NATIONAL PARK SERVICE
ENVIRONMENTAL QUALITY DIVISION–M. HUSBANDS
PO BOX 25287
DENVER, CO 25287

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

FIRST-CLASS MAIL
POSTAGE & FEES PAID
NATIONAL PARK SERVICE
PERMIT NO. G-83

EIS/EIR Schedule and Opportunities for Involvement

Your participation will help restore the Herring River. Your knowledge and participation are vital to the planning process. By sharing your opinions about the proposed restoration plan, you can make a difference in the outcome.

Timeframe	Event	Involvement Opportunity
Spring 2012	Release of Draft EIS/EIR for 60-day public review and comment period	Attend a public meeting and submit comments by a variety of methods
Summer 2012	Release of Final EIS/EIR incorporating changes to Draft EIS/EIS and public comments	Review Final EIS/EIR documenting the alternative selected for implementation
Fall 2012	Record of Decision released	

Cape Cod National Seashore
Massachusetts

July 2011

National Park Service
U.S. Department of the Interior

Herring River Restoration Project Newsletter

Introduction

The Herring River Restoration Committee (HRRC), with the National Park Service (NPS), proposes to restore native tidal marsh habitat to large portions of the Herring River flood plain in and adjacent to Cape Cod National Seashore (the Seashore), by re-establishing tidal exchange in the existing river basin and its connected sub-basins. Tidal exchange would be increased incrementally, using an adaptive management approach, to achieve desired conditions for native saltmarsh habitats in the project area.

The HRRC and NPS are preparing a Draft Environmental Impact Statement/Environmental Impact Report (DEIS/DEIR) to assist the public, the Seashore, and the towns of Wellfleet and Truro in developing the tidal restoration project. The DEIS/DEIR is being prepared in accordance with the National Environmental Policy Act (NEPA), the Massachusetts Environmental Policy Act (MEPA), and the Cape Cod Regional Policy Plan. For this project, the NPS is the lead agency for NEPA compliance.

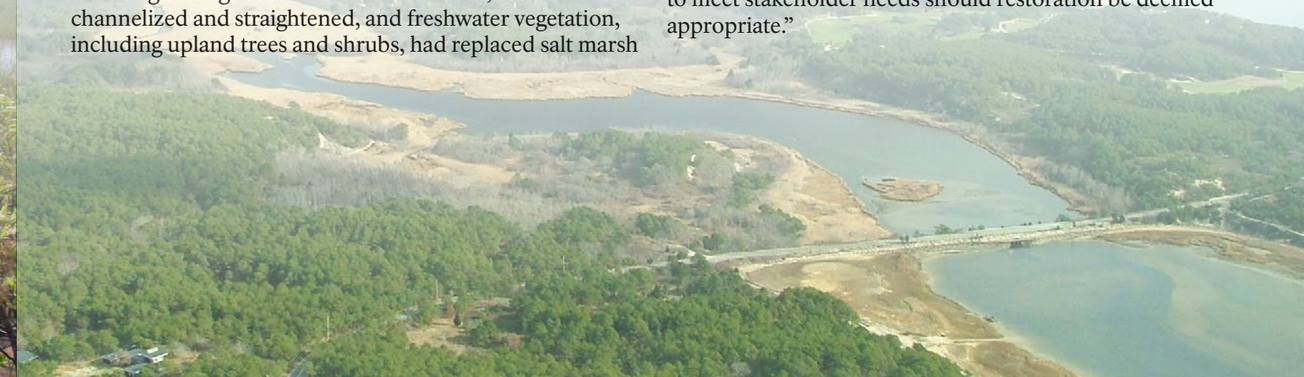
The DEIS/DEIR will present several alternatives for implementing tidal restoration and assess the impacts that could result from continuing current practices (the no-action alternative) or implementing the action alternatives. The NEPA and MEPA processes, along with public review and comment, will ultimately determine the preferred alternative for restoring the Herring River estuary.

Background

Historically, the Herring River estuary included about 1,100 acres of salt marsh, intertidal flats, and open-water habitats. In 1909, in an effort to control mosquitoes, the Massachusetts Legislature appropriated funds to the town of Wellfleet to construct a dike at the mouth of the Herring River. By the mid-1930s, mosquito ditches were dug throughout the former salt marsh, the river was channelized and straightened, and freshwater vegetation, including upland trees and shrubs, had replaced salt marsh species. These conditions allowed private development in the flood plain where it would not have been possible prior the diking and drainage of the estuary.

