A Appendix A: Executive Summary

Wastewater Treatment Options for Rural Towns

Achieving Smaller Lot Sizes for Affordable Housing & Preserving Open Space

INTRODUCTION

The challenge faced by rural towns trying to promote affordable housing is to figure out ways to encourage residential development at higher densities than typical for areas without public sewage treatment systems, in order to create opportunities for affordable housing and preserve open space.

This report summarizes the following:

1) Wastewater treatment options
2) Regulatory & Permitting requirements for these options
3) Relative costs of these options

For a copy of the full 20 page report by Concord Square Planning & Development call us or visit our website www.nwctplanning.org. The appendices and references provide a wealth of additional information from many sources on these topics.

WASTEWATER TREATMENT OPTIONS

1) Individual Septic Systems
   It is possible to achieve smaller lot sizes (for example up to 6 units/acre) and preserve open space with each unit on its own septic system IF the site has a sufficient area of good soils for accommodating the necessary number of traditional septic systems. This option is often the least expensive and least time consuming to gain permitting approval.
   - *Examples: Myfield Development, Washington, CT and IHZ Example Concept Plan for 116 Kent Rd., Cornwall (see page 16 of full report)*

2) Shared Systems –one building with multiple units sharing one septic system (for example, one apartment building)

3) Community Systems- multiple separate buildings share a septic system
   - *Examples: The Riverview in Newtown, CT and Partridge Place, MA (see page 16 of full report)*

If a site has soils that cannot accommodate a traditional septic system approach, innovative or alternative systems may be necessary, such as:

- Community Drainfields
- Soil Treatment Mounds

- Constructed Wetland System
- Sand Filter System
- Aerobic Tanks and Package Plants

These options are generally more expensive and will take more time to be permitted by DEP. Therefore they are unlikely to be feasible options for affordable types of housing. For a description of each of these, please see Appendix 2: "Sewerage Treatment Options".

REGULATIONS AFFECTING WASTEWATER TREATMENT OPTIONS IN CT

In summary, due to the cost and time consuming nature of gaining permitting approval from the Department of Environmental Protection (DEP), a development which includes some lower cost housing options will want to stay out of DEPs jurisdiction. In other words, developments that include affordable housing options will likely want to be 33 bedrooms or less (approximately 16 units maximum).

