

## **APPENDIX A4 WATER AND SEWER SERVICE**

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(October 7, 2002)

Within the built-up area of the Sanford/Springvale, public water and sewer service is widely available. Outside of this area, water supply and sewage disposal is generally an individual responsibility based on individual wells and septic systems. This chapter provides an overview of the current situation with respect to water and sewer service.

### **A. Public Water Service**

The Sanford Water District provides water supply within the Town of Sanford. The Water District was formed as a quasi-municipal water district in 1931 by an act of the legislature to take over the existing privately-owned Sanford Water Company and the Springvale Aqueduct Company. The District operates independently of the Town and is governed by its own elected Board of Trustees.

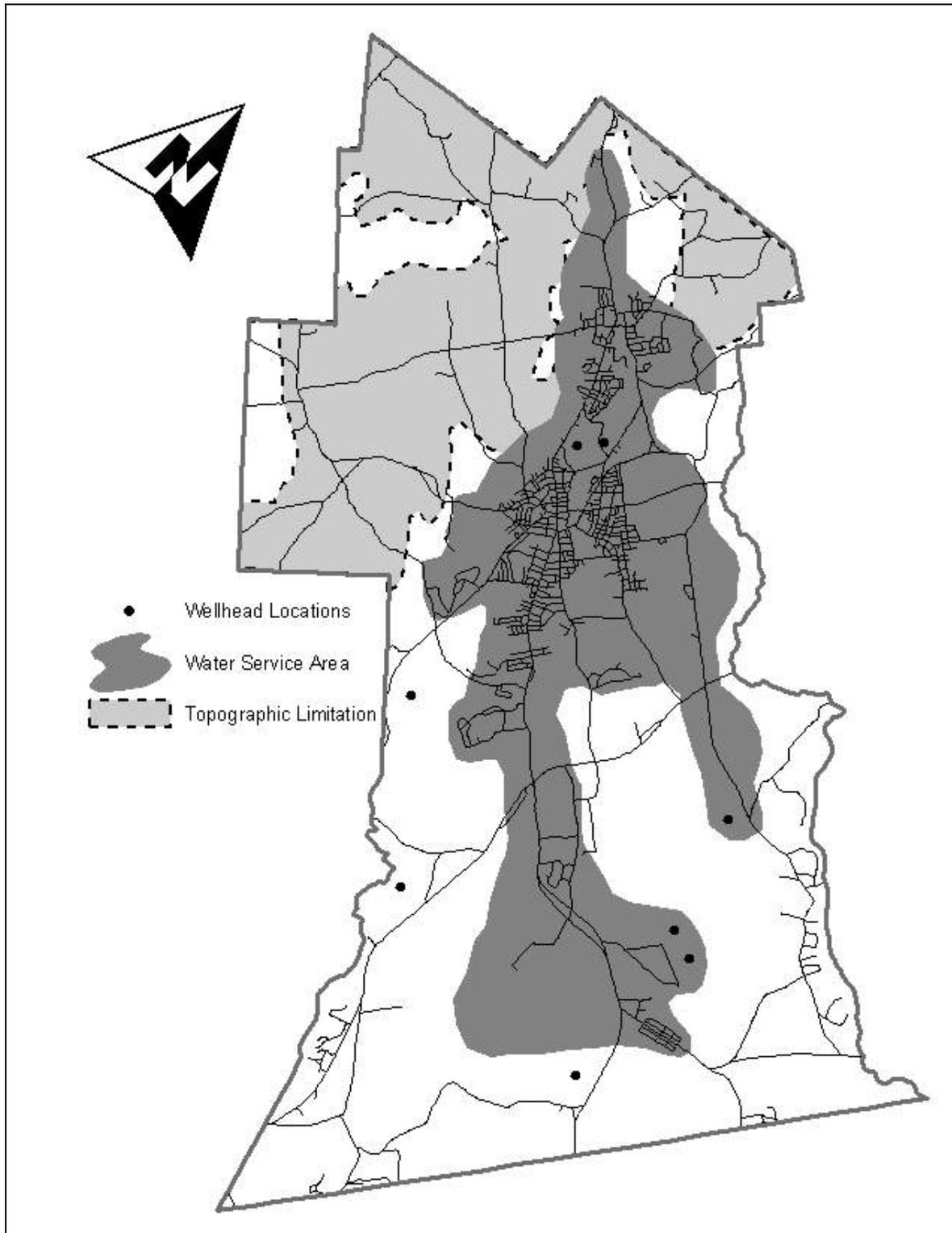
#### **1. History of the System**

The Springvale system was originally supplied by Littlefield Pond located in the northwest corner of the town. The yield of the pond was insufficient in drought years, and additional water was supplied by an intake from the Mousam River and from a connection to the Sanford system. In 1931, the Sanford and Springvale systems were tied together and now operate as a single system. While Littlefield Pond is no longer a source of supply, the District has maintained a line to the pond, allowing it to be available as a backup supply in the case of emergencies.