By the 1960s, tide gates designed to block upstream tidal flow deteriorated and rusted hinges kept the gates stuck in a partially open position. This resulted in increased tidal exchange, which promoted a limited recovery of some salt marsh vegetation and allowed shellfish to recolonize areas where they hadn't been seen in decades. But increased tidal exchange also increased risk of flooding of private properties and roads. After several years of controversy, the Commonwealth rebuilt the dike in 1974, but required the Town to partially open an adjustable sluice gate to approximate the modest level of tidal exchange that occurred prior to the repair. Because of continued concerns about flooding of low-lying properties and roads, this setting has remained in effect. The limited benefits observed when the tide gates were leaking have been largely reversed and water quality in the Herring River declined. In the 1980s, a combination of low levels of dissolved oxygen, low (acidic) pH, and high metal concentrations resulted in fish kills of river herring and American eel. In October 2003, the Herring River was listed as "impaired" under the federal Clean Water Act Section 303(d) for low pH and high metal concentrations.

Over the past several years, local, state, and federal partners and non-governmental organizations have expressed support for restoring the Herring River estuary. In August 2005, the town of Wellfleet and Cape Cod National Seashore formally agreed to cooperate in restoration of the Herring River by signing a Memorandum of Understanding (MOU) that established a "process and framework that will determine whether a restoration of the Herring River is feasible and subsequently to develop a conceptual plan of the restoration goals and objectives to meet stakeholder needs should restoration be deemed appropriate."



Purpose and Need

The Herring River's wetland resources and natural ecosystem functions have been severely altered and damaged by 100 years of diking and wetland drainage. Adverse ecological effects resulting from diking and salt marsh draining include:

- Lack of tidal inflow and outflow – tidal range restriction
- Plant community changes, including salt marsh habitat reduction and non-native, invasive species
- Elimination of salt water inputs and water quality degradation
- Sedimentation cessation and land subsidence
- Nuisance mosquito production
- Impediment to river herring migration

The purpose of this project is to restore self-sustaining coastal habitats in the 1,100-acre Herring River estuary in Wellfleet and Truro through restoration of the natural tidal range throughout as much of the Herring River flood plain as practicable. Because of development of low-lying parcels within the flood plain, tidal restoration objectives will be balanced with flood control to maximize tide range while flood proofing and ensuring flood protection of adjacent properties.

Specific objectives identified for the Herring River Restoration Project include:

- Re-establishing the natural tidal range, salinity distribution, and sedimentation patterns of the estuary.
- Protecting and enhancing shellfish resources within the river and in Wellfleet Bay.
- Restoring the connection with the marine environment to recover the estuary's functions as a nursery for marine animals and as a source of organic matter for near-shore waters.
- Removing impediments to fish passage to restore river herring and eel runs and improving fin-fishing opportunities.
- Restoring normal sediment accumulation on the wetland surface to allow marshes to accrete.
- Re-establishing natural control of mosquitoes by restoring tidal flushing, water quality, and predatory fish access.
- Restoring habitats that were once a focus of Native Americans and European settlers on outer Cape Cod.
- Avoiding and minimizing adverse impacts to low lying roads, and private property.
- Providing a long-term opportunity to educate the public about the relationship between salt marshes and tidal exchange.

Tidal Restoration Alternatives and Adaptive Management

The major construction element of the Herring River project is reconstruction of the Chequessett Neck Road Dike and installation of a much larger set of culverts to replace the existing 18-foot wide span. Hydrodynamic modeling has shown that a 165-foot wide culvert opening would restore natural estuarine conditions. The three alternatives developed for analysis in the DEIS are distinguished by the size of the vertical opening of adjustable sluice gates and the resulting tidal responses. An Adaptive Management Plan will be used to guide an incremental tidal restoration process where the sluice gates are opened slowly while tide elevations and other factors are monitored and evaluated.

These alternatives are intended to frame the "bookends" of restoring tidal exchange, with Alternative B representing the least amount of tidal restoration that still achieves the project objectives and Alternative D representing the maximum level of tidal exchange given the limitations of present day land use in the Herring River flood plain. Pursuing any of the action alternatives is not intended to imply with certainty that the exact stated conditions will be realized. Instead, they describe desired endpoints with the recognition that the culmination of incremental tidal restoration may result in a tide gate configuration and degree of tidal exchange at some intermediate point between the bracketed conditions described in the action alternatives. The actual long-term conditions that are achieved will depend on how the adaptive management process unfolds and will be based upon detailed monitoring, evaluation, and further public input.

