

6. Wastewater Systems Management

<u>Agricultural Practices (A)</u>	<u>Development (D)</u>	<u>On-site Wastewater Systems (O)</u>	<u>Stormwater Runoff (SR)</u>	<u>Wastewater Treatment (WW)</u>			
<u>Drinking Water (DW)</u>	<u>Tourism and Other Economic Development (T)</u>	<u>Water Quality Standards (WQS)</u>					
<u>Water Quality (WQ)</u>	<u>Exotic species (ES)</u>	<u>Fertilizers and Pesticides (F)</u>	<u>Heavy metals (H)</u>	<u>Phosphorus and Nutrient Loading (N)</u>	<u>Organic compounds (OC)</u>	<u>Pathogens (P)</u>	<u>Sediment (S)</u>
<u>Comprehensive Planning (C)</u>	<u>Education (E)</u>	<u>Economic Revitalization & Sustainability (ER)</u>	<u>Infrastructure (I)</u>				

Introduction

Typically wastewater is treated either on-site, through on-site wastewater systems or off-site using sewers and ultimately municipal wastewater treatment facilities (see Appendix F). There are nine regulated municipal wastewater discharges to Cayuga Lake and its tributaries with a combined design flow slightly over 15 million gallons per day (see Appendix F). Outside of these facilities residents and businesses within the watershed of Cayuga Lake are served by on-site wastewater systems. This decentralized treatment is very common in New York State and throughout the United States.

On-Site Systems

The septic tank is an underground, watertight vessel installed to receive wastewater from a home or business. It is designed to allow solids to settle out and separate from the liquid, to allow for limited digestion of organic matter, and to store the solids while the clarified liquid is passed on for further treatment and disposal (EPA 1999). In the Cayuga watershed, effluent wastewater typically leaves the tank and is distributed to a subsurface soil absorption area (the leach field). Here the clarified effluent gradually seeps in to the surrounding soils where biological and physical reactions further reduce the concentrations of nutrients, microorganisms, and oxygen-demanding material. When correctly installed and maintained, septic tank/soil absorptions systems are an effective way to treat and dispose of domestic wastewaters. Nevertheless, even the best systems are designed to release contaminants into groundwater. Siting, design, installation, operation, and maintenance must be focused on reducing the environmental impact of the release. To avoid contamination of drinking water systems and other problems, soil absorption systems must be situated at prescribed distances from wells, surface waters, springs, and property boundaries. In New York, State and County Health Departments have jurisdiction to approve septic systems.

The only county in the Cayuga Lake Watershed with a program to inspect on-site wastewater systems is Cayuga County. The Cayuga County Health and Human Services Department (2000) on-site wastewater inspection program (see Appendix N) reported a failure rate of three to six percent for systems in the Cayuga Lake Watershed. EPA has estimated that anywhere from 10 to 30 percent of onsite systems are failing annually. Failure of systems to adequately treat wastewater may be related to inadequate siting, improper installation, or poor operation and maintenance. A critical factor in optimal system performance is the depth of unsaturated soil beneath the soil absorption field. Based on the County Soil Surveys, large portions of the unsewered areas within the Cayuga Lake watershed have soil and slope characteristics that are not ideal for on-site wastewater systems.

Shoreline cottages can present special challenges to proper operation of on-site wastewater systems. Depth to groundwater is shallow and lot size can be small. Disposal systems may have been installed prior to modern sanitary codes. Systems that may have functioned adequately with limited seasonal use and a prolonged recovery period may not

be able to handle the increased demand associated with year-round use and additional appliances.

While it is difficult to measure and document specific cause-and-effect relationships between onsite systems and the quality of Cayuga Lake and its tributaries, there is little doubt that improperly operating systems can contribute to water quality problems. The Priority Waterbodies List (PWL) (see Appendix L) for Cayuga Lake lists septic effluent as a source of nutrients contributing to impairment of the northern segment of Cayuga Lake.

Goal

Reduce the negative effects of on-site wastewater systems on human health and the environment.