The Sanford system was originally supplied by a field of 48 wells located behind the District's offices on River Street (Figure A4-1). This well field provided an adequate supply for the system until the mid-1960s.

During the early 1960s, a New England-wide drought, coupled with expanded demand as a result of industrial growth in South Sanford, resulted in supply shortages. To expand its supply, the District established four new wells in the late 1960s and early 1970s. The "Cyro" well and pumping station located near the industrial park in South Sanford was opened in 1965 and followed quickly by the New Dam station (1967), Cobb #1 (1967), and Cobb #2 (1971). The development of the New Dam facility resulted in a large area being provided with public water service for the first time (Figure A4-1).

**Figure A4-1. Sanford/Springvale Water Service Areas**



## **2. Water Supply**

The system of the main well field plus the seven newer wells provides water service to the majority of the built-up areas of Sanford and Springvale (Figure A4-1). The system has a maximum capacity of safely yielding approximately 4.8 million gallons per day (MGD). Peak demand on the system reaches 4.0 MGD for a few days each year.

In the early 1990s, changes in federal and state drinking water laws required that a section of the main well field be removed from water production. Recent advances in microfiltration may make water production from this site feasible again, although supply increases elsewhere and the cost of installing this filtration technology make the site more attractive as a back-up for future water production needs. The loss of a section of the wellfield resulted in a production loss of approximately 0.3 MGD.

This loss of water production was offset by the creation of an additional 1.3 MGD of supply at two new gravel-packed well locations. The Old Mill Road site produces approximately 0.5 MGD and includes a pump station and a chemical feed system. The Country Club Road #2 site produces approximately 0.8 MGD and includes a pump station, chemical feed system, and back-up generator.

Demand on the system has been steady for the last few years. Large users (mostly nonresidential customers) use approximately 40% of the water, and small users (mostly residential) use the remaining 60%. This ratio has been slowly increasing towards the residential users, which is part of a gradual trend that has been occurring for the last few decades. The District believes that the water supply is adequate to meet any growth in demand unless a high water consuming use were to move to the community. The excess supply provides the District with a cushion should it experience problems with any of its well sources.

If the District needs to expand its supply beyond current levels, it will need to investigate additional sources. The potential for developing additional water becomes more difficult as new regulations designed to ensure adequate water quality are adopted. New water supplies may be limited, requiring the District to investigate possible water sources including a groundwater site on Sam Allen Road and surface water sources such as the Mousam Lake, Mousam River, and the Saco River.

## **3. Public Water Service Area**

The District's system is essentially a gravity-fed system supported by three standpipes. In addition, there is a small pressurized line above the District's standpipe on Hanson's Ridge, which provides service to homes in that area. The existing system provides pressure to the service area (Figure A4-1) of between 35 psi (near the Shapleigh town line) to about 130 psi in the southern area of Sanford. The District prefers not to service areas where the pressure is below 40 psi. This limits

service to areas with elevations below approximately 430 feet above sea level. There is a small area in the northeastern part of the Town (Beaver Hill-Littlefield Pond) and significant areas in the northwestern part of the Town (Hanson's Ridge, Deering Ridge, Mount Hope) that are above the elevation serviceable by the existing gravity system.

#### **4. Water Quality**

The District is dependent on groundwater as its sole source of supply. In the early 1990s, the District and the Town worked to create a Wellhead Overlay Zone; a two-tiered protection program designed to protect the wellheads from pollution. The boundaries of this protection program are defined by the amount of time it takes a drop of water to travel through the ground to the wellhead. Each wellhead is surrounded by an 'A Zone' that severely limits subsurface waste disposal (i.e. septic systems) within a 200-day travel time to the wellhead. The 'B Zone' is much larger and less restrictive; it only allows the District to comment on development projects within a 1,500-day travel time to the wellhead.

The District's water quality is sound. The District has recently implemented a lead/copper rule that adds hydroxide to decrease slightly the acidity of all pumped waters. The District is considering treating iron and manganese in the future more because it is an operational nuisance (requiring some water mains to be periodically flushed) than a health concern.

#### **5. Water Supply Issues and Implications**

- X The District currently relies on land ownership and the Wellhead Protection Program to protect the quality of groundwater in the vicinity of its wells. The recharge area for the wells typically extends significantly beyond the land owned by the District. This creates potential conflicts over the use of land in these areas.
- X Federal and State water supply standards rendered the main well field inadequate for drinking water consumption. The loss of water supply from this well field has been offset by new wells elsewhere in town. Advances in microfiltration may allow this well field to come back online.
- X Residential demand for water is increasing slightly. Commercial demand for water is expected to decrease as several large water users are cutting back their operations or relocating their business altogether.

