

**Sewage Facilities Planning Module Review for Onlot Sewage Systems
Proposed in High Quality and Exceptional Value Watersheds**

DEP ID: 385-2208-001

Draft Technical Guidance Document, published March 2, 2013
Sewage Advisory Committee Comments

The Sewage Advisory Committee understands the Department's desire to expedite the Planning process in Special Protection watersheds while complying with antidegradation requirements. However, we remain unconvinced that the issuance of this guidance document is the appropriate mechanism to achieve the ultimate goal. A significant programmatic shift such as this is worthy of a more substantial regulatory or legislative revision to most appropriately address antidegradation as it relates to onlot systems. Furthermore, we believe that existing onlot system regulations are adequate to protect the Special Protection watersheds (in the absence of data that proves otherwise) and legislative and/or regulatory revisions should reflect that perspective.

1. While the Guidance refers to onlot sewage systems excluding surface application or irrigation, the Department should specifically indicate that this guidance does not apply to drip and spray systems and any other applicable Chapter 73 or SEO permitted systems. The Department should explain in the introduction or Section IV why these systems are not included.
2. The Department should describe how this guidance applies to existing properties that don't need planning.
3. The Department should discuss how this Guidance applies to properties with wetlands since they are also considered surface waters under some regulations. (Especially as applied to the Setback Distance BMP.)
4. Definitions and Terminology:

The use of the terms "Septic Systems" and "Absorption Fields" throughout the Guidance does not comply with Ch. 71, 72, 73. The Department should use the terms "Onlot Sewage System" and "Absorption Areas".

The Department should quote all references that use EPA or other technical terminology, such as "after the treated percolate" (pg. 6), or translate it into PA regulatory language, or add a definition.

The Department should define "surface water" as used in the Setback Distance BMP.

The Department should define "shallow aquifer" and "water table" as used in the Permeable Reactive Barrier BMP.

5. Site-Specific Data: The only mention of site-specific data is on p. 12 regarding recharge rate. Field data does not necessarily support the stated assumed values of 262.5 gallons per day per EDU and 45 mg/L of nitrate. The Department should emphasize and state what kinds of site-specific data and information can be submitted and reference the mechanism to submit such information. SAC is available to work with the Department on acceptable parameters, such as effluent, in-stream and groundwater data.
6. p. 9 The Department should expand the explanation of the effects of onlot systems on surface water and groundwater.
7. p. 11 The Department has stated that the reference watershed approach is preferred, especially in northeast PA, due to data availability. DEP should provide inclusion of the reference watershed approach in this document as an acceptable modeling alternative and develop appropriate protocols.

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8. p. 12 The Department should clarify whether the Onlot System Density BMP requires the use of total acreage or undisturbed acreage.
9. p. 14 Riparian Forest Buffer BMPs: The requirements of Chapter 102 include forest preservation and maintenance. The Department should state that proper silvaculture activities are allowed to ensure healthy forests and to reduce forest fires.
10. p. 15 Riparian Buffer BMP: DEP should provide direction or references regarding vegetation types or quantities, especially for invasive and non-native plants.
11. Permeable Reactive Barrier BMP: The Department should describe the distinction between water table and shallow aquifer as they relate to the Permeable Reactive Barrier BMP.

The Department should consider allowing Permeable Reactive Barriers to be dug two feet into an aquitard, not just into the seasonal low water table.

The Department should develop proportional credits for systems within the range of isolation distances for Permeable Reactive Barrier BMPs.

An isolation distance from an absorption area may be variable depending on soils and/or geology. The Department should work with PAPSS to provide specific language for this BMP, including the provision for site-specific distances and design criteria.

Disturbance of native soils should be carefully considered and avoided depending on the soil type.

