitat for a variety of diadromous fish species, winter flounder, horseshoe crabs, and shellfish [1]. These areas also contain mapped eelgrass (*Zostera marina*) beds, one of the most productive habitats for numerous marine species [2,3]. Mapping of eelgrass in these regions has revealed significant reductions in eelgrass bed area in Hamblin and Jehu Ponds as well as the Great/Little River system over the past decade [4]. These declines are likely due to nitrogen loading to these systems [5].

We offer the following comments for your consideration:

- We have not had a meeting with the proponent specific to details of this plan. The meeting on December 18, 2014 that is referenced (page 6-2) was a Massachusetts Shellfish Officer's Association Meeting being held for purposes other than this plan. Mr. York had an informal discussion with *Marine Fisheries* staff, but there remains a need to have a focused discussion regarding the town's shellfish enhancement plan. We have concerns about the estimated survival of the planted shellfish. Specific strategies considering the likelihood of significant mortalities due to disease need to be addressed.
- Page 13 refers to a "letter of support" from *Marine Fisheries* dated September 5, 2014. This letter did express support for shellfish propagation for the purposes of augmenting harvest opportunities and maintaining and increasing local populations. However, this letter was only a general comment letter submitted to MEPA in response to the draft EIR for this project. *Marine Fisheries* is supportive of the use of shellfish as one tool in a multi-faceted approach to nitrogen remediation. However, as noted in our September 5th comment letter, we continue to express caution against relying on shellfish as a primary nutrient remediation technique.
- Due to the centrality of shellfish to this nutrient remediation plan, it is important for the proponent to identify some of the implementation and contingency details.
 1. We recommend the town consider an alternative seed source in the event of an inability of ARC to provide the necessary amount of seed.
 2. We would like additional clarification regarding how video monitoring will be used to estimate shellfish recreational landings. Accurate landings data will be a key component of the nutrient removal estimates. Understanding how the recreational estimate will be calculated; its overall contribution to the total; and how effective the planned monitoring may or may not be needs further discussion.
 3. The Plan has based its shellfish abundance targets on fixed estimates of the average size of the animals at harvest (60 g for quahogs and 100 g for oysters). Several agencies commenting on the Draft Plan expressed concern over lack of attention paid to potential variability in nitrogen content and size at harvest. It would benefit the proponent to better understand and describe the sensitivity of its harvest and nitrogen removal estimates using existing commercial harvest data. The proponent states that it is assessing shellfish effectiveness on a "results only" basis (see Appendix 1-1 page 33 for example), but in order to plan and adapt, more details regarding the harvest estimates are warranted.
 4. The Plan depends on harvesters returning to clamming, but there is little support for this assumption (page 6-12). Is this amount of harvest realistic, and how does it compare to the past 10 years of harvest? Will specific actions be taken to encourage commercial harvesting?
 5. We recommend the proponent develop a more specific O&M Plan for the shellfish propagation that addresses our above concerns and describes the monitoring and decision-making framework in more detail.
- Language throughout the Plan should differentiate between aquaculture (grow-out for commercial production in an area granted by the town to a commercial entity) and propagation (grow-out for wild harvest, both commercial and recreational). This should also carry-over to the budget section.

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, Ph.D.
Acting Director

cc: Mashpee Conservation Commission
J. Jefferson Gregg, GHD, Inc.
Rick York, Mashpee Shellfish Constable
Christopher Boelke & Alison Verkade, NMFS
Robert Boeri, CZM
Ed Reiner, EPA
Ken Chin, DEP
Richard Lehan, DFG
Kathryn Ford, Tom Shields, Michael Hickey, John Mendes, 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.
2. Jackson EL, Rowden AA, Attrill MJ, Bossey SJ, Jones MB (2001) The importance of seagrass beds as a habitat for fishery species. *Oceanography and Marine Biology: an Annual Review* 39: 269-303.
3. Heck KL, Jr., Carruthers TJB, Duarte CM, Hughes AR, Kendrick G, et al. (2008) Trophic transfers from seagrass meadows subsidize diverse marine and terrestrial consumers. *Ecosystems* 11: 1198-1210.
4. Costello CT, Kenworthy WJ (2011) Twelve-year mapping and change analysis of eelgrass (*Zostera marina*) areal abundance in Massachusetts (USA) identifies statewide declines. *Estuaries and Coasts* 34: 232-242.
5. Hauxwell J, Cebrián J, Valiela I (2003) Eelgrass *Zostera marina* loss in temperate estuaries: relationship to land-derived nitrogen loads and effect of light limitation imposed by algae. *Marine Ecology Progress Series* 247: 59-73.

