CAPE COD COMMISSION

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DATE:	November 18, 2004
TO:	Town of Barnstable 367 Main Street Hyannis, MA 02601
FROM:	Cape Cod Commission
RE:	Development of Regional Impact Cape Cod Commission Act, Sections 12 and 13
APPLICANT:	John Jacobson, Engineering Department, for the Town of Barnstable Leslie Fields, Woods Hole Group, Inc. for the Town of Barnstable
PROJECT #:	JR04002
PROJECT:	Centerville River Dredging and Craigville Beach Nourishment—Phase II
MAP/PARCEL:	206/013 Town of Barnstable 185/036 Town of Barnstable (C69428)

DECISION OF THE CAPE COD COMMISSION

SUMMARY

The Cape Cod Commission (Commission) hereby approves with conditions the application of the Town of Barnstable (Applicant) as a Development of Regional Impact (DRI) pursuant to Sections 12 and 13 of the Cape Cod Commission Act (Act), c. 716 of the Acts of 1989, as amended, for the proposed Centerville River Dredging and Craigville Beach Nourishment—Phase II (the Project). The decision is rendered pursuant to a vote of the Commission on November 18, 2004.

PROJECT DESCRIPTION

Project Description

The Town of Barnstable (the Town) has developed a two-phased project to conduct maintenance and improvement dredging in the Centerville River/East Bay estuary system for the purpose of improving navigability within the waterway. Phase I work included maintenance dredging of channel areas (Reaches 1 and 5) to the west of the Bumps River intersection with the Centerville River; Phase II includes channel areas (Reaches 2, 3, and 4) to the east of that intersection. The planning, engineering, and permitting process for Phase I was completed in October 2002. Phase I work did not require review by the Cape Cod Commission as a DRI. Reach 1 dredging occurred between December 2003 and January 2004. Due to construction delays, Reach 5 has not been dredged to date.

Phase II project work constitutes this DRI. The proposed Phase II project includes maintenance and improvement dredging of up to 31,180 cubic yards of sediment from the Centerville River for the purpose of improving navigability within the waterway. As proposed Phase II divides the Centerville River dredging into three reaches and characterizes the proposal for each reach as follows:

Reach 2

- maintenance dredging of a maximum of 23,490 cubic yards
- area includes the Centerville River east from the Bumps River intersection to the end of Centerville Cove
- sediments characterized by a silt/sand mixture proposed for dewatering within basins constructed on Craigville Beach (covering nearly 4 acres of coastal beach)
- sediments proposed for beach nourishment on Craigville Beach or for reuse at Resource Recovery of Cape Cod in Sandwich
- contains areas with "no shellfish," "low density", and "moderate to high density" of shellfish (quahogs).[1] The Town proposes to conduct a relay prior to dredging to harvest quahogs from the areas of "moderate to high density" that lie within the dredge footprint and to relocate them to other suitable habitat.

Reach 3

- improvement dredging of a maximum of 1,320 cubic yards
- area includes a 400-foot long spur from the Centerville River channel north to the Bumps River bridge
- sediments characterized by primarily clean, well-sorted sands

[1] The Town has determined that all areas proposed for dredging pursuant to this project contain some density of shellfish. In their application, the Town has grouped shellfish densities into three ranges of abundance, in a manner that allows for the mapping of shellfish located in the waterway. The three ranges are "no shellfish," "low density," or "moderate to high density" (see figure 2-5, p.9, "Response to Cape Cod Commission Comments on FEIR/DRI," dated September 9, 2004).

- sediments proposed for reuse as beach nourishment on the undeveloped eastern end of the Long Beach barrier (including town-owned Conservation Commission property and private property)
- contains areas with "low density" and "moderate to high density" of shellfish (quahogs). The Town proposes to conduct a relay prior to dredging to harvest quahogs from the areas of "moderate to high density" that lie within the dredge footprint and to relocate them to other suitable habitat.

Reach 4

- improvement dredging of a maximum of 6,370 cubic yards
- area includes a 1,500-foot long spur from the Centerville River channel to the north fork of the river to the Craigville Beach Road bridge
- sediments characterized by primarily clean, well-sorted sands
- sediments proposed for reuse as beach nourishment on the undeveloped eastern end of the Long Beach barrier (including town-owned Conservation Commission property and private property)
- contains areas with "no shellfish," "low density," and "moderate to high density" of shellfish (soft-shell clams). The Town did not propose to perform a relay prior to dredging to relocate these soft-shell clams because they are more easily damaged than quahogs. Condition C-CR2 of this Decision requires harvesting prior to dredging within the dredging footprint of any shellfish in the "moderate to high density" area and to relocate them to other suitable habitat.

PROCEDURAL HISTORY

An expanded Environmental Notification Form (ENF) was originally noticed under the Massachusetts Environmental Policy Act (MEPA) on November 22, 2000. Phase I and Phase II of the Town's proposed project were each subject to MEPA. The Town filed for and received a Phase I waiver from MEPA. Phase II of the proposed project was subject to mandatory Environmental Impact Report (EIR) provisions of the MEPA Regulations since it involves the alteration of more than 10 acres of land under water and will require both a Chapter 91 License and 401 Water Quality Certification from the Department of Environmental Protection.

