



Hydrodynamic Evaluation of Tidal Flushing & Culvert Replacement Alternatives

Davis Road Salt Marshes, Orleans, Massachusetts

Two salt marshes off Davis Road in Orleans, Massachusetts, suffer from restricted tidal flow with Pleasant Bay caused by undersized culvert crossings. Tidal restrictions alter water levels, water chemistry, diminish sources of ocean nutrients, and reduce the flushing of pollutants out of these marshes. Removing restrictions and restoring tidal flow improves the natural conditions within the salt marshes by restoring the hydrologic conditions needed to support healthy salt marsh ecosystems.

The Horsley Witten Group, Inc. (HW) assisted the Massachusetts Coastal Zone Management (CZM) Wetlands Restoration Program to evaluate the tidal restrictions and provide recommendations for increasing tidal flow to the salt marshes. Field work included the analysis of water levels throughout the marsh area and the surveying of topographic features that may limit tidal flow. HW created and calibrated a hydrodynamic model to quantify the extent of the restrictions and evaluate potential restoration options. HW provided recommendations on potential culvert configurations based on cost and flushing effectiveness.



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