

**Virginia Department of Health (VDH)  
Sewage Handling and Disposal Advisory Committee (SHADAC)  
Meeting Summary  
October 29, 2013**

**List of attendees at central location:**

Advisory Committee Members

David Fridley – Acting Chair	Matt Tolley	Mike Lynn
Robert Lee	James Pyne	Colin Bishop
Pete Kesecker	Charlie Swanson	Bob Mayer

VDH Staff and Guest

Dwayne Roadcap	Marcia Degen	Lance Gregory
Mark Courtney	Trisha Henshaw	Dave Lentz
Brian Parker	Erik Johnston	Tom Ashton

**List of attendees at remote locations:**

Advisory Committee Members

Dr. John Galbraith	Bill Timmins
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VDH Staff and Guest

Jeff Walker	Larry Hall
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**Administrative**

1. Welcome.

The SHADAC Chairman, Vincent Day, was unable to attend. Mr. Fridley volunteered to sit as acting chair for the meeting. Mr. Swanson sat as proxy for Valerie Rourke representing the Department of Environmental Quality (DEQ). Mr. Mayer sat as proxy for Curtis Moore representing the Virginia Onsite Wastewater Recycling Association (VOWRA).

2. Approve agenda.

Mr. Fridley asked if there were any comments on the agenda; there were no comments.

3. Review and approve minutes from January 23, 2013, and July 17, 2013, SHADAC meetings.

Mr. Gregory asked if the committee had any comments, corrections or additions to the draft meeting summaries for the January 23, 2013, and July 17, 2013, SHADAC meetings. There were no comments and the committee unanimously approved the minutes.

**Old Business**

1. Update on the motion to create a policy regarding authority of local ordinances in light of Attorney General's opinion. (Mr. Roadcap)

Mr. Roadcap commented that the concept of creating a policy was vetted with the Commissioner's office and the Attorney General's office. VDH has decided not to create a policy at this time.

2. Update on the SHIFT. (Mr. Roadcap)

Mr. Roadcap stated that the next [Safety and Health in Facilitating a Transition](#) (SHIFT) meeting was scheduled for October 31, 2013. Prior to the meeting the Institute for Environmental Negotiations (IEN) sent out a survey to SHIFT committee members. A copy of the survey is available on VDH's SHIFT website (<http://www.vdh.virginia.gov/EnvironmentalHealth/Onsite/SHIFT>). This survey is part of IENs shift from group facilitation to group mediation. IEN developed the survey by reaching out to individual groups to try to identify ways to generate proposals to move the process forward. The survey will test for consensus on those proposed ideas.

Mr. Fridley asked what will be done with IENs work product after the SHIFT process is done.

Mr. Roadcap stated that VDH is waiting to see what consensus recommendations come out of the process. The agency has already announced that regardless of the shift process VDH will, 1) change VDHs work product to mirror what is expected of the private sector to the extent possible, and 2) identify disclosures for the limits to VHD services – limits based on separate roles as regulators and direct service providers.

Mr. Tolley asked when these tasks will be completed and whether SHIFT recommendations have to go through legislation.

Mr. Roadcap stated that VDH announced the proposed changes for work products and disclosures to EH managers last week. He added there are internal issues, including potential fiscal impacts to upgrade software that must be addressed. These tasks are a high priority for the agency, but it is difficult to give a timeframe.

Regarding SHIFT recommendations, Mr. Roadcap stated it would depend on consensus. Implementing recommendations by policy may be problematic. For example, if the SHIFT

recommends that applicants have to go to the private sector to do a cert letter, VDH may need a specific law to cite that VDH does not provide that service.

Mr. Lee asked if the SHADAC would see a final product at the next meeting.

Mr. Roadcap stated IENs report should be complete by early December 1. This will provide time for review of any recommended legislative changes.

### 3. Update on the Alternative Onsite Soil Evaluator Regulations, 12VAC5-615. (Mr. Roadcap)

The Authorized Onsite Soil Evaluator Regulations (AOSE Regulations) were developed before licensure of Onsite Soil Evaluators (OSEs) was transferred to the Department of Professional and Occupational Regulation (DPOR). VDH does not have authority for the AOSE Regulations, and a request to remove the regulations should have been completed at the time of that transfer. The Governor's office recently requested state agencies to eliminate regulations that are unnecessary, which prompted VDH's request to rescind the AOSE Regulations through a fast track process.

Mr. Roadcap stated that VDH received 30 comments against rescinding the AOSE Regulations, most stating that portions of the AOSE Regulations need to stay in effect. Because of these comments the regulatory process has shifted to the routine regulatory adoption process. VDH's next step is to propose the rescission and propose an additional comment period. VDH's position has not changed because the agency does not have authority to administer the AOSE Regulations.

Mr. Mayer asked whether VDH will maintain any components of the AOSE Regulations, possibly within a GMP.

Mr. Roadcap stated the agency feels those components are already contained within VDH policy. Additionally, VDH believes the agency does not need a regulation to determine the minimum application requirements. There are other items in the AOSE Regulations that the agency does not have authority to determine, such as ethical requirements for licensees.

Mr. Lee asked where DPOR stood on the issue, adding that he believed DPOR used the AOSE Regulations to create their testing requirements. Mr. Lee questioned whether rescission of the AOSE Regulations would affect DPOR's testing requirements.

Mr. Courtney commented that DPOR consult with their exam provider and make sure there are no questions sourced from the AOSE Regulations.

Mrs. Henshaw stated the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals (WWWOSSP Board) could conduct a regulation review to determine whether it is necessary to bring in any standards of practice from the AOSE Regulations. She added that repeal of VDH regulations will not impact DPOR enforcement.

because DPOR does not have authority to take action if someone goes against VDH regulations. DPOR can only enforce DPOR regulations.

Mr. Lee asked whether standards of practice are typically contained within a DPOR Board's regulations, or does DPOR typically look at other regulations for standards of practice. He also asked whether there are areas where standards of practice are contained in a non-regulatory framework.

