

Memorandum

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Subject **Town of Orleans, MA
Water Quality and Wastewater Planning
Task Number 3.3 – NT Demonstration Projects
Technical Memorandum on Outline for Site Characterization and Evaluation for
Floating Constructed Wetlands**

Project Number 60476644

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

Date 11/30/15

1. Background

- a. Purpose of Site Characterization and Evaluation Technical Memorandum (1 paragraph).

2. Introduction

- a. Section 1 Introduction
 - (1) Describe Consensus Plan (1 paragraph). Appendix to include Consensus Plan documentation.
 - (2) Definitions (Define the site suitability parameters; Define Floating Constructed Wetlands (FCWs) and core design principals). Describe key features of the FCW that enable to provide the key functions of natural wetland system, but in fraction of the space.
 - (3) Provide overview of process of site identification by Town and Stakeholders and subsequent characterization and evaluation based on criteria agreed upon by Team and the Town.

b. Section 2 Site Identification

(1) Describe site identification criteria (we would be reporting the criteria that were used by Town and stakeholders to identify the sites proposed in consensus planning).

(2) Sites were reported in Consensus Plan and by team members, reviewed in field:

- Lonnie’s Pond
- Mill Pond
- Namequoit River
- Pah Wah Pond
- Pleasant Bay
- Pochet Neck
- Quanset Pond
- Town Cove
- Upper River

(3) Sites reviewed in greater detail as part of this next phase of work:

- Lonnie’s Pond
- Namequoit River
- Pah Wah Pond
- Pochet Neck
- Quanset Pond
- Upper River

3. Description of Proposed Sites

a. Introduce and define the parameters that will be described for each site (include explanation of why some parameters were not included because similar among sites, such as salinity, DO, chlorophyll, total N, particulate organic matter, pH and temperature):

- (1) Water flow (circulation, water draft) data;
- (2) Bathymetry;
- (3) Benthic Conditions (type of sediment);

- (4) Type and location of current uses (ie. boating, swimming, other);
 - (5) Abutter interests/potential conflicts;
 - (6) Acreage available within water bodies;
 - (7) Access points/easement requirements; and
 - (8) Land ownership.
- b. Provide a synopsis of existing conditions for each of the above parameters for each of the sites (Excel table summarizing data for each site, available maps, and 1 paragraph explanation for each site).

4. Enumerate Site Evaluation and Screening Criteria

- a. Site evaluation and screening criteria, with detail provided as to preferred conditions:
- (1) Site Suitability
 - Use Conflicts
 - Utility/Infrastructure Conflicts
 - Ease of Access
 - Construction Access
 - Transferable Results
 - Land Ownership
 - Depth of Surface Water
 - Benthic Conditions
 - Drainage/Watershed Area
 - Groundwater/Surface Water Flow Direction
 - (2) Project Evaluation
 - Long Term Viability (this factor will be evaluated in terms of long-term issues that may affect survival of each FCW unit – such was wave action, disturbance over multiple seasons by other activities, and/or other factors increasing maintenance issues).
 - Overall Likelihood of Monitoring Plan to Yield Quantified Results
 - (3) Other/Overriding Considerations
- b. Create a site evaluation matrix for FCW (ie. Excel table presenting matrix, and 1 paragraph).

5. Analysis: Evaluate and Rate Each Site based on Criteria

- a. Apply evaluation criteria to six sites. In applying each of the criteria to each of the sites, use a consistent three level rating system as follows.
 - (1) Good = 1 point
 - (2) Neutral = 0 points
 - (3) Poor = -1 point
- b. Assign an overall rating to each site based on evaluation findings and rank sites.
- c. Assign weights to the individual criteria based on consensus with the Team and Town and re-rate the sites evaluated in Task 5.a based on the weightings. The sites can then be ranked to reflect weighted criteria.
- d. Present results of each site ranking (weighted and un-weighted).

6. Findings/Recommendations: Summarize Site Selection Matrix/Site Screening Results

- a. Prepare a prioritized list of sites for FCW (Table with ranking and 2 paragraph description of findings and recommendations). Discuss the implications of the weighting on the list of sites.
- b. Discuss options for combining FCW sites with other non-traditional technologies (combined aquaculture/FCW, etc.).