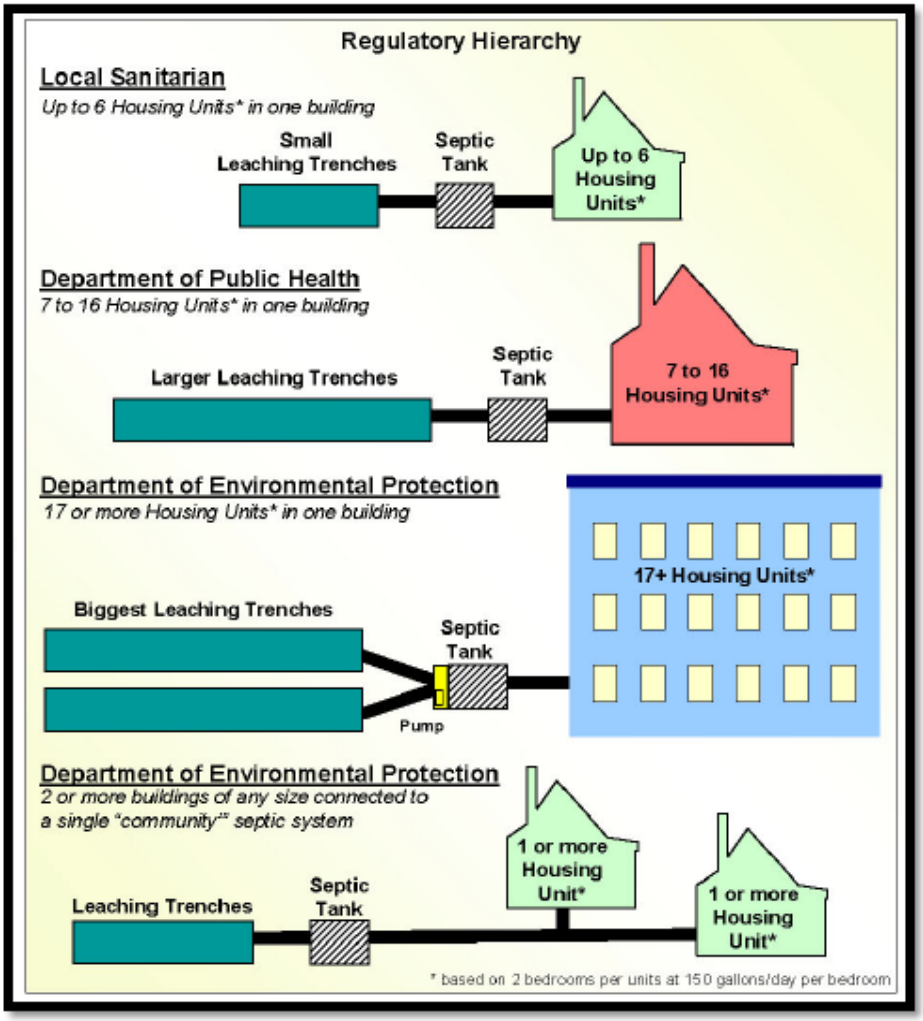

Figure 3: Regulatory hierarchy for wastewater disposal systems in Connecticut.
Fuss & O'Neill, Inc. 2009

RELATIVE COSTS OF THESE OPTIONS

Table 1: Estimated Costs of On-Site Wastewater Treatment Systems		
Type of System[1]	*Estimated Cost Per Housing Unit*[2]	*Comments*
Individual system such as for a single family detached house	$15,000 – $25,000	Includes design and installation. If located in suitable soils with adequate depth to groundwater or ledge to avoid mounded system. (Local approval)
Shared system with single tank and field with discharge between 2,000 and 5,000 gpd, such as for a ten unit townhouse building	$20,000 – $40,000	Includes surveying, engineering design, permitting, construction, and inspection. (DPH approval)
Multiple shared systems with discharge between 2,000 and 5,000 gpd, such as for a project with six duplex homes where each duplex shares a single system	$20,000 – $40,000	Includes surveying, engineering design, permitting, construction, and inspection. (Local approval, although may be referred to DPH for review and approval)
System with innovative or alternative components[3], whether for individual system or shared system	$32,000 – $55,000	Includes surveying, engineering design (PE required), permitting, construction, and inspection. (DEP approval regardless of discharge volume)
Community system with total discharge over 5,000 gpd, such as for a development with several townhouses totaling 17 or more two bedroom units	$30,000 – $60,000 plus annual costs for operation, sampling, testing, and maintenance.	Includes surveying, engineering design (PE required), permitting, construction, and inspection. (DEP approval)

1: Jurisdiction is based on wastewater discharge volumes, which is based on 150 gpd per bedroom; developments can be designed with a mixture of unit sizes provided the total number of bedrooms does not exceed the volume threshold for the jurisdictional agency desired (i.e. 13 bedrooms for a local health department, or 33 bedrooms for DPH). For the purposes of this table, townhouse (including duplex) units are assumed to have two bedrooms each.

2. Per unit costs have wide ranges since there are too many variables involved in the actual cost of any system to provide a narrower range. These estimates were provided by Fuss & O'Neill and are based on their experience with planning, designing, and permitting wastewater treatment systems.

3. Innovative and alternative wastewater treatment systems use specific and often proprietary components, usually in the leaching portion of the system, to better treat the wastewater or reduce the size of the leach field. At present, approval of alternative treatment technologies for small scale new construction is generally difficult to obtain. Such systems are generally most cost effective for large wastewater disposal system projects with greater than 5,000 gallons per day discharge.

CONCLUSION

Rural towns in Connecticut have a difficult task in promoting the creation of affordable housing by the private sector due in part to the high cost of land and lack of public sewer systems. Incentive Housing Zones provide an opportunity to encourage private landowners to build developments that include affordable housing. A systematic process, as described in the full report, can be used to identify suitable sites for Incentive Housing Zones.