On-Site Wastewater Systems

NPS

EPA Subcategory Number 65

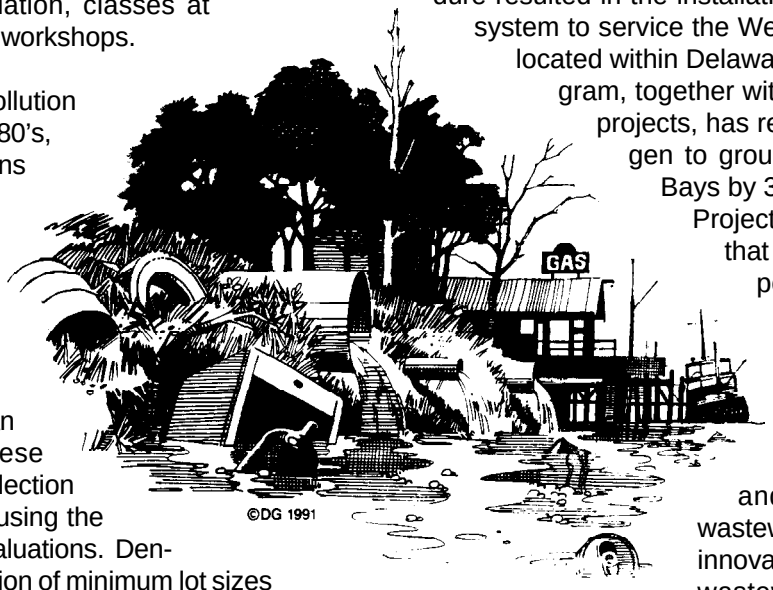
DELAWARE

INTRODUCTION

The Department of Natural Resources and Environmental Control (DNREC) is the responsible agency for on-site wastewater treatment systems pursuant to the authority set forth in 7 Del. Code, Chapter 60. The actual administration and implementation of the program is carried out by the Division of Water Resources.

The Division of Water Resource's responsibility includes developing and/or evaluating emerging technologies in the field of on-site wastewater design and operation. Technical assistance and education is provided by DNREC with assistance from other agencies, such as the Division of Soil and Water Conservation, the local conservation districts, the USDA, Natural Resources Conservation System and the Delaware Cooperative Extension System through literature circulation, classes at schools and universities, and workshops.

In order to address the pollution problem identified in the early 80's, the DNREC adopted regulations in July of 1985 that required the use of on-site wastewater systems that functioned according to their performance criteria without causing the State's ground water resources to violate U.S. EPA drinking water standards on an average annual basis. These regulations require system selection and sizing to be determined using the results of site - specific soil evaluations. Density is addressed by the adoption of minimum lot sizes tied to appropriate disposal techniques, and in some cases, the use of scientific ground water and geological analyses that both assure renovation of degradable pollutants and dilution of wastes which are inadequately treated in the soil.



Computer technology has increased the reliability of on-site wastewater treatment technology in Delaware through the use of systems such as Sequence Batch Reactor (SBR). The use of SBR's and other similar treatment technologies assists the DNREC with clean-up of existing sites that have on-site wastewater problems due to too much density and limited area for a disposal system.

DNREC has established a compliance inspection program for large and innovative on-site wastewater treatment and/or disposal systems. Presently, some seventy-five (75) systems are inspected at least once per year for compliance with their operating permit. Approximately twenty-five (25) new large and/or innovative systems are approved each year. Of those twenty-five (25), approximately five (5) are replacing old community or individual on-site systems. The new on-site wastewater systems reduce or eliminate the amount of pollution to the ground water.

In addition to this replacement program, the DNREC has imposed moratoriums on areas where on-site wastewater system will not provide the necessary protection to the State's ground water and surface waters. This procedure resulted in the installation of a central wastewater system to service the West Rehoboth Area which is located within Delaware's Inland Bays. This program, together with other central wastewater projects, has reduced the loading of nitrogen to ground water within the Inland Bays by 33,620 lbs per year or 48%. Projects since 1988 have reduced that loading by some 23,597 lbs per year or 40%.

DNREC plans on continuing this effort of pollution reduction through education programs in conservation, proper care, and maintenance of on-site wastewater systems, and use of innovative and alternative on-site wastewater treatment systems. Existing regulations will be revised in late 1999 to include: new technologies, results of research and better management, construction and implementation plans for on-site wastewater treatment and disposal systems. DNREC will continue to encourage use of central wastewater treatment system especially where the concentration of on-site wastewater systems, regardless of the technology, may continue to degrade ground water and/or surface water quality.

Finally, DNREC will continue to provide funding, through the State's Revolving Loan Program, to low to moderate income families for replacement of problem on-site wastewater systems.

COASTAL NONPOINT POLLUTION CONTROL PROGRAM (6217)

The Coastal Nonpoint Pollution Control program, more commonly known as the 6217 Program, is being developed by the Delaware Coastal Management Program in cooperation with the Nonpoint Source Program. The 6217 Program is a joint mandate between the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). The guidance document developed by EPA identifies two management measures for the control on NPS contribution from On-site Disposal Systems (OSDS); one for new and a second for existing systems. The attachment located at the end of this subcategory section details the exact wording of the EPA guidance for both On-site Disposal System Measures.

New On-Site Disposal Systems

This management measure is intended to be applied to all new OSDS including package plants and small scale or regional treatment facilities not covered by NPDES regulations in order to manage the siting, design, installation, and operation and maintenance of all such On-site Disposal Systems.