Existing Measures

System selection, design, and installation

Federal Guidance: EPA maintains compendia of management practices (see Appendix N - EPA Catalogue of Practices) for alternative on-site wastewater systems . These technology fact sheets are designed to help select an appropriate wastewater technology or practice for single-family residences, clusters of homes, subdivisions, or communities.

State Guidance: The NYSDEC publishes the "On-site Wastewater Treatment Systems Management Practices Catalogue" (see Appendix N - New York Catalogue of Practices). A subcommittee of the New York State Nonpoint Source Management Practices Task Force prepares the document, which was last revised in December 1996.

County/Municipal Reviews and Approvals: At the local level, Codes Enforcement Officers are responsible for approving design and specifications of individual on-site wastewater systems. Article 11 of the Public Health Law and Title 15 of the Environmental Conservation Law provide for review of water supply and sewerage services by the State health department (or County health department where they exist) for tracts of land divided into five or more parcels of five acres or less.

System operation, inspection, and maintenance

Federal guidance: Under the Clean Water Action Plan, EPA committed to developing voluntary national guidelines for decentralized wastewater management systems (for more information see <http://www.epa.gov/owm/smallc/guidelines.htm>) that address siting, performance, design and maintenance needs and requirements. Voluntary "management guidelines" have been developed in draft form, and will be finalized following a public comment period. The guidelines will help communities meet water quality and public health goals and provide a greater range of options for meeting wastewater needs in a cost-effective manner.

State Guidance: The "On-site Wastewater Treatment Systems Management Practices Catalogue" includes only limited discussion of operation, maintenance and inspection. However, NYS Department of Health, NYSDEC, and Cornell Cooperative Extension sponsor education and training throughout the State on wastewater related issues.

County Programs. The six counties in the Cayuga Lake Watershed have varying levels of inspection and permitting requirements for on-site wastewater systems. Cayuga County Health Department has developed a comprehensive program that includes specific requirements for inspection and testing, pumping, and timelines for bringing non-conforming uses into compliance developed under the Sanitary Code of the Cayuga County Health District. There are provisions for inspection (see Appendix N) and pumpout on a regular basis and on property transfer.

Recommendations

Improvements in the design, siting, operation, inspection, and maintenance of on-site wastewater systems are needed to protect and maintain the integrity of the water resources. This is an area of active research nationally. New technologies are being applied to onsite systems, resulting in higher treatment levels, greater reliability and more flexibility than ever before. In many communities onsite and decentralized systems are the most appropriate, least costly treatment option, and they allow maximum flexibility in planning for future growth.

EPA has identified five major barriers to the successful implementation of decentralized wastewater technologies. These include: (1) misinformation and limited public knowledge about onsite systems; (2) legislative and regulatory constraints; (3) lack of system management; (4) existing engineering practices; and (5) restricted access to funding.

The recommended practices are designed to address these barriers.

No. 6	On-Site Waste Water Systems Recommendations	Related Issue(s)	Potential Responsible Org(s)	Measures/ Targets	Approx Cost
A	<p>Adopt uniform sanitary law throughout the Cayuga Lake watershed based on the Cayuga County model (<i>Sanitary Code of the Cayuga County Health District</i>) or the model Local Law for On-Site Individual Wastewater Treatment (see Appendix N). Residences within 500 feet of the Lake and 150 feet of tributaries should be considered in a "critical environmental zone" and subject to more frequent inspection. Substandard systems in this zone should be required to install holding tanks until systems can be brought into compliance.</p>	D, O, DW, WQ, N, P, C, I	C, M	100% compliance within 7 years	\$10,000
B	<p>Hold regular educational/training forums for the following:</p> <ul style="list-style-type: none"> • Contractors and others associated with septic system design and construction; • Municipal boards (e.g. elected, zoning, and planning),; • Enforcement officers; • Home owners, using the Home*A*Syst program (see Appendix N - Home*A*Syst Program) as a model for self-assessment (see Appendix N - Septic System Assessment) and education; and • Design professionals and representatives of State and County Health Departments responsible for evaluating alternative and innovative technologies (see Appendix N). 	O, DW, WQ, N, P, E	RPB, C, CCE, M	Three/year (rotate around watershed)	\$10,000