

Memorandum

To George Meservey, Director of Planning & Community Development
Michael Domenica, PE, Program Manager

CC Betsy Shreve, AICP, AECOM Project Director
Paula Winchell, AECOM
Sia Karplus, Science Wares, Inc.

Subject **Town of Orleans, MA
Water Quality and Wastewater Planning
Task Number 4.a.1 – Adaptive Management Plan
Technical Memorandum on Outline for Water Quality Monitoring and Modeling:
Consolidation and Comparison of Baseline Monitoring Data Sets**

Project Number 60476644

From Thomas Parece, P.E., AECOM Project Manager

Date 11/30/15

1. Background

- a. Purpose of Technical Memorandum on Consolidation and Comparison of Baseline Monitoring Data Sets (1 paragraph).

2. Introduction

- a. Describe existing datasets.
- b. Provide overview of process of assembling and comparing existing datasets.
- c. Definitions (all terms in the datasets).

3. Description of Data Consolidation Process

- a. Describe how data was consolidated.
- b. Provide consolidated database.
- c. List additional information that would be useful to database management and future data collection.

4. Characterize Existing Monitoring Stations

- a. Identify on a Map:
 - Town of Orleans monitoring stations.
 - Pleasant Bay Alliance monitoring stations.
 - Other monitoring stations.
- b. Identify locations of demonstration sites selected by Shellfish, Permeable Reactive Barrier and Floating Constructed Wetlands teams.
- c. Evaluate and describe whether existing monitoring stations are adequate to define baseline water quality conditions in demonstration locations.

5. Analysis: Reconcile Current Datasets with MEP Baseline

- a. Identify changes and inconsistencies as well as trends in baseline conditions.
- b. Present comparative analysis as MEP baseline annual average versus annual average of post-MEP monitoring results (with standard deviation, percent standard deviation).
- c. Review with School for Marine Science and Technology (SMAST) and document comments.

6. Findings/Recommendations: Recommend New Sampling Stations

- a. Recommend revised baseline conditions (if warranted).
- b. Recommend and locate additional sampling stations (if warranted).
- c. Recommend data collection needs (new data) associated with the demonstration projects to define current water quality conditions in ponds and estuaries with respect to nitrogen and phosphorus. Monitoring protocols will be listed such as locations, frequency of sampling, and water quality indicators (nitrogen species, dissolved oxygen, chlorophyll a, phaeophitin, pH, total organic carbon, and others) as specified in the Quality Assurance Program Plan (QAPP) from SMAST and the Center for Coastal Studies.
- d. Review with School for Marine Science and Technology (SMAST) and document comments.