



# *Onsite Wastewater Systems Management in the New Jersey Pinelands*

New Jersey Pinelands Commission  
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## **Why is Septic System Management Important?**

**Conservative estimates indicate that septic systems discharge well over 100 million gallons of wastewater every day to New Jersey's groundwater supplies. While septic systems can provide a cost effective, environmentally safe, and sustainable way to treat and dispose of wastewater, many homeowners neglect their systems, putting off preventive maintenance until the systems threaten public health, property values, and the environment.**

### **Disease Hazard**

The improper disposal of wastewater threatens the health and well being of residents in areas served by septic systems. Large numbers of disease causing bacteria, viruses and other organisms are present in sewage. When untreated effluent from a malfunctioning septic system surfaces, insects, pets and people can bring disease causing organisms into our homes. Rainwater flushes pollutants into swimming waters and in some cases, shellfish beds. Drinking water wells can also be contaminated by malfunctioning septic systems. Regular pumping of septic tanks greatly reduces the risk of septic system backups.

### **Dollars and Cents**

Home ownership represents the single most valuable asset of most families. A properly maintained septic system adds to a homes value and alternatively, property values decline in areas where septic system problems are

known to occur. A relatively small investment in regular septic tank pumping can avoid very expensive costs to repair a malfunctioning septic system.

### **Quality of Life**

While a properly functioning system is virtually invisible in a lawn, a malfunctioning septic system is unsightly and offensive. When you are the owner of a malfunctioning system, it can also be an embarrassment. It's difficult to enjoy of one's home and surroundings when confronted with a septic system backup.

### **Environmental Protection**

Both groundwater and surface water quality are threatened by improperly operating septic systems.. Malfunctioning systems can also harm local populations of wildlife. Environmental quality is improved through proper system management.



Septic system management is a part of keeping neighborhoods in the Pinelands vibrant and healthy.

## Recent Developments

Two recent developments are affecting the use and management of septic systems in the Pinelands. In July 2008, the New Jersey Department of Environmental Protection adopted new Water Quality Management Planning Rules [N.J.A.C. 7:15-5.25(e)3] that require all New Jersey municipalities to implement mandatory septic system maintenance programs. These programs are intended to ensure that all septic systems state-wide are functioning properly. To meet the NJDEP requirement, management programs must be in place by April, 2009 and need to include provisions for periodic pump out and other maintenance as needed.

In addition, the Pinelands Commission's Alternative Design Treatment Systems Pilot Program has identified onsite wastewater treatment technologies which can reduce nitrogen loadings to the environment. The Commission is preparing to transition from pilot program approval of one or more of these technologies to a non-pilot program approval process which would permit installations on a permanent basis. Such a transition requires that adequate institutional or governmental arrangements are in place to ensure continued maintenance and monitoring of each technology.

The Pinelands Commission has recently completed work on an important manual to aid

**By April 2009, New Jersey municipalities are required to implement septic system maintenance programs.**

Pinelands Area municipalities implement management programs that will comply with both the NJDEP and Pinelands' septic system management requirements. This manual, entitled *Onsite Wastewater Systems Management Manual for the New Jersey Pinelands*, is available for download from the Commission's website at [www.nj.gov/pinelands/](http://www.nj.gov/pinelands/).

The Commission is now developing a Pinelands Model Septic System Management Ordinance to assist Pinelands

Area municipalities in further complying with the new NJDEP requirements as well as with the Pinelands Commission's regulations related to septic system management. The model ordinance is expected to be ready for distribution early in 2009.



All septic systems need regular maintenance, but advanced systems are more complex and thus regular care is critical.

## Septic Systems in the Pinelands

The Pinelands Area is an ecologically unique region covering approximately one million acres. The area is characterized by high quality surface and ground waters, including the 17.7 trillion gallon Kirkwood-Cohansey Aquifer. The Pinelands landscape provides habitat for 41 threatened or endangered animal species and 54 threatened or endangered plant species. The region includes portions of 7 Counties and 53 Municipalities. The region is protected through a variety of land use controls and environmental programs.

Within the Pinelands Area, land use planning rules permit the use of septic systems (more appropriately known as onsite wastewater treatment systems, or OWTS) provided these systems are sited at appropriate densities which are protective of water quality objectives. Traditional septic tank/disposal field systems are authorized for use on large lots - those of at least 3 acres. More advanced, nitrogen reducing systems may be used on smaller lots - down to a minimum of 1 acre. The Pinelands Commission's rules require that all systems be properly managed to ensure environmental and public health protection.