Pursuant to a Memorandum of Understanding between the Cape Cod Commission and the Executive Office of Environmental Affairs, the Town elected to participate in a joint Cape Cod Commission/MEPA review process for Phase II designed to address the concerns of both agencies and to expedite project review. The Town filed a Joint Draft Environmental Impact Report (EIR)/Development of Regional Impact (DRI) on January 14, 2004, and a Joint Final EIR/DRI on July 1, 2004. While under MEPA review an authorized subcommittee of the Commission held duly noticed public hearings on February 17, 2004, and August 2, 2004. The Secretary of Environmental Affairs issued a Final Certificate on the Joint FEIR/DRI on August 16, 2004.

A duly noticed public hearing was conducted by the Commission pursuant to Section 5 of the Act by an authorized subcommittee of the Commission on September 27, 2004, at the Barnstable Senior Center, Hyannis, MA, on which date the public hearing was closed.

The Subcommittee held public meetings to deliberate on this project on October 8, 2004, November 1, 2004, and November 4, 2004. At the November 4, 2004 Subcommittee meeting the Subcommittee took the following votes:

- Vote to recommend approval of the proposed maintenance dredging of Reach 2. Approved unanimously by a vote of 5 to 0.
- Vote to recommend approval of the proposed improvement dredging of Reach 3. Approved unanimously by a vote of 5 to 0.
- Vote to recommend approval of the proposed improvement dredging of Reach 4. Approved by a vote of 3 to 2.

A final public hearing was held before the full Commission on November 18, 2004. At this hearing, the Commission voted to approve the project as a DRI, subject to conditions. The Commission voted as follows: unanimous vote to approve the maintenance dredging of Reach 2; unanimous vote to approve the improvement dredging of Reach 3; 11 in favor and three opposed to approve the improvement dredging of Reach 4.

In addition to the list of materials submitted for the record, provided below in Table 1, the application and notices of public hearings relative thereto, the Commission staff's notes and correspondence, the minutes of meetings and hearings, and all other written submissions received in the course of the proceedings are hereby incorporated into the record by reference.

Table 1: Materials Submitted for the Record	**Date Submitted**
From the Applicant:	
Joint Draft Environmental Impact Report/Development of Regional Impact (DEIR/DRI)	14-Jan-04
DRI Application; requesting joint review with MEPA	2-Feb-04
Final Environmental Impact Report/Development of Regional Impact (FEIR/DRI)	1-Jul-04
Response to Cape Cod Commission Comments on FEIR/DRI	9-Sep-04
Letter from Woods Hole Group providing supplemental information in response to September 22, 2004 Staff Report	4-Oct-04
Letter from Woods Hole Group providing supplemental information in response to staff concerns over stabilization of beach nourishment	21-Oct-04
Comments on Draft Findings and Conditions	1-Nov-04
Letter from Barnstable Planning Director re: project consistency	18-Nov-04
Correspondence received during MEPA EIR process	
Certificate of the Secretary on the DEIR	1-Mar-04
Certificate of the Secretary on the FEIR	16-Aug-04
Letter of support for project from Barnstable Recreation Division	2/11/2004
Letter of support for project from Barnstable Marine and Environmental Affairs Division	12-Feb-04
Letter of support for project from 65 Short Beach Road, Centerville, resident	23-Feb-04
Letter of support for project from Long Beach (Homeowners) Association	21-Feb-04
Comment on DEIR from Barnstable Conservation Division	27-Feb-04
Comment letter on DEIR from Massachusetts Coastal Zone Management Office	5-Mar-04

Comment letter on FEIR from Massachusetts Coastal Zone Management Office	12-Aug-04
Comment letter on FEIR from Massachusetts Division of Marine Fisheries	9-Aug-04
Comment letter on FEIR from Massachusetts Board of Underwater Archaeological Resources	17-Sep-04
From the Commission	
Staff Report on the DEIR/DRI	13-Feb-04
Comment Letter to MEPA on DEIR/DRI from DRI Subcommittee	23-Feb-04
Staff Report on the FEIR/DRI	23-Jul-04
Note from Staff to Woods Hole Group re Reach 3 and DEIR issues	3-Aug-04
Comment Letter to MEPA on FEIR/DRI from DRI Subcommittee	5-Aug-04
Staff Report on DRI for September 27, 2004 Public Hearing	22-Sep-04
Memo to Subcommittee, Woods Hole Group, and Town re water and coastal resource issues for October 8 Subcommittee meeting	4-Oct-04
Memo of Draft Findings and Conditions for Subcommittee and Town	28-Oct-04
Memo of revised Draft Findings and Conditions for Subcomimttee and Town	3-Nov-04
From the Public	
Petition for support of Reach 3 dredging from 83 Barnstable residents	27-Sep-04
Photos hand delivered at FEIR Public Hearing	2-Aug-04
Letter of support from 98 Long Beach Road, Centerville, resident	7-Oct-04

TESTIMONY

While under MEPA review an authorized subcommittee of the Commission held two public hearings on February 17, 2004, and August 2, 2004, to receive public comment on the Joint DEIR/DRI and Joint FEIR/DRI, respectively.

The following oral public testimony was received on February 17, 2004:
Roy Richardson, Precinct 4 Town councilman, and Janet Joakim, Town councilwoman, both spoke in support of the proposed project siting shellfish resource issues and the "social health" of the river that they believe would be improved by the dredging. Dan McCarthy, Barnstable Assistant Harbormaster, spoke in support of the project and wants to see dredging accomplished. Tony Balsamo spoke in support citing reasons of siltation in Reaches 3 and 4 and public safety concerns. Jim Lane spoke in support citing reasons of water quality issues and the active Herring Run. Jack Driscoll spoke in support and stated that nourishment has been done in the past and should be done again. Neil Andres spoke in support citing concerns about heavy boat traffic and belief that this dredging will alleviate the problem by widening the channels. Jim Pineau spoke in support citing reasons of his belief that recent water quality improvement in the River are due to success of Title 5 regulations but believes this dredging will help improve the River's water quality. Mr. Pineau also cited safety concerns regarding crowded channels that are dangerous to kayakers. Jim Pideaula, Michael James, and Wayne McGann each spoke in support of the project generally.