Mr. Courtney stated that it varies from program to program, but if charged with a violation, there must be a DPOR regulation or code section to reference.

Mr. Lynn commented that policy doesn't have the backing of regulations; having standards of practice in the regulations gives the private sector something to hang their hat on.

Mr. Roadcap stated that it is possible for VDH to move items in the AOSE Regulations that the agency does have authority to regulate into another regulation.

Mr. Walker commented that he believes the AOSE Regulations get authority from statute and are the basis for GMP 126.B. He asked what aspects have to be retained under the code, and which portions have to be shifted to DPOR to be able to enforce the requirements of the AOSE Regulations.

Mr. Lee commented that he felt it would be helpful to identify what items in the AOSE Regulations could be moved to other regulators.

Mr. Bishop stated the parts of the AOSE Regulations that individuals would like to keep should be placed into DPOR's regulations.

## **New Business**

### 1. Evaluation and design of private wells; request for industry improvements. (Mr. Gregory and Mr. Hall)

Mr. Gregory stated that VDH has received a number of comments on the need for improvements to the private well program, specifically regarding evaluations and designs. Mr. Gregory introduced Mr. Hall, a well driller in central Virginia, to discuss some of the issues from Mr. Hall's perspective.

Mr. Hall commented on issues with scale drawings that do not show specific measurements. He stated this causes an issue for well drillers when locating the well in the field. He also stated that when modifications are agreed upon by well drillers and private sector designers the local health department is not informed and this results in issues upon inspection of the well. Mr. Hall felt there needs to be a standard document for permitting private wells and that measurements should be provided to triangulate the location of the well.

Mr. Gregory asked for volunteers to help address comments on the need for improvements to the private well program. Mr. Lynn, Mr. Fridley, and Mr. Mayer stated their organizations would be willing work with VDH to address comments and concerns from the industry.

## 2. Nitrogen stakeholder meetings. (Dr. Degen)

Dr. Degen provided a presentation on nitrogen reduction requirements for new applications to construct alternative onsite sewage systems in the Chesapeake Bay watershed. A copy of the presentation is included in Appendix A.

Mr. Mayer asked if field test monitoring would be done under the absorption area.

Dr. Degen stated that is an option.

Mr. Lynn asked if there a difference between 12 inch and 18 inch installations for drip.

Dr. Degen stated the 50% reduction from the Environmental Protection Agency (EPA) is limited to 12 inch installations.

Mr. Aston commented Virginia also brought forward to the EPA de-nitrification based on soil types as a possible future BMP.

Dr. Degen stated there was research done that tried to look at de-nitrification rates with different soil types with drip dispersal, but the research has not been verified. However, the EPA workgroup recognized that soils play a big part in de-nitrification.

## 3. Gravelless material policy. (Mr. Gregory)

Mr. Gregory stated that VDH is in the process of developing a policy for the use of gravelless material in VDH Onsite Soil Evaluator (OSE) designs. He stated that the policy will also provide a brief discussion of drip dispersal as it relates to the emergency regulations for gravelless material and drip dispersal. Once the policy is approved by the State Health Commissioner it will replace existing policies for gravelless material and drip dispersal.

Mr. Gregory commented that some of the key elements of the draft policy are as follows:

- If gravelless material is used, the owner is not required to maintain the footprint for the gravel and pipe primary.
- VDH OSEs would be required to include a statement on their permits that allow gravelless materials to be used in lieu of gravel and pipe.
- VDH OSEs would not design gravelless material system if they could not find an area for a gravel and pipe system, except for repairs if homeowner agrees. However this could be expand to allow homeowners to request gravelless material designs from VDH OSEs for new systems, or VDH could simply specify a gravelless material design when it is an option.
- For private sector designs, the use of gravelless material is at their discretion.

- For reserve areas, cert letters, and subdivision approval, VDH OSEs would be looking for the most conservative area available, gravel and pipe being the most conservative.
- There is no fee to modify a permit if a private sector designer allows the use of gravelless material in lieu of gravel and pipe. VDH does not need to approve the modification as long as the gravelless material is installed in approved area, and is documented by certifying OSE of professional engineer.

Mr. Gregory then asked for comments from the committee on the proposed policy. Several committee members commented that VDH should not have two different design standards for VDH OSEs and private sector OSEs. One suggestion was for VDH OSEs to be allowed to use all design components allowed by regulations, and leave the decision to use gravelless material at the discretion of the VDH OSE. Another suggestion was to use the term “or equivalent” in reference to gravelless material to allow the contractor to choose the specific product. It was also suggested that a document be developed to inform homeowner of the different options.

#### 4. Peat disposal policy. (Dr. Degen)

Dr. Degen discuss a proposed revision to Guidance, Memorandum, and Policy (GMP) 143 to include an option for on-site disposal of peat (see Appendix A). The proposed revision also includes data from Virginia Tech and Anua for landfill application which are intended to help with landfills willingness to accept the peat. For on-site disposal the idea is to add lime at the same amount as the landfill option. The peat would then be placed in a trench that complies with setbacks contained in Table 4.2 of the Sewage Handling and Disposal Regulations. The trench would need to have a 6 foot horizontal separation from tanks and the dispersal area. A repair application would be required with 1 to 2 soil borings and a description of method to remove the peat.

Dr. Degen stated that the intent of the revisions is to create a more cost effective method for disposal of peat. She asked committee members to submit any comments they have on the proposed revision to her.

#### 5. Direct dispersal policy and discuss 12VAC5-613-90.D.1.b and 90.D.4. (Mr. Gregory)

Mr. Gregory stated that VDH is developing a policy that would provide a blanket variance for the installation of repair systems that result in direct dispersal. He stated that VDH has received several individual variance requests where the only repair option will result in direct dispersal, but the owner states the requirements for direct dispersal are too costly. Mr. Gregory is drafting a policy that would deal with repairs for systems that disperse less than or equal to 1,000 gallons per day. In order to receive the blanket variance the draft policy requires the following:

- The failed system must already result in direct dispersal.
- The repair design must be submitted under Va. Code Section 32.1-163.6.
- There are no viable regulatory requirement options that don't result in direct dispersal.

