

Orleans–Floating Wetlands Feasibility Study

Orleans, Massachusetts



Biohabitats is helping AECOM provide water quality and wastewater planning and engineering services to reduce excessive nitrogen discharges to the Town of Orleans’ ponds, estuaries and embayments. The first implementation of a “Hybrid” approach under the Cape Cod 208 Water Quality Plan, approved by USEPA and MassDEP, the project consists of conceptual and preliminary design to update the town’s 2011 Comprehensive Wastewater Management Plan to reflect its 2015 Consensus Plan (Water Quality Management Plan). The goal is to minimize the proposed sewered footprint (area of Town and number of properties to be sewered) to the greatest extent possible by maximizing the use of several of the non-traditional technologies: Coastal Habitat Restoration,

Aquaculture, Floating Constructed Wetlands, and Permeable Reactive Barriers.

The Project includes two areas for sewers: (1) about 280 parcels encompassing Downtown Orleans (100,000 gpd) to be treated at a new wastewater treatment facility and groundwater effluent disposal area; and (2) about 360 parcels within the Meetinghouse Pond sub-watershed (50,000 GPD), to be treated at a new satellite treatment facility and groundwater effluent disposal area. A variety of collection, treatment, and disposal system alternatives are being evaluated. The team is also evaluating septage handling, treatment and disposal requirements as much of the town will continue to rely on septic systems. The septage facility may be developed with sufficient capacity to handle regional needs of the lower Cape.

A feasibility study for installing and monitoring floating constructed wetlands helps ensure informed decision-making for reducing nitrogen levels in Cape Cod Bay.

The project also includes conceptual design for three non-traditional demonstration projects to be implemented in 2016 to determine the feasibility of full scale installation. Tasks include siting, engineering design, initial permitting, cost estimating and development of monitoring plans. The monitoring plans will be incorporated into an overall Adaptive Management Plan which will evaluate the impacts of the technologies on reducing nitrogen. The project team is working closely with stakeholders and regulators to obtain one of the first watershed permits granted by MassDEP.

Floating constructed wetlands are one of the non-traditional technologies being considered by the Town of Orleans, and AECOM has enlisted Biohabitats to determine the feasibility of installing and monitoring a series of floating constructed wetlands for

reducing nitrogen levels in the estuarine waters of Orleans.

Floating wetlands are an innovative ecological design tool, which take up nitrogen for growth, to remove nutrients from the water. The plant roots add oxygen to the water and provide habitat and food for aquatic organisms. The design and implementation of these innovative landscape/aquascape elements use natural wetland processes to help filter water pollution in water bodies and can inspire ecological stewardship through participatory learning when the public is engaged in their implementation.

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