The following oral public testimony was received on August 2, 2004:
Brian Walls spoke in favor of the project citing reasons of observed decreases in wildlife over the years and self observed revitalization after the Phase I dredging. John Gutrow spoke in support citing reasons of extensive work done to date to develop the proposal and his belief that nourishment on Long Beach would migrate to Craigville Beach. Bob Jones, a former council member from the Town of Barnstable, stated his support for the project citing reasons of safety of navigation and benefits from beach nourishment. Barbara Birdsee spoke in support citing reasons of public safety related to a dangerous sandbar in the middle of the river that boats get stuck on. John Pendergast Jr. spoke in support. Frederick Rust stated his support citing reasons of the need for navigational improvements for larger boats and the benefits that would come with beach nourishment. George Faherty had questions and comments regarding the need to know the impact on the beach from increased nitrogen; how the dredging would affect shellfish; the fact that dredging in the 1950s killed much of the shellfish in the river; how the dredge slurry pipe would affect traffic and beach users; and the need for sand fencing.

A duly noticed public hearing was conducted pursuant to Section 5 of the Act by an authorized DRI subcommittee of the Commission on September 27, 2004, at the Barnstable Senior Center, Hyannis, MA.

The following oral public testimony was received on September 27, 2004:
Roy Richardson, Barnstable Town councilman, spoke in favor of the project stating his belief that the project will be good for the town and may help address the *Phragmites* problem in the area. Mr. Richardson later stated that people come from far and wide to boat on this river and that is one of the most popular recreation destinations in the town. Dan Horn, Barnstable Harbormaster spoke in favor of the project citing reasons of public safety and the public benefit that would result because presently emergency access is restricted from Reaches 3 & 4. Daniel McCarthy, Assistant Harbormaster spoke in support of the project citing a situation when the Coast Guard grounded in the river and stating his belief that it will improve flushing in the system. Mr. McCarthy later stated that many people come to enjoy the river from all over Barnstable. Richard Hardy spoke in favor of the maintenance dredging of Reach 2. Frederick Rust presented a petition of 80 signatures in favor of dredging Reach 3, citing reasons of improving recreation and water quality, relieving the high rate of boating accidents that he observes, and enabling waterfront property owners to access their docks and piers. Brian Wallace stated that the water is getting more polluted and he observes a reduction in shellfish quantity and an increase in the size of boats on the river as well as more kayaks. Dominick Gautrau spoke in support of the project citing reasons of the eventual movement of the sand used for beach nourishment that will be a benefit of the project since the beach is subject to erosion. He also stated later that further dredging beyond what is proposed here is not likely because it has taken the Town years to get to this point on the present proposal. Tony Balsamo spoke in favor of the dredging citing the need to improve navigation, noting that kayakers often ground and are in need of rescue, and his belief that dredging will help fish. Nelson Orr spoke in favor of the dredging stating his belief that better flushing would occur. James Padula and Michael Sullivan spoke in favor of the project, with Sullivan believing that the project will benefit the environment. George Raymond spoke in favor of the project citing reasons of the need to eliminate a bad odor from the river. Jack O'Malley spoke in favor of the project citing reasons of pollution and public safety concerns. Neil Andres spoke in support of the project, urging quick approval because of the short dredging window.

David Drake stated that if the Barnstable Conservation Commission ultimately approves this project then it must be acceptable, and urged quick approval. Jack Driscoll stated his belief that the dredging would improve fishing in the river.

JURISDICTION

The proposed Centerville River Dredging and Craigville Beach Nourishment—Phase II project was referred to the Commission by the Town on February 2, 2004, because the project required the filing of an EIR under Sections 61-62h of Chapter 30 of the general laws. The referral is required by Section 12(i) of the Act and by Commission regulations.

FINDINGS

The Commission has considered the application of the Town of Barnstable (the Town) for the proposed Centerville River Dredging and Craigville Beach Nourishment—Phase II, and based on consideration of such application and upon the information presented at the public hearing(s) and submitted for the record, makes the following findings pursuant to Sections 12 and 13 of the Act:

General

F-G1. According to a letter from the Barnstable Planning Director, the Project is consistent with the Local Comprehensive Plan and complies with local zoning.

Transportation

F-T1. According to the FEIR/DRI, the Town of Barnstable has proposed and will utilize the most direct and least disruptive trucking route between the Craigville Beach parking lot and the upland disposal site at ReSource Recovery of Cape Cod in Sandwich, MA. Also, trucking operations are scheduled to avoid peak hours during the off-season and will be done during an appropriate window between October 15 and April 15. These measures will ensure compliance with MPS 4.1.1.1.

F-T2. Due to the temporary nature of any transportation impacts and the acceptable route and time window for proposed trucking on regional roadways, there are no other transportation Minimum Performance Standards at issue for this project.

