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CAPE COD
COMMISSION

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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

CAPE COD COMMISSION HEARING SUBCOMMITTEE

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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 to 32% for the five major coastal watersheds, as listed on Table 1, with an average of a 26% increase for growth based on 2001 to 2000 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 sewerage 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 sewerage 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 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, 2015 Town Meeting did not approve the purchase of the site for effluent recharge, and the Town is 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 old 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. In a similar fashion non-traditional interventions like the Saquatucket dredging project can provide faster removal of nitrogen in targeted areas to produce demonstrable water quality improvements.
- 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.
- 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:

- 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 sewerage 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. Commission staff recommends that the town be required to file a Notice of Project Change for review under MEPA, and for review as a modification to the DRI decision, prior to implementation of expansion Pleasant Bay proposed in Phase 3.
- 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 sewerred 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. The average cost to every Harwich homeowner would be \$254, if the cost recovery was purely put on the property tax. 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 pump houses 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 pump houses 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 'offset' 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.

- 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 sewerage 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.