- The design must incorporate Treatment level 3 effluent plus disinfection, with loading rates in accordance with the Regulations for Alternative Onsite Sewage Systems.
- The system must provide a 50% nitrogen reduction.
- The design must incorporate pressure dosing.
- There are no public wells within 200 feet.
- The system must be sampled in accordance with 12VAC5-613-100.E for non-generally approved system.
- The system must be inspected annually.

One committee member commented that the requirements, as outlined, are still difficult and do not encourage an improvement to the failing system.

Mr. Gregory asked that members continue to provide their thoughts on the proposed policy.

**Adjourn**

## **Sewage Handling and Disposal Advisory Committee Meeting Agenda**

Date: October 29, 2013

Time: 10 am to 2 pm

Location: Main Floor, Mezzanine Conference Room  
James Madison Building  
109 Governor's Street  
Richmond, Virginia 23219

### **Administrative**

1. Welcome.
2. Approve agenda.
3. Review and approve minutes from January 23, 2013 and July 17, 2013 meetings.

### **Old Business**

1. Update on the motion to create a policy regarding authority of local ordinances in light of Attorney General's opinion. (Mr. Roadcap)
2. Update on the SHIFT. (Mr. Roadcap)
3. Update on the AOSE Regulations, 12VAC5-615. (Mr. Roadcap)

### **New Business**

1. Evaluation and design of private wells; request for industry improvements. (Mr. Gregory and Mr. Hall)
2. Nitrogen stakeholder meetings. (Dr. Degen)
3. Gravelless material policy. (Mr. Gregory)
4. Peat disposal policy. (Dr. Degen)
5. Direct dispersal policy and discuss 12VAC5-613-90.D.1.b and 90.D.4. (Mr. Gregory)

### **Adjourn**



# Peat Policy GMP 143

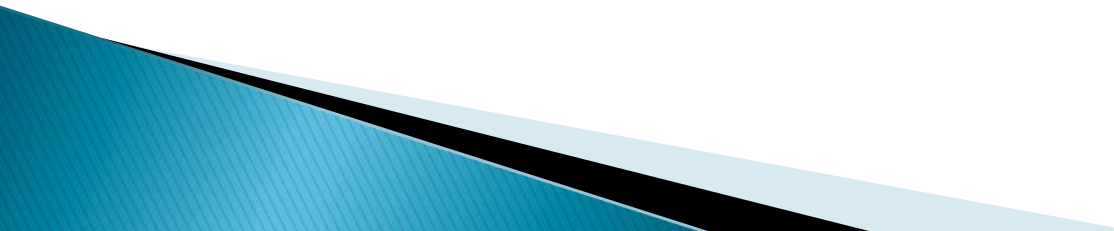
# Current Policy

- ▶ Only one disposal option – landfill
- ▶ Problem: cost to haul to landfill and refusal of some landfills to take the peat

# Proposed Changes

- ▶ Identifies 3 options
  - Landfill
  - DEQ permitted activity
  - On-site disposal
- ▶ Addresses Abandonment of Units

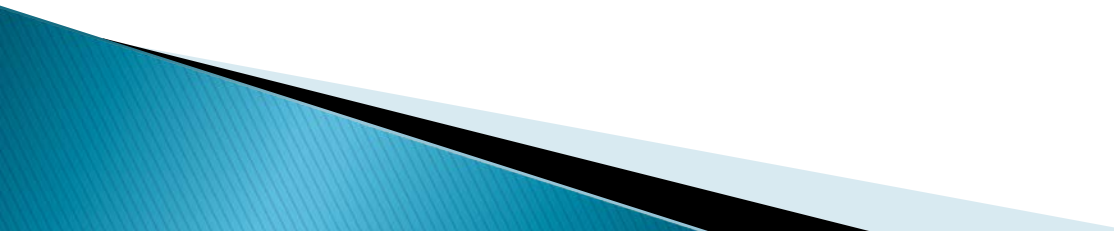
# Landfill

- ▶ Includes data from Virginia Tech on spent peat
  - ▶ Retains addition of hydrated lime for odor and pathogen reduction (does not have to attain a certain pH level)
  - ▶ Dewater to pass paint filter test
- 

# DEQ Permitted Activity

- ▶ Compost
- ▶ Reuse
- ▶ Land application

# On-site Disposal

- ▶ Add lime to peat as in landfill option
  - ▶ Disposal in on lot trench (excavation) IF:
    - Complies with Table 4.2 setbacks
    - Not subject to flooding or erosion
    - 6 feet horizontal from dispersal area
    - Bottom  $\geq$  6 inches above SHWT or PLF (cannot create vertical separation)
    - 6 inches of soil cover and seeded
    - Max depth 12 inches
- 

# On-site Disposal

- ▶ Repair Application:
  - Soil boring(s) to verify depth to SHWT or PLF
  - Site sketch to locate disposal area
  - Description of method to remove peat lime application and disposal procedure

- ▶ Draft out to districts soon for comment.



# Update on BMPs for Small AOSSs

*Marcia Degen, Ph.D., P.E.  
VA Dept of Health*



# Today's Agenda

- Brief Review of Statewide N PLUS  
Chesapeake Bay N regulations
- Verifying Compliance
- BMPs for Small AOSS
- Status of VDH Policy Development

# EPA Assumptions for Onsite

- EPA assumes that onsite systems do not add P to the BAY due to the number of reactions available in an unsaturated soil environment to remove P
- The edge of drainfield load is about 9 lb/person/year (4 kg/person/yr). EPA assumes that 40% of that N migrates to the river's edge.

# FINAL Regulations for Alternative Onsite Sewage Systems

- 12 VAC 5-613
- Adopted December 7, 2011
- Bay N Limits effective December 7, 2013  
section 90.D.