DP/JL/KF/TS/sd

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CAPE COD
COMMISSION

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Via Electronic Mail
July 28, 2015

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

**Re: Final Environmental Impact Report- EEA No. 12615
Town of Mashpee- Comprehensive Wastewater & Nitrogen Management
Plan**

Dear Secretary Beaton:

Thank you for the opportunity to provide the Cape Cod Commission's comments on the above-referenced matter, which follow and are arranged by the applicable issue areas from Barnstable County's Regional Policy Plan (RPP). The matter is currently undergoing joint FEIR/Development of Regional Impact (DRI) review by the Commission. If and when Final Certification on the EIR issues from the Secretary, a Commission subcommittee will reconvene and continue DRI review of the project.

Cape Cod Commission staff is available to answer any questions about the comments.

Sincerely,

Jon Idman
Chief Regulatory Officer

Cc: Project File
Jeff Gregg, GHD, via email

The Section 208 Area-wide Water Quality Management Plan recommends that all nutrient management planning in the region be reviewed for 208 Plan consistency. The Mashpee CWMP is generally consistent with the 208 Plan approaches that require a combination of traditional and non-traditional technologies toward reducing cost while providing for performance monitoring of all technologies to ensure their effectiveness.

The Commission will be issuing specific guidance on 208 consistency review in the coming months, at which time the Commission will have also issued guidance for developing Targeted Watershed Management Plans (TWMP). This guidance will become available as critical components of the Mashpee plan are implemented.

The Mashpee CMWP provides a playbook of nitrogen reduction interventions to be implemented over the course of the next 26 years. The strategy is the culmination of more than 14 years of work by the town. Begun prior to having definitive nitrogen thresholds, the town has taken advantage of numerous opportunities to define its plan including the Massachusetts Estuaries Project, the DEP pilot project, the Barnstable County Septic Test Center, USGS and Sewer-Cad modeling through the County, clarified regulatory language, grant opportunities and the recent 208 Plan Update. The fact that the lynch pin of the Mashpee CMWP comes down to a massive aquaculture project calling for the harvesting of 35 million shellfish is an testament to the collective thinking that has advanced over this peninsula.

Significant nitrogen reduction projected by shellfish alone cannot meet the overall required reductions. Thus the CWMP also includes strategic areas to be served by new wastewater collection and treatment infrastructure.

The Mashpee CWMP addresses many of its details with options and contingencies to double back in the event that aquaculture or other interventions do not perform as envisioned. The CWMP includes significant options that address: nitrogen thresholds for two major embayments (Popponesset and Waquoit); numerous private treatment facilities; four-town responsibility for nitrogen management; a shared federal facility; and provides watershed

characterization and priority ranking of collection areas. The wastewater disposal options are dependent on existing, contingent and conceptual sites. The use of existing private wastewater infrastructure is efficient and promising, although their use will require negotiation and the formation of a nimble management structures. The path toward implementing planned and conceptual solutions is dependent on performance of the Phase I shellfish projects as assessed through water quality monitoring.

The CWMP aquaculture component calls for the deployment of 35 million oysters and quahogs to filter algae out of degraded waters and thus restore water quality. The CWMP includes general descriptions and qualifiers about how this program would be implemented. The initial Phase of this project will require additional design specifications, particularly the acquisition of so much seed from a single source, the Aquacultural Research Corporation in Dennis, MA (ARC). The CWMP indicates that ARC could meet those demands with a year or two advance notice, but how does that affect ARC's ability to provide to other Cape communities? Also, the role of the Town and its commercial, tribal and recreational harvesters requires more detail in a preliminary design. Finally, the management of the aquaculture program requires additional information and detail, including its relation to a yet to be established overall wastewater management structure on the town level.

Keeping track of the multiple options within the 30 year CWMP will be a challenge to direct and measure. The Cape Cod Commission has adopted a targeted watershed approach to focus wastewater planning for nutrients. It is recommended that the preliminary designs for the CWMP configure its interventions by sub-embayments/sub-watersheds ty. For instance, the CWMP indicates that the exact deployment of the aquaculture program is likely to be incremental rather than starting with 35 million shellfish program among multiple sub-embayments. It is recommended that the plan design consider the Popponesset system and its subwatersheds as an initial targeted watershed. The Wampanoag aquaculture farms are located in Popponesset and there is an opportunity for Barnstable to participate in a shared Shoestring Bay aquaculture project. Phase I of the CWMP proposes the Mashpee River sub-watershed for the

first phase of sewer collection of wastewater for treatment. There are several deferred options in the Quashnet River watershed that are waiting for funding and outcomes from other studies like the JBCC assessment being conducted by Mass Development.