Coastal Resources

F-CR1. Public testimony and testimony by Barnstable town officials has indicated that there is a history of vessels attempting to transit shallow and narrow portions of the river and running aground, creating a public safety hazard. No management controls such as draft restrictions, speed limits, or posted “no wake zones” currently exist in the area. The Town has demonstrated that the proposed new dredging of Reaches 3 and 4 is necessary pursuant to MPS 2.2.3.6 because the

project will improve navigation by alleviating safety hazards to vessels navigating in certain shallow and narrow water ways.

F-CR2. The Town has demonstrated that there are no feasible alternatives to the proposed new dredging at Reaches 3 and 4 (pursuant to MPS 2.2.3.6) that will alleviate hazards to vessels navigating in shallow and narrow waterways, as described in F-CR1.

F-CR3. The proposed new dredging of Reaches 3 and 4 provides a substantial public benefit pursuant to MPS 2.2.3.6 because the project will: improve navigation by alleviating some safety issues arising from public use of certain shallow and narrow waterways; fortify coastal beaches and critical habitat; and, provide a sediment source for the littoral system.

F-CR4. According to MPS 2.2.3.8, development and redevelopment shall be designed to minimize direct and secondary impacts to fish, shellfish, and crustaceans. Both the maintenance and the new dredging will have immediate adverse impacts to shellfish habitat through the excavation of sediment currently serving as habitat for "moderate" and "moderate to high" (as defined by the applicant) densities of Quahogs (*Mercenaria mercenaria*) in Reach 2 and Reach 3, and moderate to high densities of soft shell clams (*Mya arenaria*) in Reach 4. The dredging will have long-term impacts to shellfish habitat by altering the composition of the material available for "sets" of shellfish spat. In some areas this may produce a short-term improvement. However, over time fine sediments will accumulate on the bottom of the channel unless maintenance dredging operations return the channel to the design depth.

F-CR5. According to MPS 2.2.3.8, development and redevelopment shall be designed to minimize direct and secondary impacts to fish, shellfish, and crustaceans. New and maintenance dredging will have immediate adverse impacts to shellfish and crustaceans because organisms that are not removed from the dredging footprint are likely to be lost. The Town proposes to minimize direct impacts by relocating existing Quahogs from Reach 3 and from two areas in Reach 2 prior to dredging. The Town also proposes to recover Quahogs from dredged material pumped to Long Beach and to relocate them to suitable areas.

The shellfish within the Phase II project area are currently closed to harvest for human consumption. According to the Town's Harbormaster the Bumps River has been closed to shellfishing since 1986; the Centerville River has been closed to shellfishing since 1994; and the East Bay area of the Centerville River has been closed to shellfishing since 1995. Regardless of the suitability of the shellfish for human consumption, the shellfish in the existing shallow estuarine system are a resource protected under the RPP. They are an important component of the environment that provide forage for other marine and coastal species including fish, crustaceans and birds, and they provide spawning biomass for other areas that may be open to harvest. If the sources of contamination causing the closure (often attributed to runoff and stormwater or wastewater systems) were addressed, these shellfish areas may be opened for shellfishing at some time in the future.

F-CR6. According to MPS 2.2.3.8 development and redevelopment shall be designed to minimize direct and secondary impacts to fish, shellfish and crustaceans. Dredging will alter the volume and rate of flow of water in the anadromous fish run. Phase I of the project involved

dredging in quantities that exceeded the scope of the project described in permitting materials. Dredging beyond the envelope proposed in Phase II could have adverse impacts that were not examined during the permitting process. However, because the physical alteration is likely to have minimal long-term adverse impacts on the river's suitability as anadromous fish habitat, the project can be conditioned to minimize direct and secondary impacts to fish by ensuring that the channel does not exceed proposed dimensions and is constructed pursuant to the project design.

F-CR7. According to MPS 2.2.3.8 development and redevelopment shall be designed to minimize direct and secondary impacts to fish, shellfish and crustaceans. Dredging will loft fine sediments and detritus into the water column, which is likely to have a short-term adverse impact on fish, shellfish, and essential fish habitat (EFH). In their response dated March 5, 2004, to the DEIR/DRI the National Marine Fisheries Service recommended that the project be subject to time of year restrictions and be limited to maintenance dredging only. Also, National Marine Fisheries Service required that the Town conduct an expanded EFH assessment because of "potentially significant adverse effects on EFH." The Town conducted the EFH assessment on during August and September 2003 and information gathered was supplemented, or "ground-truthed," with a fisheries survey conducted during September 2003, which found the site to be a productive and diverse estuarine ecosystem. To comply with MPS 2.2.3.8 the Town proposes to minimize short-term adverse impacts by adhering to time of year restrictions for dredging and ensuring that fine sediments are handled properly.

F-CR8. According to Other Development Review Policy 2.2.2.14, boat traffic should be minimized in critical habitat areas such as "shallow estuarine areas." Unless additional management tools (as described in C-CR5) are adopted, new dredging will allow for boats of greater draft to transit portions of the river with greater frequency and at a greater velocity than when the channel was depth-restricted at low tide. Such intensification of use will cause persistent adverse impacts to wetland resources adjacent to the channel and could perpetuate public safety hazards. In their response dated February 23, 2004, to the DEIR/DRI the Massachusetts Division of Marine Fisheries described these adverse impacts as including "erosion of salt marsh and coastal bank due to boat wakes, increased risk of related fuel and oil spills, and related impacts from dock construction and/or expansion." The implementation of C-CR5 could minimize such adverse impacts.