# Regulations for Alternative Onsite Sewage Systems

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- **Applicability**
- **Small vs. Large Performance Requirements**
- **Verification (Reasonable Assurance)**



# Related Information

- Renewable operating permits (5 year term) required for all large systems (>1,000 gpd)
- Renewable operating permits required for all direct dispersal systems
- All other systems receive operating permits with no expiration date

# Current Statewide N Limits

- For Large AOSSs must meet 5 mg/l TN at the project boundary – essentially groundwater
- All direct dispersal systems (dispersal within 6 inches of a water table) regardless of size:
  - < 5 mg/l TN as applied to soil dispersal system

# Applicability of Bay N Limits

- Effective Date: December 7, 2013
- All construction applications received **on or after** that date
- All renewable operating permits that initiate a reissuance **on or after** that date



# Chesapeake Bay

## N Limits in Small Systems

$\leq 1,000$  gpd

- 50% N reduction as compared to conventional septic tank drainfield system
- **BMPs as recognized by VDH**
- Defines 50% as 4.5 lb N/person/year at edge of drainfield OR
- 20 mg/l TN applied to the drainfield
- No allowance for uptake or denitrification in dispersal field with install depths > 18 inches

# BMPs

## Existing BMPs

- 50% N Removal Treatment Unit
- Hook up to Central Sewer
- Septic Tank Pump Out

New BMPs – will discuss later

# Chesapeake Bay

## N Limits in Large Systems

>1,000 to 10,000 gpd

- 50 % N reduction as compared to conventional
- Demonstration:
  - 20 mg/l TN in effluent applied to soil OR
  - As measured within 24 inches below application point in soil
- Allows for an intermediate compliance point approved by VDH
- Methods for insitu testing not defined

# Chesapeake Bay

## N Limits in Large Systems

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>10,000 gpd

- 8 mg/l TN in effluent applied to soil OR
- 5 mg/l as measured within 24 inches below application point in soil
- Allows for an intermediate compliance point approved by VDH
- Methods for insitu testing not defined

# Don't Forget

- Both N limits apply to large systems
  - 5 mg/l to meet drinking water standards
  - N limits for Chesapeake Bay TMDL
- The most limiting case rules
- Example: 8,000 gpd school
  - Given dilution area available, engineer determines effluent must meet 15 mg/l TN to comply at property boundary
  - For TMDL limit is 20 mg/l
  - What's the end of pipe limit?

# Special Case: Direct Dispersal

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Effluent Limits:

$\leq 3 \text{ mg/l TN}$  and  $\leq 0.3 \text{ mg/l TP}$

Regardless of design flow

Providing Reasonable Assurance

# Verifying Compliance

# Verifying Compliance

- Small Systems:
  - Encourage use of BMPs accepted by VDH
  - If properly maintained by a licensed operator assumed complying
  - No ongoing N sampling anticipated at this point unless proposal of other than accepted BMP



# Verifying Compliance

- Large Systems:
  - Monitoring to verify compliance
  - Routine electronic reporting of O&M
  - O&M by licensed operator
  - Frequencies in accordance with AOSS Regulations

# Sampling for Large AOSS

<b>PLANT SIZE</b>	<b>&gt;2.0 MGD</b>	<b>&gt;1.0-2.0 MGD</b>	<b>&gt;.1 to 1 MGD</b>	<b>&gt;0.04-0.1 MGD</b>	<b>&gt;0.01-0.04 MGD</b>	<b>&gt;0.001-0.010 MGD</b>
<b>Flow</b>	<b>Totalizing, Indicating &amp; Recording</b>	<b>Totalizing, Indicating &amp; Recording</b>	<b>Totalizing, Indicating &amp; Recording</b>	<b>Totalizing, Indicating &amp; Recording</b>	<b>Measured</b>	<b>Estimate</b>
<b>BOD<sub>5</sub>, TSS</b>	<b>24-HC 1/Day</b>	<b>24-HC 5 Days/Wk</b>	<b>8-HC 3 Days/Wk</b>	<b>4-HC 1 Day/Wk</b>	<b>Grab quarterly</b>	<b>Grab 1/yr</b>
<b>Total Nitrogen</b>	<b>24-HC weekly</b>	<b>24-HC weekly</b>	<b>8-HC monthly</b>	<b>4-HC quarterly</b>	<b>Grab quarterly</b>	<b>Grab 1/yr</b>
<b>TRC, Contact Tank</b>	<b>Grab daily</b>	<b>Grab daily</b>	<b>Grab weekly</b>	<b>Grab weekly</b>	<b>Grab weekly</b>	<b>Grab 1/yr</b>
<b>Fecal Coliform</b>	<b>Grab weekly</b>	<b>Grab weekly</b>	<b>Grab monthly</b>	<b>Grab monthly</b>	<b>Grab quarterly</b>	<b>Grab 1/yr</b>

# Special Case: Direct Dispersal

$\leq 1,000$  gpd - Quarterly effluent monitoring for BOD<sub>5</sub>, TSS, fecal coliform, TN, TP

$> 1,000$  gpd and  $< 40,000$  gpd - Monthly effluent monitoring

$\geq 40,000$  gpd follow previous Table for effluent monitoring

How Do We Get There?

# **BMPs for Small AOSSs**

# BMP Development

- EPA set up the On-Site Wastewater Treatment Systems Nitrogen Reduction Technology Expert Review Panel (OWTS Panel)
- Initial meeting January 2012
- Met monthly
- Task: identify and recommend practices (BMPs) that would reduce N loads from the onsite sector
- Limited to BMPs within the owner's control

# Onsite Wastewater Treatment Systems Expert Panel Charge

- Review available science on the nitrogen removal performance of treatment practices
- Provide concise definitions and percent reductions for nitrogen load reduction practices
- Provide a definition for each treatment practice and the qualifying conditions under which credits can be received

# Draft Final Report

- Created August 2013
- Three tiers of review
  - Wastewater Workgroup
  - Watershed Technical Group
  - Water Quality Goal Team
- Presented to Wastewater Workgroup on 9/10
- Approval Stage 1 expected October 2013
- 4-6 months to complete approval process