### **B. Public Sewer Service**

The Sanford Sewerage District provides public sewer service and sewage treatment facilities within the Town of Sanford. The District was created in 1947 by an act of

the legislature to “provide, construct, and maintain and operate those systems of sewerage and sewerage disposal, and to lay, make, and maintain such common sewers as the board of trustees may from time to time deem necessary for the health, welfare, comfort and convenience of the inhabitants of the Town of Sanford.” The District took over operation of the sewer system from the Town. The District operates independently of the Town and is governed by its own elected Board of Trustees.

## **1. Capacity of the System**

The Sewerage District operates a system consisting of a sewage treatment plant, interceptor sewers, local sewers, and thirteen pumping stations.

The sewage treatment plant is located on the east side of the Mousam River at the bend in the River (Figure A4-2). The plant provides advanced treatment of the sewage. The treated effluent is discharged from the plant into the Mousam River. The treatment plant has the capacity to treat more than 8.0 million gallons per day (MGD), but characteristics of the Mousam River (which receives the treated effluent) dictate that plant capacity rarely surpasses 4.4 MGD. During summer months, when river flow is low, the treatment plant is limited to 3.5 MGD. Approximately 2.7 MGD flow into the system on an average day, although during rain events this can increase to more than 5.0 MGD. There is a system of lagoons to hold the excess sewerage until the treatment plant can process the waste.

Within older portions of the town, some of the system consists of combined sewers which carry both sewage and stormwater. This results in the overboard discharge of untreated flows during wet periods through a series of combined sewer overflows (CSOs) and bypasses at pumping stations. The District has been involved in an ongoing program of stormwater separation in conjunction with the Town by removing stormwater catch basins from the sanitary sewer system. Currently, only 50 of a one-time 250 catch basins remain connected to the sanitary sewer system. These are being replaced at the rate of approximately 10 per year. In addition, the District has undertaken a program of sewer rehabilitation/replacement to reduce the amount of infiltration into the system.

## **2. Sewer Service Area**

The sewer system services most of the built-up portion of Sanford, including the South Sanford industrial area (Figure A4-2). The District operates as a gravity system except for the Goodall Brook and Great Works drainage basins and the South Sanford area. The upstream portion of the system functions as two branches that serve either side of the Mousam River. These two branches join together in the downtown area and continue as a single gravity system downstream to the main pump station where it is pumped across the river to the treatment plant. The sewage collected in the Goodall Brook and Great Works drainage basins goes by gravity to a series of

pump stations and then is pumped into the main gravity system. In South Sanford, a system of small pump stations has been developed to allow individual projects and areas to pump their sewerage back into the gravity system which terminates around Cyro Road.

At the present time, the District's sewerage system services primarily the lower elevations of the Mousam River watershed. Two factors function to constrain the potential expansion of the sewer service area:

§ The built-up portions of Sanford and Springvale sit in the Mousam River Valley. Much of the area surrounding this built-up area is undeveloped and is theoretically serviceable by gravity sewer connections into the existing system. However, the presence of significant amounts of ledge close to the surface of the ground in these areas and the presence of numerous small streams make the extension of public sewers costly. In addition, the existing gravity system consists of small sewers at its extremities in the older, built-up areas of Springvale and Sanford. This creates a potential constraint to sewer extensions.

