



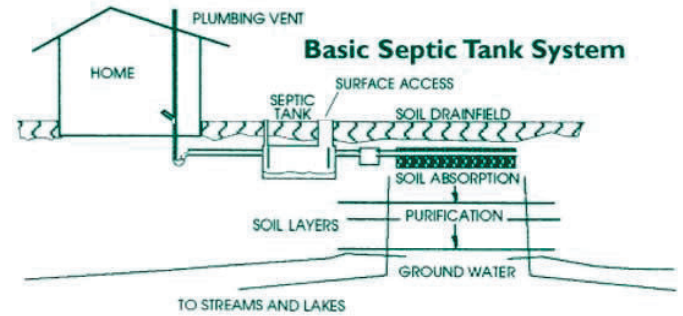
Among the primary goals of the Route 57 Corridor Plan are the preservation of scenic and environmental quality, while supporting local economic development. Land preservation can be accomplished by sustainable development techniques, such as cluster development, that concentrate buildings on a small portion of each parcel, allowing the remainder to be preserved for agricultural or environmental purposes. Cluster development offers numerous advantages over the large lot zoning many municipalities have enacted in response to development pressures. It consumes far less land, and leaves large contiguous tracts of open space available for farming, recreation, or wildlife habitats.

One of the primary concerns about implementing cluster development in Warren County is how sewerage requirements will be met. Increased densities and smaller house lots may rule out the use of conventional septic systems, for instance. However, through the use of innovative and alternative septic systems, the higher densities needed for clustering may be achievable.

### What are innovative and alternative septic systems?

In the United States, onsite wastewater disposal technology has become fairly well developed and perfected, and is in widespread use throughout the country, particularly in rural and suburban areas. The most commonly employed method is typically referred to as a septic system. Years of study and research have resulted in design standards that generally ensure that septic systems are protective of human health and the environment. Septic systems, when properly constructed, virtually eliminate outbreaks of disease caused by human enteric pathogens such as those causing typhoid fever, cholera, dysentery, and impacts from viruses and protozoa or other parasitic organisms.<sup>1</sup>

A frank assessment of this technology, however, is that its primary focus is on disposal, following some rudimentary treatment. Ultimately, "treatment" in standard systems is primarily due to dilution, dispersion and retention in underlying soils until pathogens are rendered harmless.<sup>2</sup> As a result, nitrates, phosphorus, and pathogens may be released into the surrounding



Source: National Onsite Wastewater Recycling Association

soils and groundwater, and the ability to mitigate their harmful effect is dependant on factors that include the type and quality of soils and the depth and movement of groundwater.

However, new systems are becoming available that employ innovative technologies to overcome the limitations of conventional septic systems through improved treatment, filtering, and dispersal. Examples of these systems include:

- Aerobic Treatment Units
- Denitrification Systems
- Fixed Activate Sludge Treatment (FAST)
- Recirculating Sand Filter
- Sequencing Batch Reactors
- Septic Tank Filters
- Gravel free Chamber Leachfields

### Why is this important to Warren County?

According to the Warren County Strategic Plan, all drinking water in the county comes from groundwater as opposed to surface water supplies. Warren County also lies within the New Jersey Highlands region which is the source of drinking water for half of New Jersey residents.<sup>3</sup> On-site septic and wastewater treatment, however, are among the potential contaminants of groundwater supplies.

Consequently, protecting both the quality and supply of

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groundwater are essential to public health and quality of life, and therefore a primary focus of planning efforts in Warren County and the surrounding areas.

New and innovative systems are becoming available that may function better, provide more effective pollution control, or are better able to overcome certain site constraints.<sup>4</sup> Innovative systems may also prove useful to meeting the state's recommended (although not required) standard for nitrate levels and in locations where increased density is recommended to accommodate clustering, lot-averaging, or other methods of land conservation.

Compatibility between existing zoning and water quality was analyzed as part of the County's Strategic Plan. According to this analysis, the minimum lot size required to achieve the New Jersey's recommended standard for nitrate levels in groundwater is met in all but two of the municipal zoning districts in the county. Innovative and alternative methods may provide an effective means of protecting groundwater in these zones.

The Warren County Strategic Plan encourages municipalities to consider the use of alternative wastewater treatment systems to protect water quality. These systems may be useful for protecting water quality in cluster subdivisions. These systems can accommodate smaller lot sizes thereby allowing municipalities to preserve larger land areas without reducing water quality. The 2001 Final Report from the New Jersey Pinelands Ad Hoc Committee on Alternative Septic Systems researched several systems that can reduce the nitrate concentrations in effluent from onsite waste disposal systems. Examples include Fixed Activated Sludge Treatment (FAST), Cromaglass, Bioclere, ASCHO and Amphidrome.<sup>5</sup>

As of January 12, 2006, the following innovative or alternative onsite wastewater technology components or systems have been approved by the New Jersey Department of Environmental Protection. These devices are approved for general use with certain conditions:<sup>6</sup>

Infiltrator® Chamber Distribution System  
Septic Tank Effluent Filters  
Aerobic Treatment Units

For more information:

[http://www.state.nj.us/dep/dwq/sep\\_inov.htm](http://www.state.nj.us/dep/dwq/sep_inov.htm)

[http://www.state.nj.us/dep/dwq/sep\\_appv.htm](http://www.state.nj.us/dep/dwq/sep_appv.htm)

[http://www.co.warren.nj.us/planning/county\\_strategic\\_growth\\_plan.html](http://www.co.warren.nj.us/planning/county_strategic_growth_plan.html)

## (Endnotes)

<sup>1</sup> *A Protocol for Testing, Assessing and Approving Innovative or Alternative Onsite Wastewater Disposal Systems* Fred H. Bowers, Ph.D. New Jersey Department of Environmental Protection, Most recently edited on February 8, 2001; Insite Wastewater

<sup>2</sup> *Innovative and Alternative On-site Wastewater Treatment Technologies Handbook*, Erick S. Winkler, University of Massachusetts Amherst, 2000

<sup>3</sup> [http://www.state.nj.us/dep/highlands/faq\\_info.htm](http://www.state.nj.us/dep/highlands/faq_info.htm);

<sup>4</sup> *Hunterdon County Environmental Toolbox, Alternative Wastewater Systems, Final Version*: April 2005, pg 42

<sup>5</sup> Warren County Strategic Growth Plan, Revised October 2005, pp 112-113

<sup>6</sup> [http://www.state.nj.us/dep/dwq/sep\\_inov.htm](http://www.state.nj.us/dep/dwq/sep_inov.htm),