# Report Summary

- Defined the baseline
- Identified Exsitu (treatment) and Insitu (soil) based BMPs
- Exsitu
  - Proprietary (testing)
  - Non-proprietary (testing)
  - Standard Non-proprietary (assumed to comply)
- BMP Verification



# Current Model Assumptions

- 4 kg TN/person/year at edge-of-drainfield
  - Assumed flow of 75 gpcpd
  - TN concentration of 39 mg/L
- 60 percent attenuation between drainfield and edge-of-stream
- Three BMPs
  - Connection to central sewer (100 percent reduction from on-site sector)
  - 50 percent denitrification system (50 percent reduction)
  - Routine septic tank pump-out (5 percent reduction)

# Baseline Defined

- BMPs are given credit for N reduction **BEYOND** the *baseline condition*
- All BMPs have to be compared to the *baseline condition* to determine the **NET N Reduction**
- From model 4 kg per person per year at edge of drainfield so **edge of drainfield defined.**
- **N applied to drainfield not defined.**
- Panel reviewed available literature

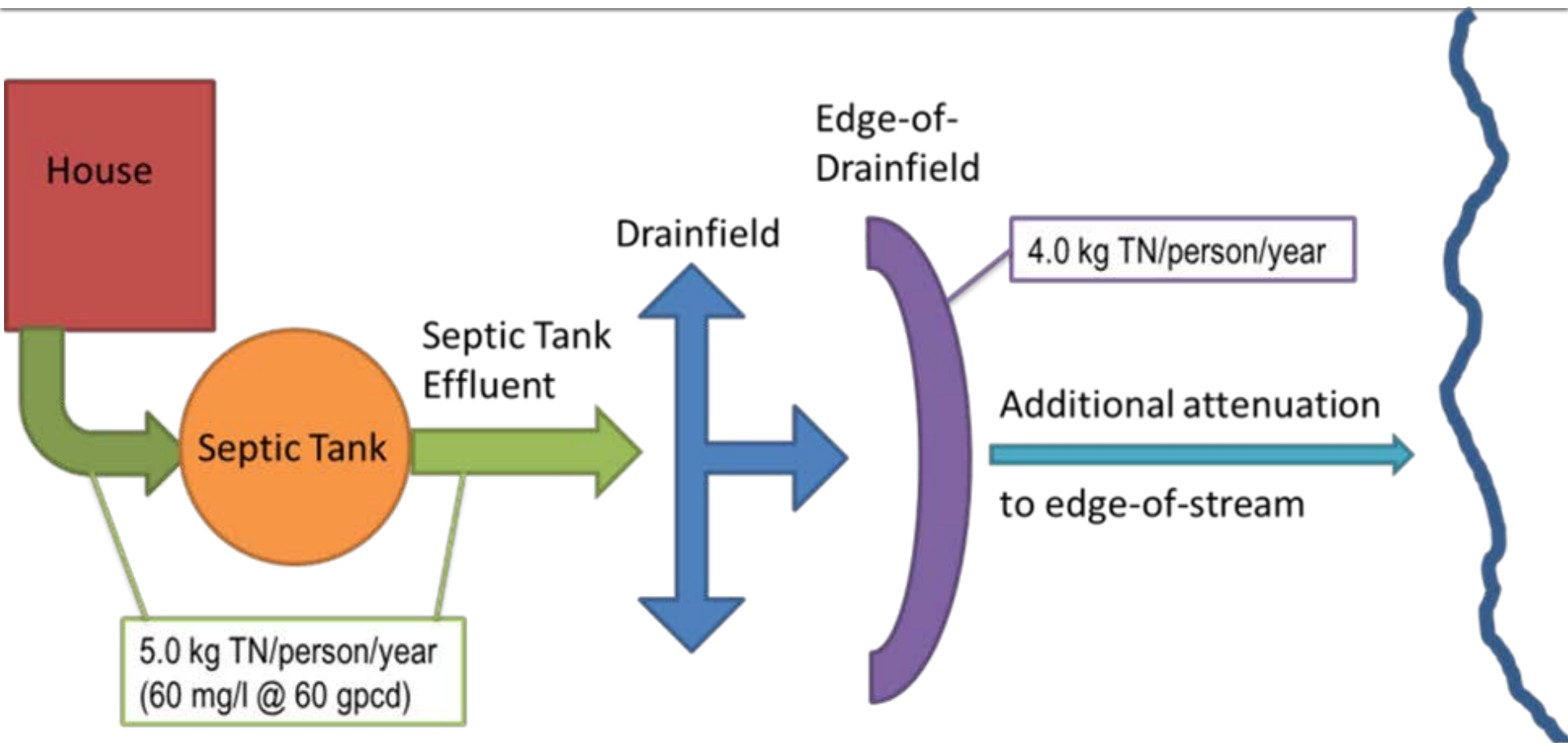
# Baseline Load Recommendations

- 5 kg TN/person/year in raw wastewater and STE based on average of literature reviewed