F-CR9. MPS 2.2.2.12 directs that, wherever feasible, dredged material shall be used on public beaches subject to erosion. The standard also allows for the use of nourishment material on private property where no feasible public site exists and where storm damage prevention may be enhanced for multiple private properties. Beach nourishment is proposed to occur on both public and private lands at Long Beach. Long Beach is coastal barrier beach and dune system that provides some protection for the Centerville River navigation channel and private development on the north shore of the river from storm damage. The planting of supplemental vegetation in accordance with MPS 2.2.2.11 will improve the longevity of the nourishment material deposited on Long Beach.

F-CR10. MPS 2.2.1.2 states that public access shall be provided at all publicly funded beach nourishment sites where such access will not impair natural resources. A portion of the material

generated by new dredging is proposed for use as beach nourishment on land that is in private ownership, and that proof of public access is required.

F-CR11. The Town of Barnstable manages Craigville Beach with summer recreational beach use as the prevailing interest. Information provided by the applicant and public testimony described the intensive use of the site during the summer, as well as describing problems caused by the erosion of beach material onto areas to the north of the beach, including the Craigville Beach parking lot and Craigville Beach Road. The Town indicated that the past practice has been to collect the material for reuse or disposal offsite, depriving the littoral system of the material. MPS 2.2.2.11 requires the use of vegetative stabilization to enhance the longevity of nourishment placed on the shore during beach nourishment operations. The pre-existing use of the site should be considered when determining the type, density, and distribution of vegetation used to satisfy this standard.

F-CR12. Goal 2.2.3 stresses the need to maintain and improve coastal water quality, particularly when it provides shellfish and finfish habitat. The Project entails the stockpiling of material on the surface of the existing Craigville Beach Parking lot for further dewatering and storage. Proper management of stockpiled material is essential to ensure that it is not conveyed to coastal waters by the existing stormwater system.

The proposed nourishment of Craigville Beach also involves the excavation of dewatering basins on the beach and the management of hydraulic flow to separate suitable nourishment material from fines, which are unsuitable for placement on the beach. Proper management of dewatering structures and operations is essential to ensure that fine sediments are not conveyed to coastal waters during dredging operations.

F-CR13. MPS 2.2.2.11 states that monitoring and maintenance plans shall be required of all nourishment projects. The provisions of a suitable monitoring and maintenance plan are outlined in C-CR12.

F-CR14. Reach 2 of the Centerville River is proposed for hydraulic cutter head dredging of approximately 16,280 cubic yards of material, to attain a final depth of -6 MLW. As proposed, the work is (by definition) maintenance dredging. The project will restore the channel to its previously permitted configuration and thus restore navigation that has been affected by shoaling. Provided that dredging of Reach 2 is carried out within the proposed footprint, it is not anticipated to have significant long-term adverse impacts to coastal resources if conditions C-CR4, C-CR6, and C-CR9 through C-CR13 (related to time of year restrictions and dewatering and nourishment activities at Craigville Beach) are met.

Water Resources

F-WR1. Commission analysis of nitrogen loading and tidal flushing in the Centerville River/East Bay embayment system identified the system as nitrogen overloaded (Eichner, *et al.*, 2002). Projects within embayment watersheds where the embayment has water quality problems or the watershed nitrogen load exceeds a loading standard are required to have no net nitrogen loading (MPS 2.1.1.2.C.2).

F-WR2. Dredging within an embayment system increases its internal volume, which causes nutrients to remain longer in the embayment and worsens water quality conditions. Conversely, the removal of the sediments may improve water quality by removing the portion of the sediment nitrogen that is labile and would otherwise contribute to internal nitrogen loads within the embayment. Refined data collection and modeling of these competing impacts is usually required to definitively determine whether dredging provides a net water quality benefit. The Town has not undertaken such work for the Centerville River system and therefore water quality effects associated with this proposed project are unknown.

F-WR3. Based on the nutrient data from sediments in areas proposed to be dredged (Table 5-1 in the DEIR/DRI), a simple calculation results in an estimate of between 387 and 1,055 kilograms (kg) of nitrogen in the sediments to be dredged. A portion of this nitrogen would discharge into Craigville Beach and into Centerville Harbor during the dewatering process, while the remaining sediment portion will be trucked off-site to ReSource Recovery of Cape Cod, which is located within the Sandwich Harbor watershed. Using a series of reasonable assumptions, the Town's consultants estimated that 974 kg will be discharged into Centerville Harbor during the dewatering process on Craigville Beach and 291 kg will be taken into the Sandwich Harbor watershed in 17,620 cubic yards of dredged material.

F-WR4. Using a previously completed flushing study of Sandwich Harbor (Woods Hole Group, 2001) and the critical loading limits in the Commission's Nitrogen Loading Technical Bulletin (Eichner and Cambareri, 1992), Commission staff determined that the critical nitrogen loading limit for Sandwich Harbor is 15 kg of nitrogen per acre of watershed. MPS 2.1.1.2.C.1 requires that all projects have nitrogen loads less than the identified critical nitrogen load for the impacted embayment. Disposal of 291 kg of nitrogen on the 31 acre ReSource Recovery site results in a load of 9.4 kg/ac, which is less than the identified critical nitrogen load for Sandwich Harbor and, thus, meets MPS 2.1.1.2.C.1.

F-WR5. Although a larger mass of nitrogen is being discharged into Centerville Harbor than to Sandwich Harbor, Centerville Harbor is not an embayment and is very well flushed by Nantucket Sound. The nitrogen discharge from the sediments and their dewatering is unlikely to have any long-term impact on water quality in Centerville Harbor, especially given the proposed fall/winter-dredging schedule.