## The Existing Septic System Management Situation

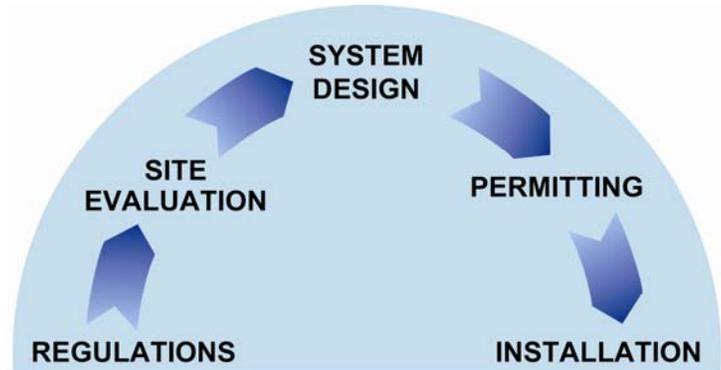
New Jersey's septic system management regulations date back to at least 1945 when local Boards of Health were given the authority to regulate septic systems to protect public health and the environment. Since that time, New Jersey has continually updated its programs to manage septic system placement, design, and construction. Rigorous soil testing is required, professional engineers design systems and licensed health inspectors assure proper construction. The current management system ends, however, when septic systems are turned over to the ultimate user, the homeowner.

New management efforts seek to complete the cycle by providing for institutional management after a homeowner begins to use the system. This added management not only protects the system owner by avoiding unintended neglect, but it also benefits all of the residents in the community by protecting public health, quality of life, the environment, and property values.

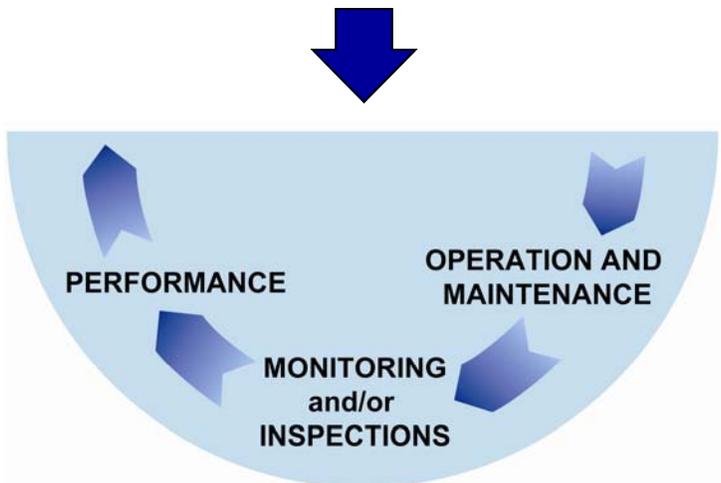
The Pinelands Commission has implemented this "full-circle" management program through the pilot program for advanced treatment technologies.

Throughout New Jersey, onsite wastewater treatment systems with design flows in excess of 2,000 gallons per day (e.g., schools, shopping malls, etc.) are currently managed throughout their life via operating permits issued by the New Jersey Department of Environmental Protection.

Currently, regulatory oversight of traditional septic systems (OWTS) in New Jersey ends after the system is installed (adapted from Michael Hoover, 1997).



After installation, management that includes appropriate levels of homeowner education on proper operation, active maintenance, periodic inspections or monitoring to evaluate system performance, and updates to regulations, as needed, completes the picture (Hoover, 1997).



With better OWTS management, property owners' investments and the Pinelands environment will be better protected.

