Connecticut Nonpoint Source Management Program Plan

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Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Connecticut Department of Energy & Environmental Protection

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4.1.4 Subsurface Sewage Disposal Systems

Background

Approximately 40 percent of Connecticut's population – over 1 million people – relies on subsurface sewage disposal systems for wastewater disposal. These systems, which are typically conventional septic systems, are primarily used in rural and low-density suburban areas (e.g., outside of areas served by sanitary sewers – see **Figure 4-3**), and generally serve individual homes, small residential communities, and commercial buildings. The typical septic system has four main components: a pipe from the home, a septic tank, a leaching system, and the soil. Microbes in the soil digest or remove most contaminants from wastewater before it intercepts ground water.

Common Causes of Septic System Failure

Several factors can contribute to failure or malfunction of a subsurface sewage disposal system:

- Age and design of system
- Lack of maintenance
- User habits
- Improper siting or installation
- High loading rate or uneven effluent distribution
- Lack of a mature biomat

Although decentralized systems cause a disproportionately smaller percent of water quality impairments than their public sewer counterparts, inadequate or failed subsurface sewage disposal systems represent a significant threat to ground water and surface waters in environmentally sensitive areas resulting from loadings of pathogens, nutrients, and other pollutants.

In Connecticut, subsurface systems are regulated by local health departments, CT DEEP, or the Connecticut Department of Public Health (CT DPH) depending on the design flow capacity and the type of treatment and disposal system. Unlike neighboring New England States (i.e., Massachusetts and Rhode Island), Connecticut does not currently require inspections and upgrades of subsurface sewage disposal systems when properties are sold.

Jurisdiction of on-site sewage disposal systems for design flows of 5,000 gallons per day and less lies with State and Local Health Departments, and is regulated by the Public Health Code (PHC) Section 19-13-B103 and the associated Technical Standards. Conventional systems with design flows less than 2,000 gallons per day are regulated by the local Health Department. Conventional systems with design flows greater than 2,000 gallons per day but less than 5,000 gallons per day are regulated by the Connecticut Department of Public Health Environmental Engineering – Subsurface Sewage Program (CT DPH).

The CT DEEP Subsurface Sewage Disposal Program regulates the following types of subsurface systems under both a general permit for existing facilities (as of May 2012 – the issuance date of the general permit) and individual permits for new facilities:

- Conventional systems with design flows greater than 5,000 gallons per day, including sites where multiple smaller systems on a single "lot" have a combined flow greater than 5,000 gallons per day
- Community sewerage systems (i.e., one subsurface sewage disposal system serving two or more residential buildings, regardless of system size)