F-WR6. Based on the information in the FEIR/DRI, the dredging in the entire system (both East Bay and Phase II) will increase the overall volume by 5.1%. This increase includes the excessive dredging of East Bay during Phase I of the project; the volume of East Bay was increased by 5.6% compared to the 2% increase proposed in the Phase I plans. In Phase II area, the proposed dredging will increase the volume by 4.7%.

F-WR7. It is unclear how much these volume changes will impact water quality without further refined tidal flushing and water quality analyses. Holding tidal flushing constant, these volumes change the critical loads (or nitrogen limits) for the system and subembayments by less than a tenth of a percent (<0.1%). The 387 and 1,055 kg of sediment nitrogen estimated to be removed from the system is between 0.4 and 1.2%, respectively, of the upper Centerville River annual

nitrogen load. Since these percentages are so small, a definitive water quality benefit or detriment cannot be assigned to the overall dredging project.

F-WR8. More refined collection of, at the very least, tidal data, water nitrogen concentrations, and sediment regeneration, as well as incorporation of this information into a detailed estuary model, would be needed to definitively assess the water quality benefits and detriments of the overall project. This type of data is collected and modeled through the Massachusetts Estuaries Project.

Natural Resources/Open Space

F-NR1. The upland portions of the Project are located in rare species habitat as mapped by the Natural Heritage Atlas, third edition. According to the Natural Heritage and Endangered Species Program (NHESP), the project as designed and conditioned in C-CR6 is anticipated to result in beneficial impacts to actual habitat of state listed shorebirds, including Piping plovers, Least terns, and Common terns. In order to ensure compliance with MPS 2.4.1.4 (no adverse impacts to rare species or their habitat), monitoring and management is necessary to ensure that shorebirds and their nest sites are not disturbed by people or dogs. In addition, as conditioned in C-CR7 and C-CR9, snow fencing should only be permitted seasonally between October 15 and March 31.

F-NR2. Piping of the dredge slurry will result in minor temporary impacts to salt marsh located at the head of Centerville Cove where tubing will be laid directly on the marsh vegetation. The Town evaluated several dredge spoil disposal alternatives in the DEIR/DRI, settling on the present proposal as having the fewest environmental impacts. The Town plans to minimize the impacts to the marsh during construction of the tubing through the use of a rubber-tired front-end loader operating on crane mats. All disturbed areas will be revegetated. Timing of the Project during the fall and winter months will also contribute to minimizing impacts to the salt marsh. MPS 2.3.1.1 allows for wetland alteration for water dependent projects where no feasible alternative exists and the proposed alteration is the minimum necessary.

Conclusion

Based on the findings above, the Cape Cod Commission hereby concludes:

- The benefits of the Project outweigh the detriments as supported by findings F-CR1, F-CR2, and F-CR3.
- The Project complies with the Minimum Performance Standards of the Regional Policy Plan.
- The Project is consistent with local zoning and with the Barnstable Local Comprehensive Plan.

The Commission hereby approves with conditions the application of the Town of Barnstable for the proposed Centerville River Dredging and Craigville Beach Nourishment—Phase II as a Development of Regional Impact, provided the following conditions are met:

CONDITIONS

General

C-G1. This DRI decision is valid for 7 years and local development permits may be issued pursuant hereto for a period of 7 years from the date of the written Decision.

C-G2. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Decision upon notice to the applicant and an opportunity to be heard.

C-G3. The Town of Barnstable shall obtain all necessary federal, state, and local permits for the proposed project. The Town shall forward to the Commission copies of any and all permits and approvals issued in relation to this project and issued subsequent to this Decision.

C-G4. No development work, as the term "development" is defined in the Act, shall be undertaken until all appeal periods have elapsed or, if such an appeal has been filed, until all judicial proceedings have been completed.

C-G5. Any future dredging proposed within this Project's dredging footprint that meets the definition of improvement dredging will require a modification of this Decision.

C-G6. The proposed Centerville River Dredging and Craigville Beach Nourishment—Phase II project shall be constructed as proposed in the DEIR/DRI, dated January 14, 2004, and as modified and specified in:

- FEIR/DRI, dated July 1, 2004;
- Response to Cape Cod Commission Comments on FEIR/DRI, dated September 9, 2004;
- Proposed Beach Nourishment Template, as revised on October 19, 2004; and
- this Decision, dated November 18, 2004.

C-G7. The following Certificates of Compliance shall be obtained by the Town:

- Certificate of Compliance #1 – shall be obtained prior to undertaking any dredging
- Certificate of Compliance #2 – shall be obtained upon completion of all dredging and beach nourishment
- Certificate of Compliance #3 – shall be obtained one year after the completion of all dredging and beach nourishment
- Certificate of Compliance #4 – shall be obtained three years after the completion of all dredging and beach nourishment

C-G8. Prior to receiving Certificate of Compliance #1 the Town shall convene a pre-dredging consultation with Commission staff, the Town of Barnstable dredging project manager, and the County dredge operator/manager to review construction details, phasing, and any project conditions of this Decision.

C-G9. The Town of Barnstable shall notify Commission staff of the intent to seek Certificate of Compliance #1 at least ten business days prior to dredging. The Town understands that the

Commission has no obligation to issue any Certificate of Compliance unless all conditions are complied with or secured consistent with this Decision.