There may be other opportunities to consider as interventions are incrementally deployed. The Comparison on Table 6-9 of the Aquaculture and non-aquaculture plans show a large decrease in the volume of wastewater to be treated; from 2.7 to 1.7 mgd. Much of the decrease is wastewater to be treated at Site 4 and Mashpee Commons. If aquaculture is successful, the daily 280,000 gallons of wastewater that is projected to be collected is only 100,000 gpd more than the 180,000 gpd permitted capacity of the Mashpee Common plant. An expansion of that plant could potentially be reconsidered in the preliminary design and/or adaptive management plan to provide additional capacity.

Only recently has the entire Waquoit Bay received its TMDL thresholds which now allow more definitive regional solutions for this shared watershed. The CWMP ranks several areas in the Quashnet/Moonakis River System sub-watershed as high priorities and has developed a collection and treatment strategy that includes the Joint Base Cape Cod wastewater facility as an alternative to several identified "Back Road" sites in Mashpee. The Back Road sites are directly upgradient of freshwater ponds and were not assessed in detail. The 300,000 gpd of wastewater potentially to be treated at JBCC pending an agreement would be collected from Mashpee areas south and north of Ashumet/John's Pond and areas of Sandwich adjacent to and upgradient of Snake/Mashpee/Wakeby Ponds. Satisfactory nitrogen reduction would be achieved through the use of JBCC facility. If the JBCC does not become available, additional collection for nitrogen reduction and disposal configurations are required beyond the Back Road sites, including the potential need to redirect the disposal of effluent from Southport. The CWMP indicates that an additional 50,000 gpd could be collected in Falmouth for its share of Waquoit and diverted to JBCC. A preliminary design improvement to increase treatment capacity at JBCC to 600,000 gpd is detailed in the CWMP.

Under Development of Regional Impact review, the Commission will review the CWMP for consistency with the Regional Policy Plan minimum performance standards. Water Resource issues include: drinking water, fresh ponds, coastal waters and appropriate use of wastewater and stormwater infrastructure and management. In particular the Commission DRI review will focus on appropriate scoping of the AMP, appropriate scopes of hydrogeological assessments for potentially affected resources, and demonstrating long term hydrologic balance and nitrogen budgets for existing and CWMP interventions by sub-watershed.

The CWMP implementation describes the monitoring and modeling that will provide the basis for performance. These include shellfish (oyster and quahog) harvest goals, nitrogen filtering and denitrification associated with quahog replenishment, nitrogen in water column, results of the Quashnet/Moonakis River study, Joint Base Cape Cod regional option, and proposes five year review periods. These outcomes are proposed to form the basis of the Adaptive Management Plan that will be developed through the Cape Cod Commission DRI review in conjunction with DEP. In addition to the proposed scope, the CWMP includes options for additional non-traditional interventions such as permeable reactive barriers, wetland restoration, ecotoilets and fertilizer/stormwater management. The CWMP acknowledges the use of the Commission Tools to evaluate potential collection areas and non-traditional technologies. Some of these may be more tenable by funding and grant opportunities, such as EPA's recent PRB hydrogeological characterization grant. Decisions to proceed with any new technology intervention are likely to be opportunistic, and flexibility within the permit conditions and the AMP should allow it.

The AMP includes a list of resource areas for monitoring including shellfish, estuary water quality (for both pilot performance and TMDL compliance), stream gauging, drinking water and hydrogeological assessments. Monitoring for existing wastewater plants is also included. There is a need for all monitoring to be compiled and formatted for consolidated real-time review, or at least on an annual and five year basis. The AMP typically includes the formation of a technical advisory committee to meet frequently through the implementation of the plan and guide the use of data in the adaptive plan decisions.

Commission staff recommends that the CMWP provides adequate information for MEPA final certification and can be approved with conditions for implementation. It is recommended that the Town consider the use of a targeted approach making use of its five year time milestone for the Initial Phase with an assessment of progress and future plans to be submitted through Notices of Project Change. This will insure that all agencies and parties have the ability for a consolidated review of this interdisciplinary CMWP.