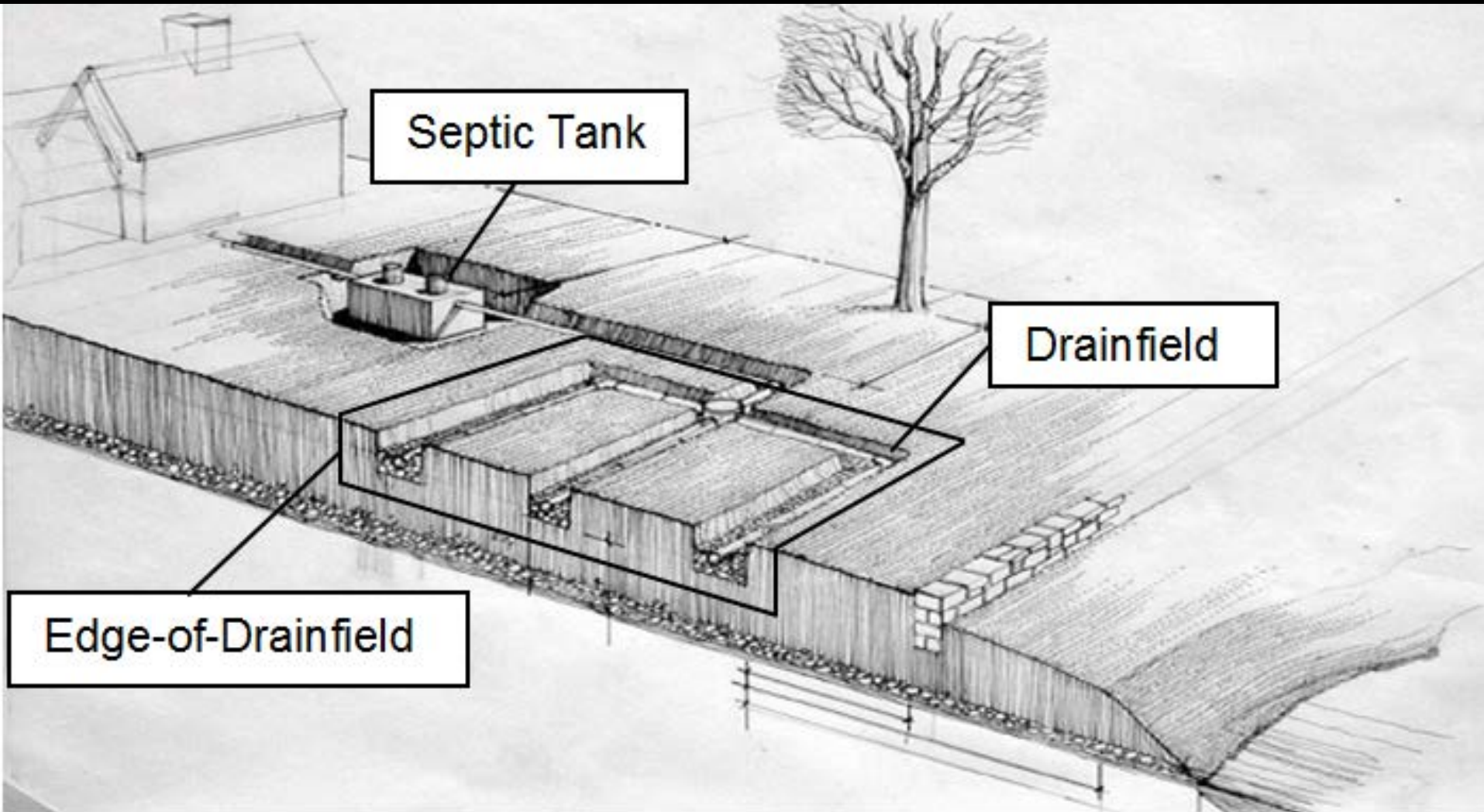
Gpcd	TN mg/l
50	72.44
<b>60</b>	<b>60.4</b>
75	48.3

- 4 kg TN/person/year at edge-of-drainfield
  - 20 percent reduction in drainfield, average

# Baseline Load Recommendations



# Baseline System

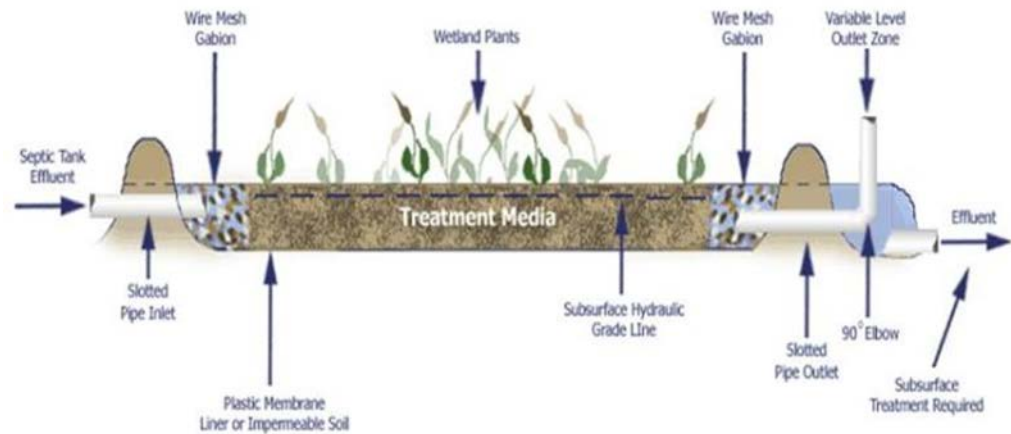
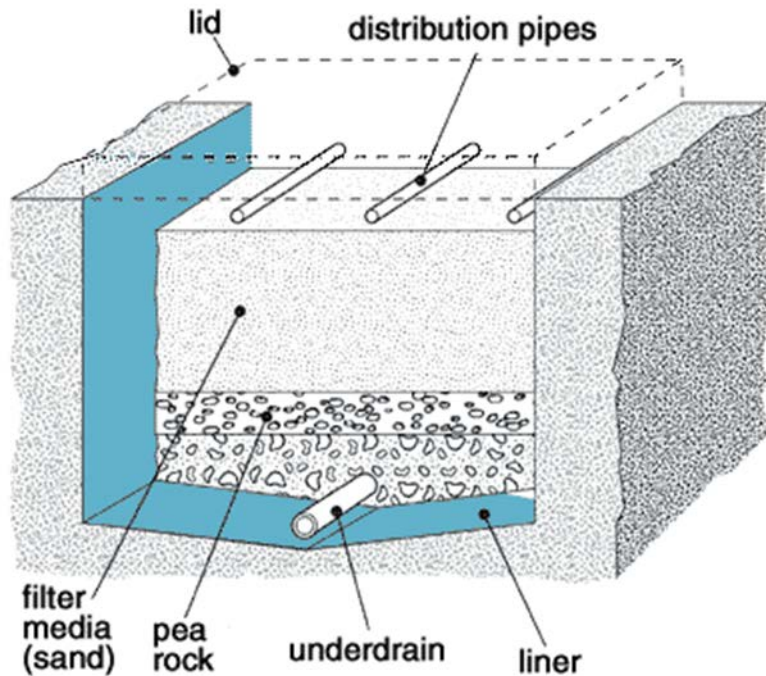
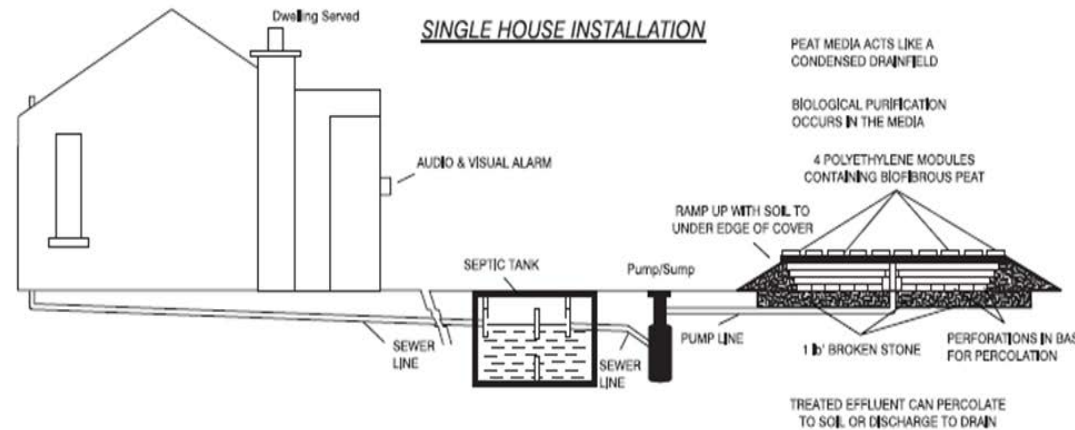
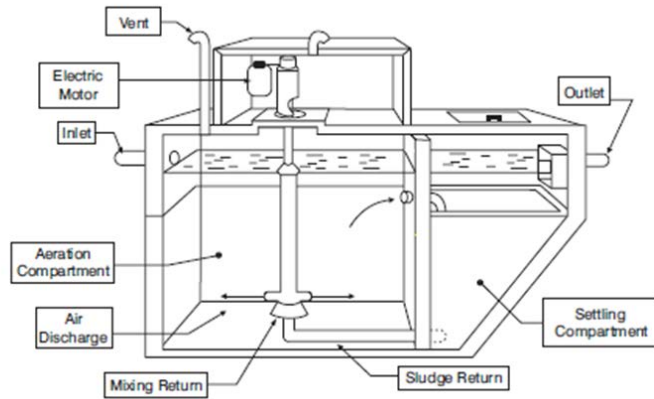