Alternative A: No Action – Retain Existing Tidal Control Structure at Chequessett Neck.

Alternative A represents the no action alternative, under which the current tide control structure at Chequessett Neck Road would remain in place. Severe tidal restriction would continue and the estuary would not be restored.

Alternative B: New Tidal Control Structure at Chequessett Neck - No dike at Mill Creek.

If indicated through the adaptive management and monitoring process, Alternative B would result in a final tide gate configuration that limits maximum high tide elevations in the lower Herring River to approximately 4.7 feet* during bi-monthly spring tides and 6.0 feet* during a 100-year storm surge. Tides in upstream sub-basins would be lower because of natural tide attenuation. Hydrodynamic modeling shows that a vertical sluice gate opening of approximately three feet across a 165-foot wide culvert span would produce this tidal regime. The areal extent of tidal exchange and the depth and frequency of salt water inundation would be limited. Flood

proofing measures for the CYCC golf course and other low-lying properties would be required, and a secondary flood control dike at Mill Creek would not be constructed. Two options for mitigating impacts to the CYCC golf course would be considered: 1) raising the low-lying playable golf course areas a minimum of two feet above the projected high spring tide in Mill Creek, or 2) relocating low-lying golf holes to undeveloped upland owned by CYCC. A tide control gate at Pole Dike Creek might also be necessary.

Alternative C: Alternative C: New Tidal Control Structure at Chequessett Neck - Dike at Mill Creek that excludes tidal flow.

If indicated through the adaptive management and monitoring process, Alternative C would result in a final tide gate configuration that allows maximum high tide elevations in the lower Herring River of approximately 5.6 feet* during bi-monthly spring tides and 7.5 feet* during a 100-year storm surge. Tides in upstream sub-basins would be lower because of natural tide attenuation. Hydrodynamic modeling shows that a vertical sluice gate opening of approximately ten feet, completely open across a 165-foot wide culvert span would produce this tidal regime. The areal extent of tidal exchange and the depth and frequency of salt water inundation would be maximized and closely match natural, unrestricted tidal patterns. Flood impacts to sensitive properties in Mill Creek and other sub-basins would be mitigated with a secondary dike and tide exclusion structure at Mill Creek and potentially a tide exclusion gate at Pole Dike Creek. Excluding tides at these locations means that flood proofing measures for the CYCC golf course and other low-lying properties would be not required. A new Mill Creek Dike would require provisions to maintain freshwater drainage and would require long-term maintenance and oversight to ensure flood protection.

Alternative D: New Tidal Control Structure at Chequessett Neck - Dike at Mill Creek that partially restores tidal flow.

If indicated through the adaptive management and monitoring process, Alternative B would result in a final tide gate configuration that allows maximum high tide elevations in the lower Herring River of approximately 5.6 feet* during bi-monthly spring tides and 7.5 feet* during a 100-year storm surge. Tides in the other upstream sub-basins would be lower because of natural tide attenuation. Hydrodynamic modeling shows that a vertical sluice gate opening of approximately ten feet, completely open across a 165-foot wide culvert span would produce this tidal regime. The areal extent of tidal exchange and the depth and frequency of salt water inundation in all sub-basins except Mill Creek would be maximized and closely match natural, unrestricted tidal exchange. Similar to Alternative C, flood impacts to sensitive properties in Mill Creek and other sub-basins would need to be mitigated and a new dike at Mill Creek would be constructed. Unlike Alternative C, the Mill Creek dike would be designed and operated to partially restore, rather than exclude, tidal exchange. Like Alternative B, flood proofing measures for the CYCC golf course and other low-lying properties would be required. Two options for mitigating impacts to the CYCC golf course would be considered: 1) raising the low-lying playable golf areas a minimum of two feet above the projected high spring tide in Mill Creek, or 2) relocating low-lying golf holes to undeveloped upland owned by CYCC. A tide control gate at Pole Dike Creek might also be necessary.

**All tidal elevations cited are referenced to the North American Vertical Datum of 1988 (NAVD88), which in Wellfleet Harbor is approximately 0.3 feet above mean sea level and 5.2 feet above mean low water.*