12. p. 17 The Department should consider adding a statement that other advanced onsite denitrifying technologies are allowed as they are approved.
13. p. 17 The Department should assign apportioned protection factors for other treatment systems based on performance.
14. p. 18 The Department should emphasize that alternative options can be used to comply with the anti-degradation guidance to maintain and protect water quality.
15. The Department should include a Source Reduction BMP that includes those discussed on page 23 #12 and any others, and provide applicable protection factors. Consider BMPs for composting toilets, and advanced treatment (see proposed chapter 73a).
16. The data from the DelVal Phase I and II studies (see attachments) indicate that nitrate concentrations in the absorption areas beneath operating drip systems typically are less than 10 mg/L. These findings are consistent with other studies demonstrating that shallow placement and even distribution allow for nitrate reduction. Therefore, the Department should include drip systems as a BMP and assign a protection factor of 4.
17. The Department should consider allowing compensatory mitigation or the transfer or offset of protection factors within a watershed from BMP use by agricultural sources of nitrate, nutrient management plans, or for land purchased and placed into a conservancy that could be credited toward the acreage requirement on a smaller property, or adding denitrification technology on an existing structure of equal or greater use in addition to denitrification on the subject property to double the credits allotted for use of the denitrification technology BMP.

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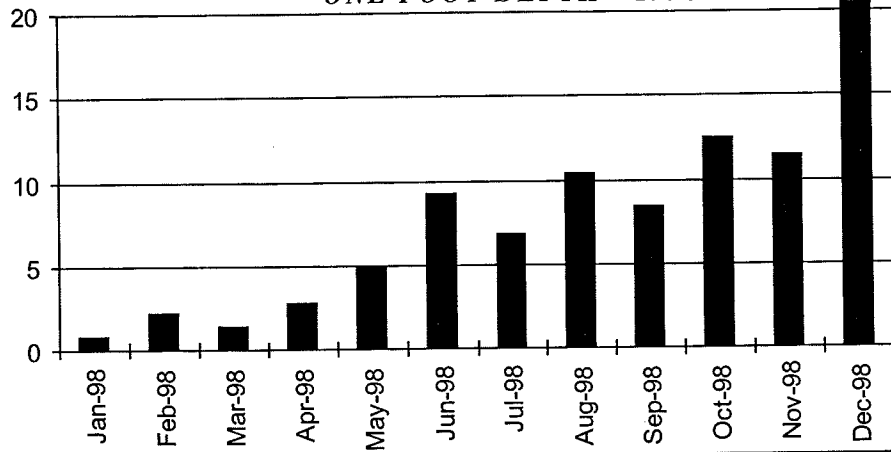
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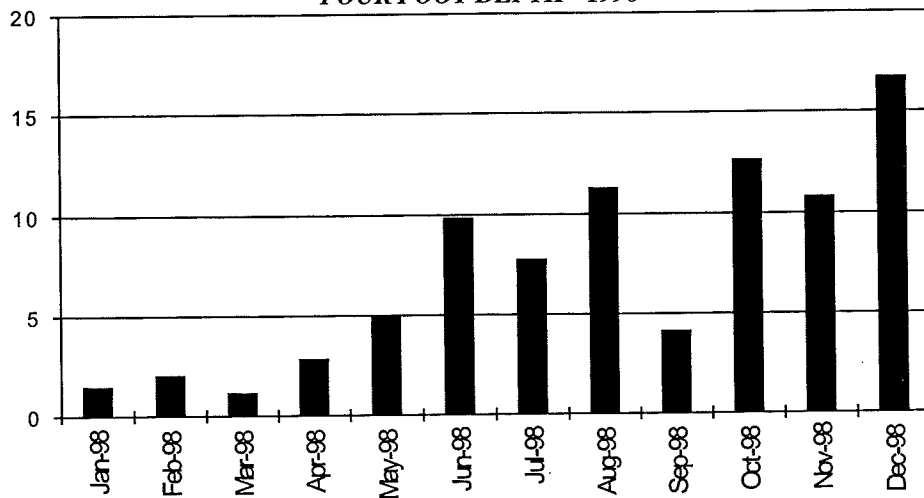
18. The Department should consider allowing an “interception forests” BMP – woodlands between the absorption area and the stream that do not qualify as riparian forest.
19. The Department should develop a policy that as new BMPs are approved regionally or by central office be listed on the DEP website so that all may be aware of the technology’s approval.
20. Section V. Cost estimates are provided for the Permeable Reactive Barrier and the Denitrifying Onlot Treatment Technology BMPs but not the Riparian Forest Buffer and Riparian Buffer BMPs. The Department should include current cost estimates or add a footnote to adjust costs to current values (per ENR Indices or directly from vendors), or remove all costs due to site and regional variabilities. The SAC can assist to provide a range of actual costs from different areas of the state.
21. The Department should add language that the given costs are for construction only, and that other costs would occur for planning, design, etc. Add a statement indicating that the property owner should research costs prior to choosing a BMP.
22. p. 19 The Department should explain if riparian buffer ordinances apply to existing properties that do not require planning modules. For example, would construction of a new house in an existing subdivision be subject to the riparian buffer ordinance?
23. Section VI The Department should expand and clarify how municipalities can comply with the requirement for sewage management plans as discussed in this guidance only, i.e. through each Planning Module approval vs through an Official Plan Update.
24. Regional staff discretion: The Guidance states that regional staff has discretion to assign intermediate protection factor values for the Setback Distance and to approve Other BMPs. The Department should provide guidance for consistency between regional offices, describe the Department’s composite assessment of BMP studies and how intermediate values can be determined, and/or add a ratio to the protection factor values for a mathematical result.
25. The Department should provide effective training for regional staff regarding the use and application of the Guidance.
26. The Department should develop training for SEOs.