Source: Joubert et al. (2005)

# BMPs Exsitu (Treatment)

BMP	Gross N Reduction
NSF 40 or Equal	20%
Constructed Wetland	20%
Intermittent Sand Filter	20%
Recirculating Sand/Gravel Filter	50%
Anne Arundel Co. IFAS	50%
3 <sup>rd</sup> Party Certified Proprietary	50%

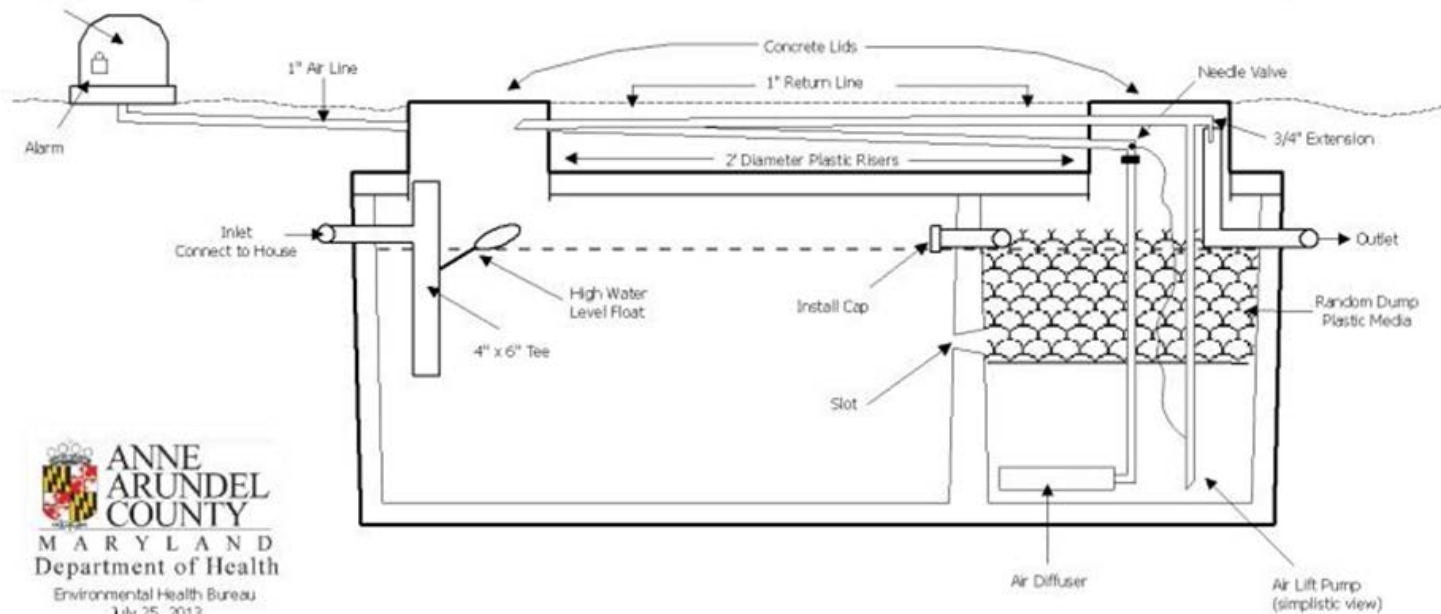
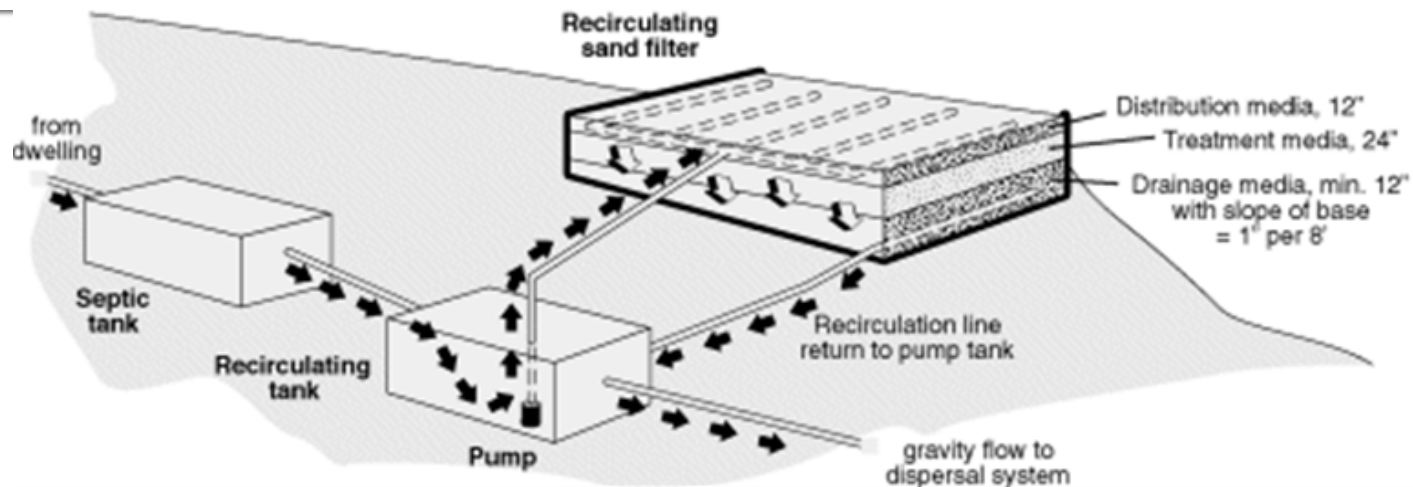
# Exsitu BMPs



