



# Septic Systems in High Quality and Exceptional Value Watersheds

Sewage Advisory Committee (SAC)

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Planning & Permits Division  
Bureau of Point and Nonpoint Source Management  
PADEP

# Background

- Issue: Siting of septic onlot sewage systems in HQ and EV watersheds primarily for new residential development.
- Special Protection: Chapter 93 antidegradation regulations provide special protection for HQ (High Quality) and EV (Exceptional Value) watersheds as part of our federally-approved WQ standards program.

# Chapter 93 and Septic Systems

- Nonpoint sources: Septic systems are nonpoint pollutant sources because they do add pollutants to surface water through a pipe or similar conveyance.
- Antidegradation: Chapter 93 requires that water quality in HQ and EV waters be protected and maintained.
- Point Source Process: Well defined. Involves setting effluent limits to protect instream concentrations of pollutants, or considering nondischarge alternatives.

# Chapter 93 and Septic Systems

- Point Source Exception: For point source discharges in HQ watersheds, some degradation of instream water quality may be allowed based on social or economic justification (SEJ analysis).
- Nonpoint Source Process: Chapter 93 requires the Department to “assure that cost-effective and reasonable best management practices (BMPs) for nonpoint source control are achieved.”

# ▶ Septic Systems and Water Quality

- Septic Systems: Inherently protective of surface water quality when properly designed, operated and maintained.
- Nitrate: Septic system pollutant of potential concern in groundwater and drinking water wells.

# Recent EHB Decision

- *Pine Creek Watershed Assoc. v. DEP*: DEP approved the use of septic systems in a small residential development in an EV watershed-- Pine Creek in Berks County.
- The approval was appealed to the Environmental Hearing Board (EHB) on the basis that water quality in Pine Creek would not be properly maintained and protected under the Chapter 93 antidegradation requirements.
- DEP relied primarily on a groundwater plume analysis using a model developed to design constructed wetlands to assert that nitrate would not reach the creek because the natural wetland present on the site would effectively remove the nitrate.

# Pine Creek and EHB

Outcome: The EHB ruled in November 2011 that the wetlands model relied upon by DEP was not appropriate. DEP's approval of the plan was rescinded and DEP was required to pay the watershed group's attorney fees.

Problem: The *Pine Creek* decision establishes a legal and scientific standard that is extremely difficult to meet, thereby jeopardizing any future development using septic systems in HQ and EV watersheds.

# Refocus on BMPs

- For nonpoint sources, water quality in HQ and EV watersheds can be protected and maintained through the implementation of reasonable and cost-effective best management practices (BMPs) under the Chapter 93 regulations.
- For onlot septic systems, the use of BMPs with nitrate removal efficiencies established through scientific research is the best approach.



# New BMP-based Guidance

DEP has implemented the BMP approach for other nonpoint sources such as agricultural operations, general construction/land development, timber harvesting, resource extraction and waste management, but has not developed BMPs for septic systems to maintain and protect water quality in HQ and EV watersheds. DEP is now doing so through this guidance.

*“Sewage Facilities Planning Module Review for Onlot Sewage Systems Proposed in High Quality and Exceptional Value Watersheds” DEP-ID: 385-2208-XXX*

# BMPs

- Onlot System Density: Limit number of sources within reason. One acre lot minimum.
- Setback Distance: Credit for the distance of the septic system from the river or stream.
- Riparian Buffers: Cheap, effective, and protective of property value long-term. Effective against essentially all nonpoint sources.

## BMPs (more)

- Permeable Reactive Barrier: Emerging passive technology. Effective, and can be cost-effective in certain situations. If and when PRBs are integrated into the design of the drain field, nitrate migration will be eliminated.
- Denitrifying Septic Systems: Established technology, but has disadvantages as an engineered system that has a higher capital cost and requires ongoing maintenance.

# Planning & Challenges

Part of the challenge is integrating the BMP process into the established new land development planning process.

- Regional input
- High degree of detail in guidance

Some existing challenges become more important:

- Implementation of sewage management plans
- Long-term maintenance of septic systems
- Establishment and permanency of riparian buffers.

# Summary

- Cost-effective and reasonable BMPs are needed to protect and maintain water quality in HQ and EV streams under Chapter 93.
- Quantitative BMP approach outlined in the guidance is consistent with Chapter 93.
- Revisions to regulations are being considered to support this BMP approach.