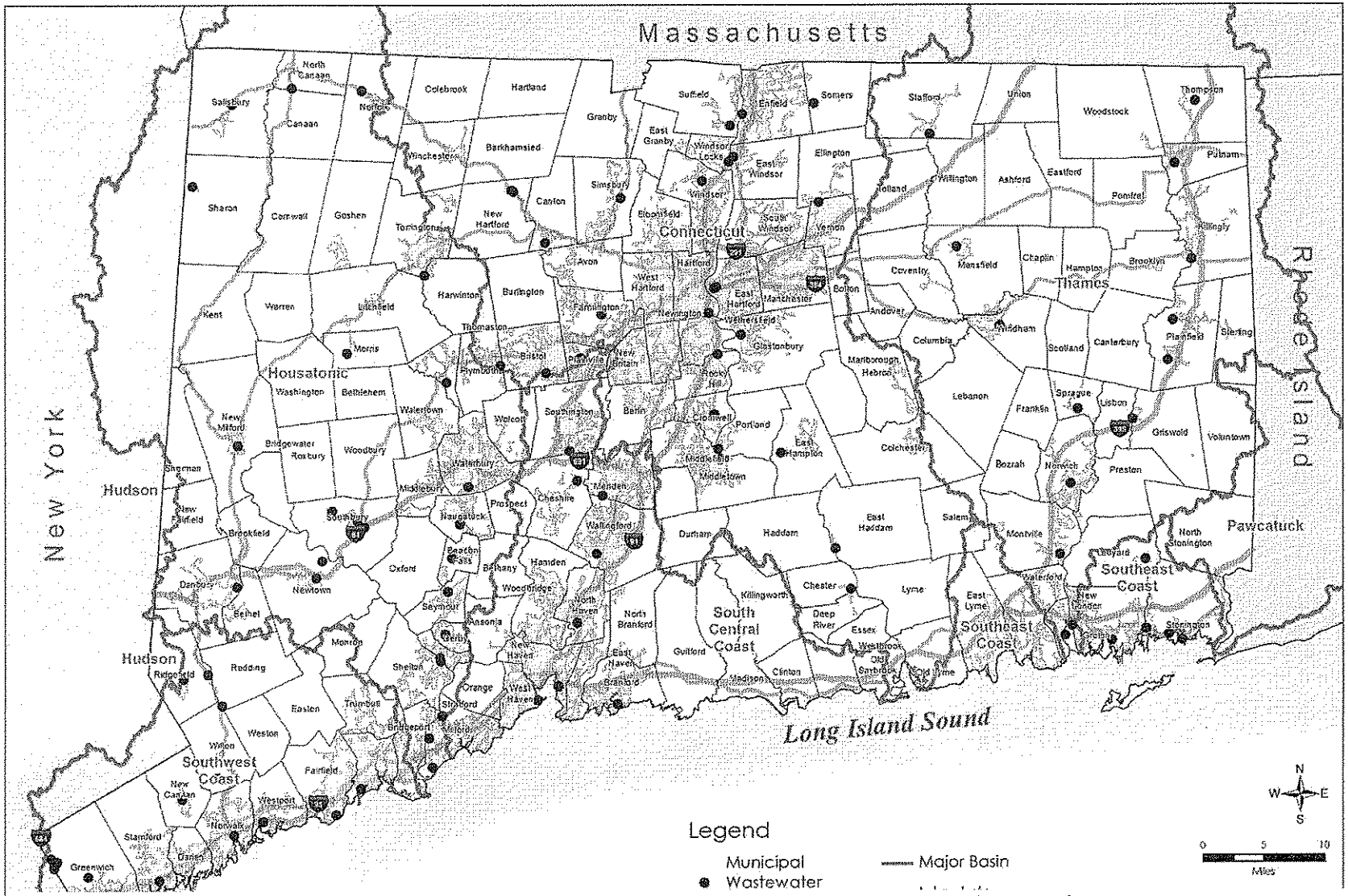

Figure 4-3. Sewer Service Areas in Connecticut. (Areas in white are served by subsurface sewage disposal systems.)

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- Any system utilizing alternative or advanced treatment, regardless of size.

Technical standards for subsurface sewage disposal systems in Connecticut have been in place since the early 1980s. CT DEEP design standards for larger systems were last revised in 2006, while the CT DPH design manual for smaller subsurface disposal systems was published in 1998. The Connecticut Public Health Code subsurface sewage disposal system regulations and technical standards are periodically updated, with the latest revisions occurring in 2011.

The CT DPH certifies, licenses, and regulates designers and installers of subsurface systems and also provides assistance to local health officials and updates training providers with periodic newsletters.

There has been significant attention nationally and in Connecticut on nutrient loading from septic systems due to ground water contamination and eutrophication of inland and near-shore coastal waters. In Connecticut, Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), addresses management measures for septic systems that deal with nitrogen reduction:

- **New Systems:** Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from ground water, new regulations require the installation of Onsite Disposal Systems (OSDS) that reduce total nitrogen loadings by 50 percent to ground water that is closely hydrologically connected to surface water.

- **Existing Systems:** Consider replacing or upgrading OSDS to treat wastewater so that total nitrogen loadings in the effluent are reduced by 50 percent. This provision applies only: (a) where conditions indicate that nitrogen-limited surface waters may be adversely affected by significant ground water nitrogen loadings from OSDS, and (b) where nitrogen loadings from OSDS are delivered to ground water that is closely hydrologically connected to surface water.

Many Connecticut communities are faced with wastewater management challenges in existing developed areas with old, undersized, or malfunctioning septic systems and in newer developments that need high-performance treatment facilities to protect ground water and nearby lakes, rivers, streams, wetlands, and coastal waters. CT DEEP and several Connecticut communities such as Old Saybrook are evaluating and implementing comprehensive decentralized approaches to wastewater management as a cost-effective alternative to traditional centralized wastewater treatment, including local ordinances and wastewater management districts, technical standards for conventional septic system upgrades and advanced treatment systems, and operation and maintenance programs.