# Management Models for the Pinelands Area

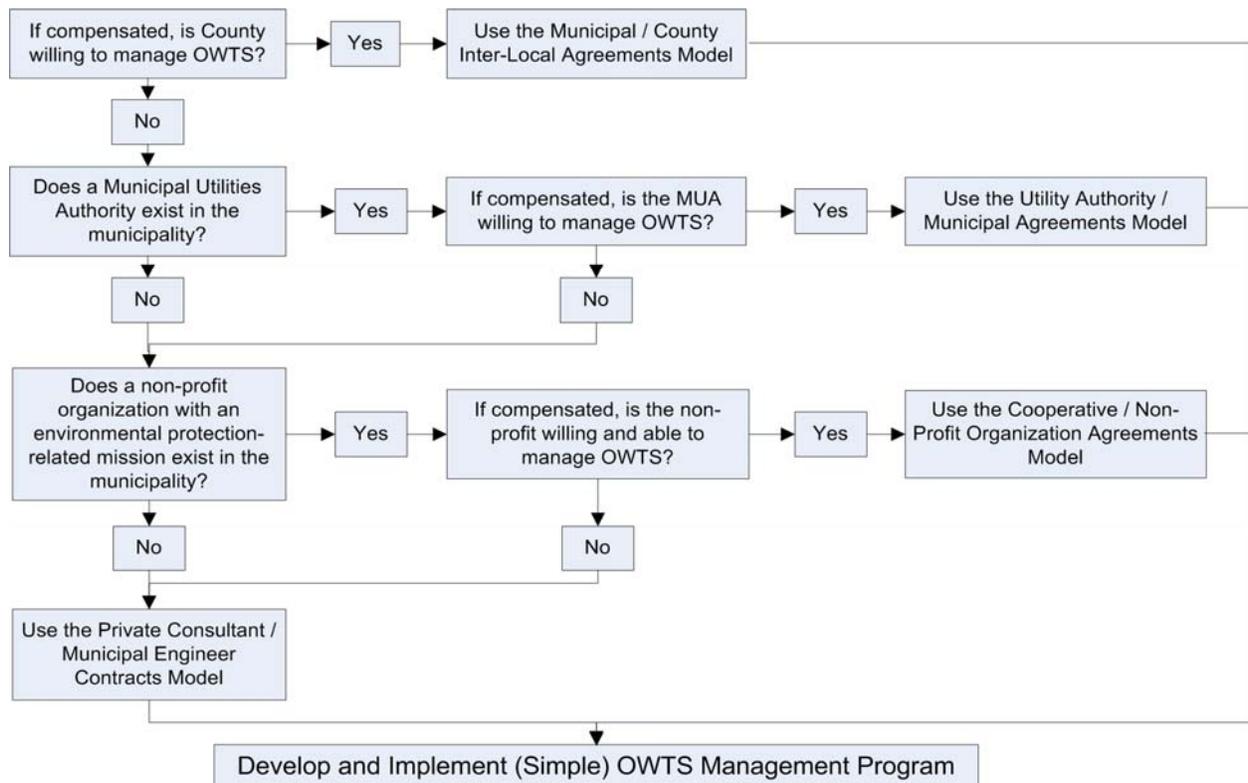
Four collaborative management models have been developed for the Pinelands Area. Each of the following models includes provisions for program administration, system installation, system operation and system compliance:

- I. The *Municipal/County Inter-Local Agreement Management Model* is closest to the current program already in place in the Pinelands Area for OWTS installation-related management elements. In this model, the municipalities delegate wider authority over OWTS to County environmental health departments, which would implement the management program.
- II. The *Utility Authority Management Model* expands the role of utility authorities from centralized wastewater infrastructure to distributed wastewater infrastructure (OWTS). This approach utilizes existing expertise and experience in wastewater infrastructure management to operate the management program.
- III. The *Private Consultant/Municipal Engineer Contracts Management Model* is

based on the way that many townships already contract engineering services to consulting firms. Under this model, implementation of technical management elements such as inventory or inspection elements would be contracted to professionals, while the municipality retains responsibility for public outreach, planning, financial assistance, corrective actions, and enforcement.

- IV. The *Cooperative/Non-Profit Organization Agreements Management Model* is similar to the private consultant contracts model above, in that the municipality retains responsibility for program funding and corrective actions/enforcement, and contracts the remaining elements to the cooperative or non-profit.

The process of evaluating and selecting which model is appropriate for a particular area in the Pinelands is dependent on the availability, expertise, experience, and willingness of potential management entities. A process for evaluating models is shown below.



By answering each question above, decision makers can understand which management model may work best for them.

## Developing Simple Local OWTS Management Programs

Information about fashioning key components of an OWTS management program is provided in the manual, and advantages, disadvantages, and estimated cost allocations are provided in chapters devoted to each model. Regardless of the management model chosen within a given jurisdiction, a simple or “minimum” OWTS management program should include the following elements in order to comply with existing regulations:

- An inventory of existing systems
- An ordinance that requires regular septic tank pumpouts
- Basic inspections to ensure systems are functioning properly
- A renewable operating permit program and a database to track pumpouts
- An enforcement mechanism to assure pumpouts are completed

Implementing a simple OWTS management program will allow jurisdictions to build an

inventory of OWTS installations and to understand current conditions—thus enabling better community decision making about whether elements of a more comprehensive management program are needed locally.

If advanced treatment systems were installed in a jurisdiction through the Pinelands Alternative Wastewater Treatment System Pilot Program, or if such systems could be installed in the future, the management program should include the following additional elements:

- An ordinance requiring Pinelands approved advanced systems to be serviced under an operations and maintenance (O&M) contract
- A special renewable permit issued to owners of advanced treatment systems, and an associated database to track operations, maintenance, and monitoring
- An enforcement mechanism to assure continued renewal of O&M contracts

### Existing Management Programs in Northern New Jersey

Management programs with ongoing maintenance and record-keeping activities for traditional OWTS with design flows of less than 2,000 gpd do exist in New Jersey. Eight municipalities, located in Morris, Somerset, and Sussex counties, have implemented local OWTS management programs. These programs generally require licenses for the operation of each system. Unlike permits issued for system construction, operation licenses provide for continued oversight of OWTS by local health departments or municipalities. These operational licenses must be renewed, typically every three years. When system owners apply for their license renewal, they must show that the conditions of renewal have been met (typically, that the septic tank has been pumped or inspected) and that the system appears to be functioning properly.