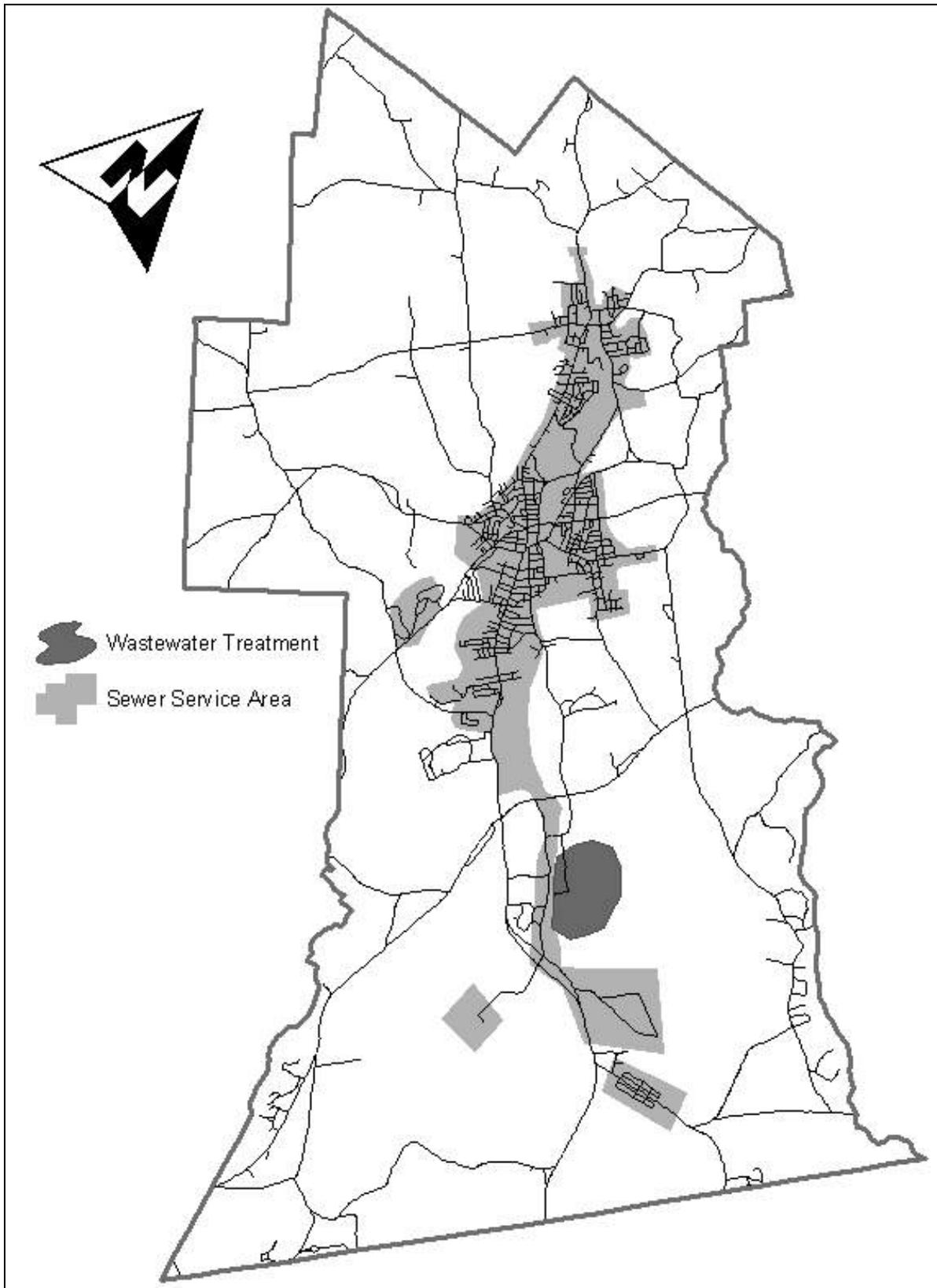
§ Sewering of new users outside of the Mousam River watershed requires that the sewage be pumped into the main gravity system. Existing pump stations in the Goodall Brook/Great Works River watershed make expansion of the sewer system feasible in the area between the North Berwick Road and Route 202. Sewering of the area on the westerly side of Route 109 in the vicinity of Curtis Lake and Fishing Pond will require the construction of a pumping station to lift the sewage back into the gravity system. Similarly, much of the South Sanford area including the industrial park, airport, and nearby residential areas cannot be serviced by gravity except for a small area on the north side of the airport.

There are several areas in which the extension of public sewer is generally feasible, most notably an area immediately west of the Sanford urban center and fringe areas around Sanford and Springvale. It should be noted that expansion into other areas is technically feasible either by gravity or through construction of pump stations, although costs may be significant. The District currently requires that developers pay the entire cost of sewer extensions and road system upgrades necessary to service new developments. The District also has a program for assessing the costs of petitioned sewer extensions in built-up areas against property owners benefitting from the improvements.

### **3. Sewer Issues and Implications**

X There are still a number of Combined Sewer Overflows (CSOs) that, during large rain events, occasionally allow untreated sewer to flow into the Town's water bodies. These CSOs are currently being eliminated under the CSO Master Plan.

**Figure A4-2. Sanford Sewer District**



- X While the District and the Town maintain communication on planned developments and the District participates in development reviews, expansions of the system currently result from individual development projects or District improvements. This could result in a haphazard system with a large number of small pump stations and force mains which become an operational problem. The District and the Town should work toward identifying potential expansion areas, development master sewer plans for these areas, and establishing a program for financing the needed improvements which may involve impact fees or similar mechanisms which involve sharing the cost of the improvement among the property owners benefitting from the project.
  
- X Low seasonal flow rates in the treatment plant's receiving waters (the Mousam River) create a treatment issue. While the treatment plant can handle 4.4 million gallons per day, during the summer months, the receiving waters can only handle a maximum of 3.48 MGD. The Sewer District is looking into tertiary treatment so that it would be able to discharge more than 3.48MGD during the summer months.