Control Measures

Regulatory Programs

- CT DEEP Subsurface Sewage Disposal System website: http://www.ct.gov/deep/subsurfacedisposal

- CT DPH Subsurface Sewage website:
  http://www.ct.gov/dph/subsurfacesewage

Guidance Documents and Educational Resources

- CT DEEP Guidance for Design of Large-Scale On-Site Wastewater Renovation Systems:
  http://www.ct.gov/deep/lib/deep/water_regulating_and_discharges/subsurface/2006designmanual/designmanual2006.pdf
- CT DPH Design Manual Subsurface Sewage Disposal Systems for Households and Small Commercial Buildings:
  http://www.ct.gov/dph/lib/dph/environmental_health/environmental_engineering/pdf/DESIGN_MANUAL_Part_1.pdf
- EPA Septic System Website:
  http://water.epa.gov/infrastructure/septic/

Connecticut Department of Public Health (DPH) Circular Letters Dealing with Nitrogen Analysis

- Density of Developments:
  http://www.ct.gov/dph/lib/dph/environmental_health/environmental_engineering/pdf/CIR_2000-01_Sewage_Updates.pdf
- Nitrogen Loading Design Considerations:
  http://www.ct.gov/dph/lib/dph/environmental_health/environmental_engineering/pdf/CIR_2002-03_Updates_On-Site_Sewage_Disposal.pdf

Table 4-5. Subsurface Sewage Disposal Systems – Five-Year Objectives, Actions, and Milestones							
Objectives	Actions	Milestones	Schedule				
			2015	2016	2017	2018	2019
1. <u>Regulatory, Planning and Funding Framework</u>: Improve effectiveness of existing regulatory, planning and funding framework for wastewater treatment and disposal in unsewered areas.	1. Improve coordination with CT DPH to identify and discuss concerns pertaining to effective onsite wastewater treatment & disposal, ground water & surface water quality, existing Public Health Code requirements, and opportunities for improvements. Some points of concern where recommendations may be made include:	Evaluate alternative strategies to improve the effectiveness of existing programs, including inspection and maintenance. Describe progress in annual report	X	X	X		
	a. Point-of-sale inspection and upgrade program for substandard systems. b. Siting design of both LID and onsite wastewater systems to reduce potential for conflicts. c. Identify or develop funding opportunities for enhanced management and tracking of onsite wastewater systems, and develop parameters for improved statewide management d. Planning and development for local onsite wastewater management programs that may include options such as centralized and clustered onsite systems.	Evaluate the planning and implementation for local onsite wastewater management programs. Describe progress in annual report	X	X	X		
		Evaluate potential conflicts between onsite management programs and local land use regulations, including stormwater management requirements. Describe progress in annual report	X	X			
	e. Potential source controls through material and technology modifications.	Meet annually with municipal representatives, CT DPH and industry representatives in NPS	X	X	X	X	X

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	f. Community wastewater decisions guide g. Evaluate enhanced nitrogen and phosphorus treatment technologies. *Lead Agencies: CT DEEP and CT DPH* *Partners: Local Health Departments, Municipal and industry representatives, UConn, WPCAs, OPM*	State Technical Committee. Describe progress in annual report. Provide phosphorus-specific recommendations for reducing pollution from garbage disposals, phosphate detergents, harmful septic system additives, and corrosion inhibitors for water and sewer systems in report.					X
2. <u>Homeowner Education</u>: Educate homeowners and homebuyers about proper use and maintenance of onsite wastewater treatment and disposal systems.	1. Discuss the need and opportunities for homeowner and homebuyer education with CT DPH. 2. Identify and evaluate the effectiveness of existing educational resources and materials. 3. Develop improved or expanded educational resources and materials for homeowners and homebuyers. *Lead Agencies: CT DEEP, CT DPH, Local Health Departments, CT Conservation Districts* *Partners: Municipal and industry representatives*	Seek appropriate partner(s) and support efforts to develop improved educational resources and materials to address system inputs, maintenance, and operational function of filters, distribution boxes and leaching fields. Disseminate through local Health Departments and CCDs.		X	X	X	X