TECHNOLOGY E: Drip/Trickle Irrigation

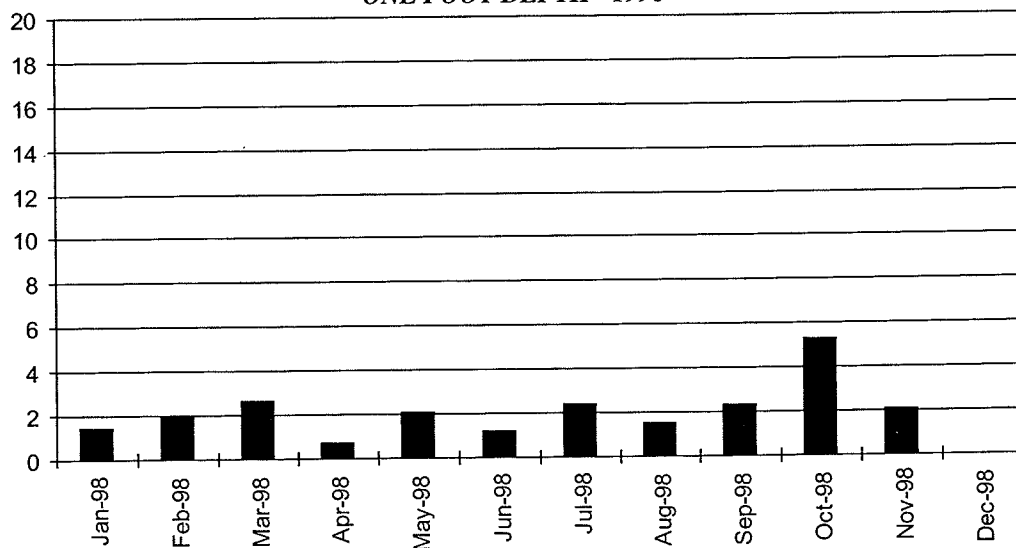
*AVERAGE NITRATE TECH. E - mg/l
ONE FOOT DEPTH - 1998*