Coastal Resources

C-CR1. The Town shall conduct a survey of shellfish habitat characteristics in the dredge footprint within one year after the completion of dredging. Areas that supported moderate or high densities of quahogs or soft shell clams prior to dredging shall be re-seeded with the appropriate species under the direction of the Town's Shellfish Biologist. A report describing the quantity of seed distributed and its location shall be submitted to the Commission following assessment and re-seeding, but no later than six months after re-seeding is completed. The report shall include a narrative describing any observed changes in habitat characteristics since the dredging, and identify areas that are unsuitable for seeding. This condition shall be met prior to the issuance of Certificate of Compliance #3.

C-CR2. The Town shall conduct a relay to remove shellfish from all areas within the dredging footprint that are identified as having a "moderate to high" shellfish density, per figure 2-5, p.9, "Response to Cape Cod Commission Comments on FEIR/DRI," dated September 9, 2004. This includes areas in each of Reaches 2, 3, and 4. Collected shellfish shall be used to fortify an area of suitable habitat identified by the Town's Shellfish Biologist. This relay shall be accomplished prior to the issuance of Certificate of Compliance #1.

The Town shall also undertake a shellfish recovery program at Long Beach according to the protocol set forth on page 18 of the "Response to Cape Cod Commission Comments on FEIR/DRI," dated September 9, 2004. This protocol shall ensue during construction and renourishment operations.

C-CR3. The Town shall conduct a post-project bathymetric survey. Any depth gained by incidental dredging beyond the design depth of –6 MLW for Reach 2, and –4 MLW for Reaches 3 and 4 shall not be maintained. For the purposes of Cape Cod Commission review, any additional depth beyond the design depth shall not qualify as maintenance dredging for future projects. The total amount of material to be dredged from the three reaches shall not exceed 31,180 cubic yards in the aggregate, including the allowance for incidental over-dredging. This condition shall be met prior to the issuance of Certificate of Compliance #2.

C-CR4. As described in the permit documentation, operation of dredging and discharge apparatus shall be limited to the period from October 15 to February 15 as described on page 18 of the "Response to Cape Cod Commission Comments on FEIR/DRI," dated September 9, 2004. This condition shall be met prior to the issuance of Certificate of Compliance #2.

C-CR5. Reaches 3 and 4, the areas proposed for new dredging, shall be posted with "no wake zone" buoys following construction. Buoys may be permanent or may be removed and replaced on a seasonal basis in accordance with the Harbormaster's annual maintenance of aids to navigation. The Town shall post signs indicating average depth to MLW at the upstream terminus of new dredging in Reach 3 and Reach 4 to provide notice to boaters of limited depths that exist beyond the dredged area. The Town shall post a sign with a map depicting the bathymetry of the

maintained channel and the upper reaches of the Bumps River and Centerville River area in a prominent location at the public landing site. The map shall indicate that all areas with depths shallower than –2 MLW are recommended for "high tide access only." This condition shall be met prior to the issuance of Certificate of Compliance #2.

C-CR6. Sandy dredged material shall be placed on existing dunes and beach to create a roughly flat 60 foot-wide berm that will be extended further seaward at a 10:1 slope to meet the natural grade of the beach. No beach nourishment or grading of dredged material on the beach shall occur between April 1 and August 31. The Town shall collect a post-project beach profile of the regions nourished on Craigville Beach and Long Beach to ensure that the final beach profiles meet these specifications. This condition shall be met prior to the issuance of Certificate of Compliance #2.

C-CR7. Material placed on Long Beach shall be re-vegetated from a point where the grade of the flat upper berm of the beach meets the 10:1 slope on the seaward side of the dune, and shall continue landward to meet existing beach grass of equal or greater density or the edge of existing woody vegetation, and include any areas where the existing toe of the dune has eroded or "blown out." Minimum density shall be two culms of Cape American beach grass (*Ammophila breviligulata*) planted every three feet on center to a depth of ten inches. No other vegetation is permitted. No snow fencing shall be placed on the nourished beach between April 1 and August 31. This condition shall be met prior to the issuance of Certificate of Compliance #2.

C-CR8. To ensure that the public interest is accommodated in the use of the material used for beach nourishment on private parcels at Long Beach, copies of easements allowing the public to cross over the nourished areas shall be provided by the Town along with a parcel map correlating the instrument conveying the right to pass with the location of the property. This condition shall be met prior to the issuance of Certificate of Compliance #1.

C-CR9. Vegetative stabilization and seasonal, temporary fencing shall be utilized at Craigville Beach and be designed as follows to provide containment for material subject to wind erosion during the winter months, while having minimal impact on the Town's primary use for the site:

> (a) Prior to the issuance of Certificate of Compliance #2, Cape American beach grass (*Ammophila breviligulata*) shall be planted and maintained on Craigville Beach at the periphery of the recreational beach consistent with the plan entitled, "Proposed Beach Nourishment Template," sheet 3 of 3, as revised on October 19, 2004. The grass shall be planted three-feet on center, and shall be protected from pedestrian traffic by fencing. The specific type of fencing shall be proposed by the Town and shall be found acceptable to the Natural Heritage and Endangered Species Program and approved by Cape Cod Commission staff. Fencing shall be maintained and kept in good repair at all times. The initial density of three-feet on center shall represent the baseline for density of live plants.
>
> (b) Prior to the issuance of Certificate of Compliance #4, the Town shall monitor the site on an annual basis, and install additional culms of beach grass during the planting season each year to ensure that the minimum density is maintained. No other vegetation is permitted. No snow fencing shall be placed on the dredged material between April 1 and August 31.

