



City of Portsmouth, New Hampshire
Wastewater Master Plan

Technical Memorandum
TM 1

DEFINE STUDY PARAMETERS AND DEVELOP PROJECT BOUNDARIES

Tasks:	1.1 through 1.4	
Status:	Submitted to EPA and NHDES	10/18/07

Introduction and Purpose

This Technical Memorandum (TM) was prepared to satisfy the requirements of Task 1 as set forth in the Work Plan for the City of Portsmouth, New Hampshire Wastewater Master Plan (WMP). This TM reviews the study parameters and project boundaries to be utilized in development of the WMP. Each task associated with Task 1 of the Work Plan is addressed below.

1.1. Define WMP parameters.

The Study Area has been divided into several categories, and entities associated with each category have been identified as shown in Figure 1 and summarized as follows:

Sanitary Sewer Service

Surrounding entities, which may require sanitary sewer service, have been identified as follows:

- Newcastle
- Greenland
- Rye
- Pease Development Authority
- North Hampton
- Stratham
- Newington

Only a small portion of Greenland is currently served and this by an agreement with the property owner in Greenland and not via an inter-municipal agreement between Greenland and Portsmouth.

Rye has an inter-municipal agreement with Portsmouth for sewer service.

Based on past studies, the Route 1 corridor in North Hampton may require sewerage to the Hampton border at some time in the future.

Biosolids Handling



Entities which may desire Portsmouth to provide biosolids handling have been identified as all 44 communities in the Seacoast Regional Wastewater Management Study, as well as select wastewater treatment facilities in Maine, including Kittery, York and South Berwick.

Fats, Oils and Grease

Entities which may desire Portsmouth to provide fats, oils and grease (FOG) treatment have also been identified as all 44 communities in the Seacoast Regional Wastewater Management Study.

DES funding opportunities for brown grease treatment facilities have been developed. The program provides a maximum of 50% grant funds for the construction of brown grease treatment systems based on the following scale:

- A 10% grant for the host community handling its own brown grease.
- A 2% grant for each additional community contracted by the host community.

Portsmouth currently is eligible for a base 30% grant for wastewater related facilities. Therefore, with five additional communities identified, Portsmouth could reach the 50% grant maximum (30% base + 10% host + 2%x5).

Septage

Entities which may desire Portsmouth to provide septage treatment have also been identified as all 44 communities in the Seacoast Regional Wastewater Management Study. As with brown grease, DES also offers up to 50% funding for septage related facilities, based on the same formula as brown grease treatment. Therefore, with five additional communities contracted, Portsmouth would maximize the 50% grant.

1.1.1. Identify alternative wastewater treatment facility (WWTF) sites.

Buildable areas and potential sites for a new WWTF have been identified. Assuming a minimum lot size of 10 acres will be required for a new WWTF, Figure 2, attached, illustrates buildable areas within the City.

Figure 2 was developed from available Geographic Information System (GIS) overlays. This figure is based on parcels, which are 10 acres or larger of buildable land, or when combined when other adjacent parcels, have 10 acres or more of buildable land. The remaining buildable lots will be evaluated. Non-buildable areas are those that include one or more of the following:

- Wetlands
- Conservation land
- Parks
- Cemeteries
- 50' setback from open water
- Archaeological sites, and
- Protected wildlife area



Figure 2 shows potential WWTF candidate sites A through F. Candidate sites will be identified based on a review and of the following criteria:

- Candidate sites are undeveloped, under developed, or have potential for redevelopment.
- Size of individual lots or contiguous undeveloped lots are 10 acres or greater in size.
- The candidate site has no historic significance.
- Candidate site is owned by the City, or the City may have the ability to acquire the parcel(s).
- Economic impacts may be minimal to the surrounding area.
- Zoning would allow construction of a WWTF.
- Neighborhood impacts / aesthetics are not a significant concern.
- The candidate site is within a reasonable distance from an existing outfall location (Pease or Peirce Island)
- Transportation access to the candidate site is primarily via roadways which currently handle truck traffic
- Odor control needs would be minimal based on proximity to residential areas.

Matrices to refine the selection of potential candidate sites will be developed under future tasks of this WMP.

1.1.2. Identify regional communities that may be included in the Study Area.

Those regional entities that will be included in the study area have been presented in Section 1.1.1, above.

1.2. Define planning horizons for the WMP.

Planning horizons have been identified as 20 years for the WWTF and 50 years for the collection system infrastructure. Additionally, the WWTF site will be evaluated for sustaining flow based expansions for 50 years.

Growth and build-out scenarios for current baseline conditions, 20-year forecasts, 50-year forecast and build-out conditions will be developed as part of the Flow and Load Forecasting effort under Task 3 of the WMP.

Build-out scenarios will be adhered to, and if the 50-year growth projection is greater than the build-out projection, than the build-out projection will be utilized for 50-year considerations.

1.3. Define sustainability goals.



Sustainability requirements for the project will be as follows:

- Systems must be expandable as set forth in the planning horizons.
- LEED goals will be used for office areas.
- For operational areas, LEED goals will be considered, but “functionality and durability” must take precedence.
- Systems will be designed to allow reuse and recycling.
- The overall carbon footprint will be considered
- Costs to achieve sustainability must be acknowledged and the design basis must be validated.
- The utilization of electrical load shedding, utilizing waste heat, water reuse and other sustainable approaches will be evaluated, where appropriate.

P:\Portsmouth NH\2070308 WWTF-LTCP\030 Memos-Fax-Email\Technical Memoranda\TM 1 A.doc