

Memorandum

To George Meservey, Director of Planning & Community Development
Michael Domenica, PE, Program Manager
Betsy Shreve, AICP, AECOM Project Director

CC James Petras, AECOM
Michael Curran, AECOM
Paula Winchell, AECOM

Subject **Town of Orleans, MA
Water Quality and Wastewater Planning
Task Number 1.c. – Facilities Preliminary Design
Technical Memorandum Outline on Collection System (GS, LPS, VS and
STEP/STEG)**

Project Number 60476644

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

Date 12/19/15

1. Background

- a. Purpose of Collection System Technology and Evaluation Technical Memorandum (1 paragraph).

2. Introduction

- a. Describe Consensus Plan (1 paragraph). Appendix to include Consensus Plan documentation.
- b. Definitions (Define the technologies).
 - Gravity Sewers(GS)
 - Low Pressure Sewers (LPS)
 - Vacuum Sewers (VS)
 - Septic Tank Effluent Pumping (STEP)
 - Septic Tank Effluent Gravity (STEG)
- c. Design Criteria – Present the design criteria (i.e. minimum pipe sizes and slopes. materials of construction, trench depth and width, private property scope of work, restoration, typical production rates) that will be used as part of the basis of the technologies evaluations.

3. Enumerate Site Evaluation and Screening Criteria

- a. Identify and define technology evaluation and screening criteria for the proposed Collection Systems (GS, LPS, VS, STEP, and STEG), such as:
- (1) Site Suitability
 - Land Ownership
 - Constructability (Method of Installation)
 - (2) Environmental Considerations
 - Permittability
 - Extent of Dewatering
 - Sustainability
 - (3) Financial Considerations
 - Costs, Construction
 - Costs, Operation
 - (4) Maintenance Considerations
 - Level of Maintenance, Homeowner
 - Level of Maintenance, Town
 - (5) Other Considerations
 - Reliability
 - Ability to Accommodate Expansion
 - Area of Disturbance
 - Duration/Schedule
 - Aesthetics
- b. Create a technology evaluation matrix for the proposed Collection Systems (GS, LPS, VS, STEP, and STEG) in the proposed Downtown Area and Meetinghouse Pond Area, (ie. Excel table presenting matrix, and 1 paragraph explanation).

4. Analysis: Evaluate and Rate Each Technology based on Criteria

- a. Apply evaluation criteria to five technologies. In applying each of the criteria to each of the technologies, 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 technology based on evaluation findings and rank the technologies.
 - c. Assign weights to the individual criteria based on consensus with the Team and Town and re-rate the technologies evaluated in Task 5.a based on the weightings. The technologies can then be ranked to reflect weighted criteria.
 - d. Present results of each technology ranking (weighted and un-weighted).

5. Findings/Recommendations: Summarize Technology Selection Matrix/Screening Results

- a. Prepare a prioritized Collection Systems (GS, LPS, VS, STEP, and STEG) list for the proposed Downtown Area and Meetinghouse Pond Area (Table with ranking and 2 paragraph description of findings and recommendations). Discuss the implications of the weighting on the list of technologies.

6. System Layout and Cost Estimates

- a. Prepare a preliminary system layout (plan and profiles, as applicable) for the two highest rated technologies.
- b. Prepare cost estimates for each of the preliminary system layouts, as applicable.
 - Project Cost
 - Annual Operation and Maintenance Cost
 - Replacement Cost
 - Annual Monitoring Cost