(c) Because the Town has requested that the use of vegetation be minimized in light of the intensive use of the site, and with due regard for the type and timing of erosion occurring at the site, temporary snow-fencing shall be deployed on a seasonal basis. The fencing shall be installed along the seaward edge of the Craigville Beach Parking lot. The distance from the parking lot shall be determined by the Town on an annual basis based on prevailing site characteristics at that time. The fence shall be installed to run parallel to the high water line by November 20 each year and shall be removed by March 31, but no earlier than March 1, of the following calendar year. The fencing shall be a double row, 3 to 4 feet high, and approximately 8 to 10 feet apart. The Town shall maintain the fencing and any damage sustained during storm events or due to vandalism shall be repaired immediately.

C-CR10. Grain size testing and management of discharged material shall be performed on the materials in each basin as described in Section 2.0(D) of the FEIR/DRI. Only sediment with a fine fraction of less than 15% may be used for beach nourishment. Per the Town's proposal, upon decommissioning of the dewatering basins on Craigville beach, the Town shall excavate material from the bottom of the basin to a depth of 0' NGVD (basin design depth of +1 plus one foot of over-excavation to remove residual fines) prior to filling with compatible nourishment material, in order to ensure that fine material lodged in the basin is removed to the greatest extent possible. This condition shall be met prior to the issuance of Certificate of Compliance #2.

C-CR11. Prior to the commencement of dewatering operations on Craigville Beach parking lot, the Town shall ensure that existing drainage basins are protected from flows that may emanate from the stockpiled material. Catch basins on the site shall be cleaned immediately after beach nourishment activities have been completed.

C-CR12. Prior to receiving Certificate of Compliance #1, the Town shall present a plan for approval by Cape Cod Commission staff showing the location of work and specifying the dates that the required monitoring and maintenance protocol will be undertaken. Prior to the issuance of Certificate of Compliance #4, the Town shall comply with the following monitoring and maintenance protocol in accordance with MPS 2.2.2.11:

The Town shall establish a minimum of two fixed locations on Craigville Beach and shall record elevations with suitable GPS equipment along fixed transects on a path generally perpendicular to mean low water, extending from mean low water to the edge of the parking lot. One site shall be equidistant from the west property boundary and the centerline of the property; the second shall be equidistant from the east boundary of the property and the centerline of the property. Profiles shall be generated to provide an estimation of changes in beach profile and the location of mean high water, across the beach and in areas where seasonal erosion control measures are deployed. The Town shall establish three locations to record transects on Long Beach, two within the area that has received nourishment and one in an area downdrift of the area to be nourished during Phases I and II of the Centerville River dredging project. Transects shall be collected on at least an annual basis for a minimum of three consecutive years.

C-CR13. Prior to the issuance of Certificate of Compliance #4, the Town shall use GPS equipment to locate the mean high water line in relation to existing aerial photographs at nourishment sites. There shall be no requirement to supplement nourishment or to maintain post-project beach profiles. Maintenance pursuant to MPS 2.2.2.11 shall be accomplished by meeting the requirements of C-CR9.

Water Resources

C-WR1. No more than 17,620 cubic yards of Phase II dredge material shall be disposed of at ReSource Recovery of Cape Cod, Sandwich, Massachusetts. Documentation of the final disposal amount shall be provided to the Commission prior to the issuance of Certificate of Compliance #2.

Natural Resources

C-NR1. To prevent disturbance or direct mortality to Piping plover, Common or Least tern adults, eggs, or chicks, signs shall be clearly posted prohibiting dogs on the town-owned beaches within the project area between April 1 and September 15 of each year.

C-NR2. To ensure no adverse impacts to rare species as required by MPS 2.4.1.4, the Town of Barnstable, through its Conservation Commission, and in conjunction with a competent third party as appropriate, shall monitor the project beach nourishment sites for abundance, distribution, and reproductive success of Piping plovers and Least and Common terns. Symbolic twine fencing and warning signs shall be erected around nests when found to deter human or other disturbance to the nests.

C-NR3. Construction of the dredge slurry piping over the salt marsh located at the head of Centerville Cove shall be mitigated through the following measures:

a. Crane mats shall be used in conjunction with a rubber-tired front-end loader to place pipe sections directly on the marsh ground surface. Connection of pipe sections shall be performed by hand to minimize impacts to the marsh.

b. Consistent with other timing constraints for this project, construction activities in the marsh shall occur only between October 15 and March 31 in order to take advantage of the season when marsh vegetation is dormant.

c. Areas of the saltmarsh disturbed by construction or as a result of the pipes laying on the marsh surface shall be revegetated.

C-NR4. To ensure no adverse impacts to rare species as required by MPS 2.4.1.4, disposal of dredge spoils from Reaches 3 and 4 onto Long Beach shall be limited to the time between October 15 and March 31, and best management practices shall be used to minimize impacts to beach resources, as necessary.

The Cape Cod Commission hereby approves with conditions the application of the Town of Barnstable as a Development of Regional Impact pursuant to Sections 12 and 13 of the Act, c. 716 of the Acts of 1989, as amended for the proposed Centerville River Dredging and Craigville Beach Nourishment—Phase II project located in Centerville, Massachusetts.

_____

David Ansel, Chair of the Commission Date

Commonwealth of Massachusetts
County of Barnstable

On this 18th day of November, 2004, before me, the undersigned notary public, personally appeared Mr. David Ansel, proved to me through satisfactory evidence of identification, which were _____ _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he)(she) signed it voluntarily for its stated purpose.

_____

Notary Public
Commonwealth of Massachusetts

My Commission Expires: _____