Operating On-Site Disposal Systems

This management measure is intended to be applied to all operating OSDS and requires: 1) policies be established and implemented to ensure appropriate operation and maintenance is being performed; 2) On-site Disposal Systems be inspected at an appropriate frequency to determine whether or not the system is failing; and, 3) replace and upgrade systems to treat influent to reduce total nutrient loadings by 50%.

This management measure does not apply to existing OSDS that meet the following criteria: 1) treat wastewater from a single family home; 2) are sited where OSDS density is less than or equal to one OSDS per 10 acres; and 3) the OSDS is sited at least 1,250 feet away from surface waters.

Current Status of Delaware's On-site Disposal System Program:

The DNREC, Ground Water Discharges Section currently runs a program which addresses the above management measures. The enforceable mechanism which will be used for this section are the Regulations Governing the Design, Installation, and Operation of On-site Wastewater Disposal Systems. No new programs or changes to the existing program will need to be developed or instituted to comply with the requirements of the 6217 guidance.

Milestones for Implementation:

WORK ACTIVITIES	LEAD IMPLEMENTATION AND COOPERATING AGENCIES	TARGET DATE FOR COMPLETION	FUNDING SOURCES
Complete minor revisions and reprint the Simply Septics Brochure which provides information on the siting, construction and maintenance of on-site wastewater disposal systems for public availability	DNREC/DWR/Ground Water Discharges Section (GWDS)	1999	NPS Grant
Continue open meetings and workshops for licensed on-site designers, soil evaluators, contractors, and public	DNREC/DWR/GWDS	Continuous	Fees/General Funds
Update, expand and maintain on-site data management and information service for state-wide multi-user availability	DNREC/DWR/GWDS	Continuous	Fees/Grants/General Funds
Programmatic Enhancements: ♦ Encourage central wastewater in high density areas where degradation has or may be negatively impacted by individual on-site waste water disposal systems	DNREC/DWR/GWDS	Continuous	UIC Grant/Fees

Milestones for Implementation:

WORK ACTIVITIES	LEAD IMPLEMENTATION AND COOPERATING AGENCIES	TARGET DATE FOR COMPLETION	FUNDING SOURCES
Delaware has developed an on-site remediation component for the State's Revolving Loan Program. There is approx. $300,000 for individual household systems and $100,000 for community systems dedicated for fiscal year 1993	DNREC/DWR/Underground Discharges Branch Facilities Support Branch	Continuous	SRF/NPS
Delaware funding has initiated several projects combining public participation and installation of innovative and alternative on-site wastewater treatment systems in the Inland Bays Watershed	DNREC/DWR/Underground Discharges Branch	1993 - 1995	NPS 319(H) Grant
Revision of Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Sewage Disposal Systems to eliminate outdated information, add new technology, and streamline permitting prodedures.	DNREC / Contractors licensed under Regulations	1995	Unkown
Continue to evaluate alternative technologies for the treatment of on-site commercial and residential wastewater.	DNREC/DWR/Underground Discharges Branch	Continuous	Grants/Fees/General Fund

On-Site Wastewater Systems NPS

New On-site Disposal Systems Management Measure

1. Ensure that new On-site Disposal Systems (OSDS) are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives: (a) discourage the installation of garbage disposals to reduce hydraulic and nutrient loadings; and (b) where low volume plumbing fixtures have not been installed in new developments or re-developments, reduce total hydraulic loadings to the OSDS by 25 percent. Implement OSDS inspection schedules for pre-construction, construction and post-construction.

2. Direct placement of OSDS away from unsuitable areas. Where OSDS placement in unsuitable areas is not practicable, ensure that the OSDS is designed or sited at a density so as not to adversely affect surface waters or ground water that is closely hydrologically connected to surface water. Unsuitable areas include, but are not limited to, areas with poorly or excessively drained soils; areas with shallow water tables or areas with high seasonal water tables; areas overlaying fractured bedrock that drain directly to ground water; areas within floodplains; or areas where nutrient and/or pathogen concentrations in the effluent cannot be sufficiently treated or reduced before the effluent reaches sensitive waterbodies.

3. Establish protective setbacks from surface waters, wetlands and floodplains for conventional as well as alternative OSDS. The lateral setbacks should be based on soil type, slope, hydrologic factors, and type of OSDS. Where uniform protective setbacks cannot be achieved, site development with OSDS so as not to adversely affect waterbodies and/or contribute to public health nuisance.

4. Establish protective separation distances between OSDS system components and ground water which is closely hydrologically connected to surface waters. The separation distances should be based on soil type, distance to ground water, hydrologic factors, and type of OSDS.

5. Where conditions indicate that nitrogen limited surface waters may be adversely affected by excess nitrogen loadings from ground water, require the installation of OSDS that reduce nitrogen loadings by 50 percent to ground water that is closely hydrologically connected to surface water.

Operating On-site Disposal Systems Management Measure

1. Establish and implement policies and systems to ensure that existing OSDS are operated and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives, encourage the reduced use of garbage disposals, encourage the use of low volume plumbing fixtures, and reduce total phosphorus loadings to the OSDS by 15 percent (if the use of low level phosphate detergents has not been required or widely adopted by the OSDS users). Establish and implement policies that require an OSDS to be repaired, replaced, or modified where the OSDS fails, or threatens or impairs surface waters.

2. Inspect OSDS at a frequency adequate to ascertain whether OSDS are failing.

3. Consider replacing or upgrading OSDS to treat influent 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.