Although not mandated in the new management program requirements, providing ongoing opportunities for people to learn about septic system maintenance is important to the successful implementation of any program.

## Comprehensive OWTS Management Programs

After implementing a simple OWTS management program, a jurisdiction may find that a more comprehensive OWTS management effort is needed. A comprehensive OWTS management program for traditional OWTS could include activities in addition to those in a simple program:

- Periodic, more detailed inspections of components, including tanks, pumps and alarms, distribution devices, and disposal fields.
- Creation of sketch plans for each OWTS.
- A system to track the residuals from septic tank pumpouts, to ensure that residuals are properly handled once they are removed from tanks.
- A low-interest loan program for distribution of revolving funds (if available) to assist low to moderate income property owners with repairs or system replacements if malfunctions are discovered during inspections.



Photo: Bruce Douglas

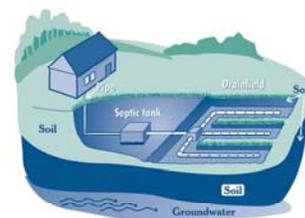
Implementing proper wastewater management practices at all scales helps protect and preserve the Pinelands' unique ecology.

### Guidance for Treatment System Inspections

A guidance document for performing septic system inspections has been developed by the New Jersey Department of Environmental Protection. The full document, called *Technical Guidance for Inspections of Onsite Wastewater Treatment and Disposal Systems*, is available at [www.nj.gov/dep/dwq/owm\\_inspect.htm](http://www.nj.gov/dep/dwq/owm_inspect.htm).

If periodic inspections were included as part of a comprehensive management program, the frequency of onsite inspections would be dependent on the needs or desires of the local jurisdiction; for example, inspections could occur every “x” years or at time of property transfer. The Pinelands management manual contains more information about deciding whether inspections are necessary and on setting inspection schedules.

#### Technical Guidance for Inspections of Onsite Wastewater Treatment and Disposal Systems



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF WATER QUALITY  
BUREAU OF NONPOINT POLLUTION CONTROL

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## How Much Will It Cost?

Illustrative cost estimates are presented in the Pinelands management manual. Each OWTS management program developed for a county or municipality in the Pinelands Area will have its own unique costs, and these should be determined individually during the program development stage. The Commission will encourage municipalities to join forces with neighboring municipalities to reduce costs where possible.

Costs for each of the four management models and three example management programs were estimated based on two scenarios: A simple management program for 1,000 traditional OWTS that meets the minimum requirements of the revised WQMP Rules and a more comprehensive OWTS management program, again for 1,000 traditional OWTS. Regardless of the approach a municipality takes to OWTS management, advanced OWTS will require additional inspections and monitoring, so those costs were estimated separately per 100 advanced OWTS. The table below compares the total estimated user costs between all the models and programs described in the manual. Actual costs of a management program in a specific community may be less than or greater than these figures depending on program design, available resources, and their local costs.

## Next Steps

The recent WQMP Rule amendments, as well as action by the Pinelands Commission, will enhance education of OWTS owners and improve OWTS management throughout the Pinelands Area. In the coming year, the Commission will establish policy through rule making, setting forth the minimum requirements of OWTS management programs throughout the Pinelands Area. Management of advanced OWTS technologies as well as traditional OWTS will be addressed in these CMP requirements. These amendments will transition management of advanced technology systems from the pilot program to management at the local or sub-regional level and require maintenance of all OWTS. Commission staff will also prepare and distribute to each Pinelands Area municipality a Pinelands Model OWTS Management Ordinance to assure the adequacy of maintenance programs and to avoid duplication of effort on the part of each municipality.

## For More Information

Additional copies of this summary and the Pinelands management manual on CD-ROM may be requested from the Pinelands Commission, or downloaded from [www.state.nj.us/pinelands/landuse/waste/septic.html](http://www.state.nj.us/pinelands/landuse/waste/septic.html).

**Comparison of Estimated Annual Average User Costs for each Model and Management Program**

Management Model	Management Program		
	Simple	Comprehensive	Advanced OWTS
Inter-Local Agreement Model	\$103	\$380	\$1,413
Municipal Utility Authority Model	\$103	\$312	\$1,155
Private Consultant/ Engineer Model	\$110	\$388	\$1,698
Non-Profit / Cooperative Model	\$111	\$388	\$1,421

# *Onsite Wastewater Systems Management in the New Jersey Pinelands*

Septic systems are an integral and essential part of the Pinelands' rural wastewater treatment infrastructure. Recent changes to statewide rules governing water quality planning are affecting the way that septic systems in the Pinelands and elsewhere in New Jersey are maintained, and how local jurisdictions oversee that maintenance. Read on to find out about resources that can help municipalities meet the need for locally managing septic systems.



Photo: Bruce Douglas



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