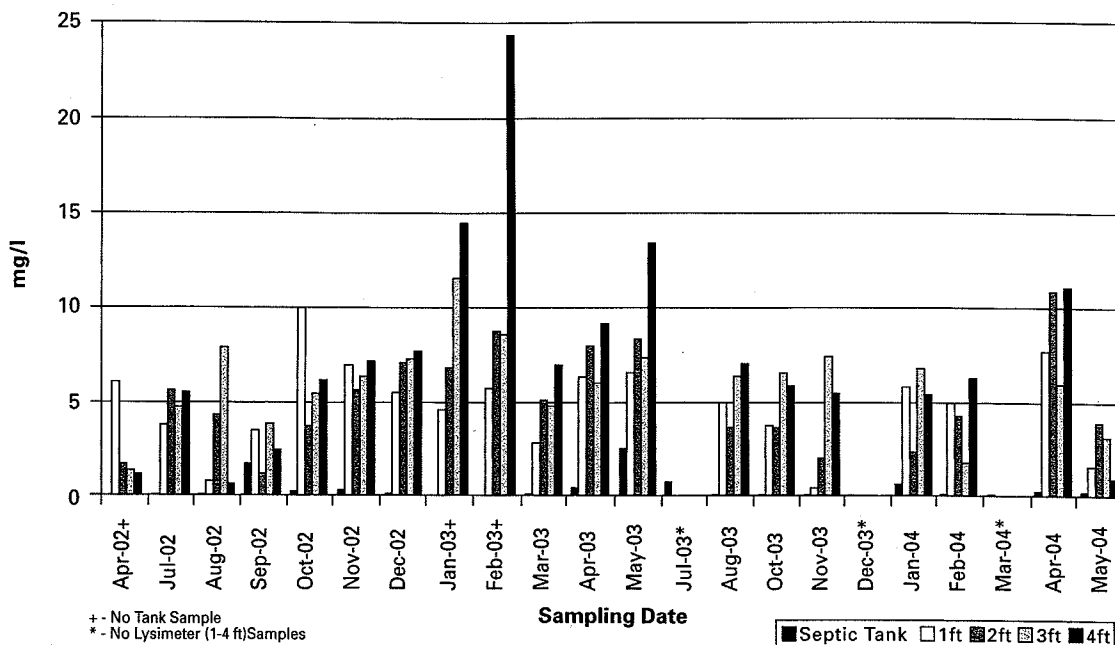
*AVERAGE NITRATE TECH. E - mg/l
FOUR FOOT DEPTH - 1998*



*AVERAGE TOTAL PHOSPHOROUS TECH. E - mg/l
ONE FOOT DEPTH - 1998*



Phase II Tech E Average Monthly Nitrate Nitrogen (NO3-N) Levels



NO3-N (nitrate nitrogen): The Wilcoxon calculated p-values for the comparison of the septic tank to Tech E 1ft, 2ft, 3ft, and 4ft depths ($p=.0000$, $p=.0000$, $p=.0000$, $p=.0000$) indicated a significant difference between the effluent quality of the compared sites. When comparing the lysimeter depths (1ft, 2ft, 3ft, 4ft), the Kruskal-Wallis calculated p-value indicated no significant difference among the four depths ($p=.4521$). NO3-N levels exceeded the PA water quality criterion of 10mg/l (Pa Code, Ch93) 18:89 times (20%) for 1ft depth, 19:82 times (23%) for 2ft depth, 14:74 times (19%) for 3ft depth, and 20:60 times (33%) for 4ft depth. The median or measure of center increased from the septic tank through the soil depths. Descriptive statistics for each sampling site, which include the number of samples (N) and the 5-number summary, are found in the table below.

Descriptive Statistics for Tech E NO3-N (mg/l)

| | Tank | EL 1ft | EL 2ft | EL 3ft | EL 4ft |
|---------------------|------|--------|--------|--------|--------|
| N | 18 | 89 | 82 | 74 | 60 |
| Minimum | 0.00 | 0.08 | 0.08 | 0.04 | 0.04 |
| 1st Quartile | 0.09 | 0.69 | 0.41 | 1.02 | 0.71 |
| Median | 0.16 | 3.21 | 2.57 | 2.64 | 5.55 |
| 3rd Quartile | 0.48 | 8.88 | 9.72 | 7.90 | 12.63 |
| Maximum | 2.51 | 26.54 | 23.98 | 33.00 | 31.00 |