No Scale



# Exsitu BMPs

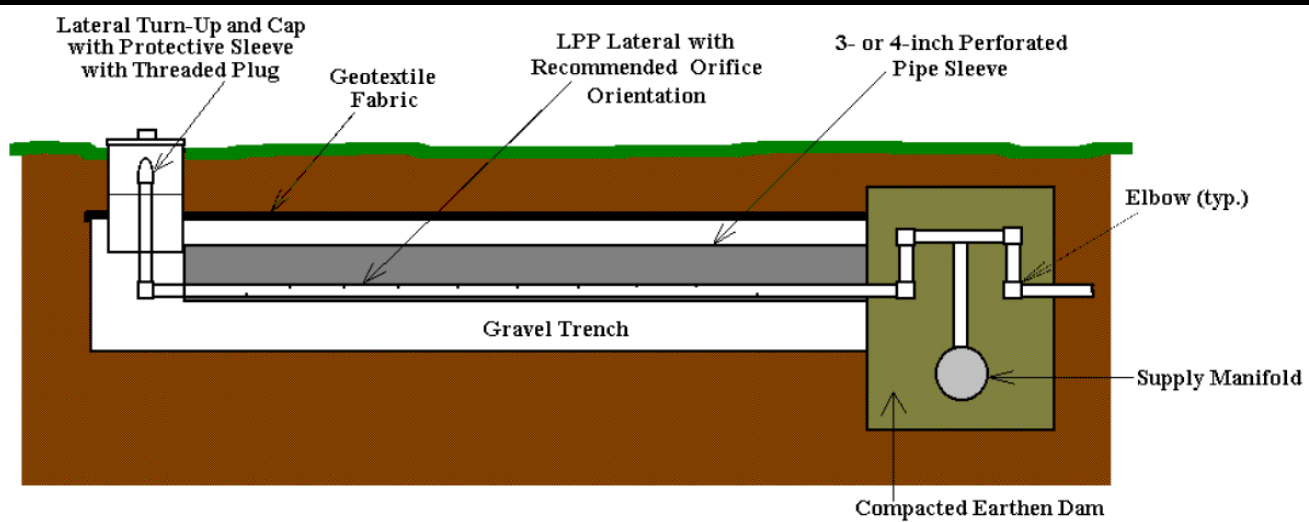




# BMPs Insitu (Soil)

BMP	Gross N Reduction
Shallow place, pressure dosed (drip, LPD)	50%
Elevated sand mound	50%
Permeable reactive barrier	Case by case

# Insitu BMPs



# BMP Design Conditions

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- Each BMP has specific requirements in order to qualify.
- The report details those requirements.

# Intermittent Sand Filter

- Timer-based flow equalization with 12–24 doses/day
- 2' depth media ES = 0.5-1.0 mm; UC  $\leq 4.0$ ; < 0.5% passing #200 sieve
- HLR  $\leq 2$  gpd/sf
- OLR  $\leq 5$  lb BOD/1000 sf
- Uniform, pressurized distribution  $\leq 6$  sf/orifice

# Shallow Placed, Pressure Dosed

- Drip or LPD within 12" of grade in A or A/B horizon
- Credit not provided for sand or loamy sand soils
- Lines placed on contour
- Drip requires: prefiltration system, automatic flush cycle, flow equalization, air release valves
- LPD requires: working pressure head of 2–5', dosing volume of 7–10 times distribution system piping, lateral flushing provisions, max flow variation of 10% for each lateral

# Treatment Units

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- Proprietary
- Non-Proprietary

# Proprietary

- Systems developed, marketed and constructed by a manufacturer
- Manufacturer has ongoing responsibilities for design, install, training operators
- Standardized in design and construction

# Non-Proprietary

- Case by Case designs
- Unique to a given site
- Design standards exist, but constructed using non-specific and readily available materials and mechanical components
- Several non-proprietary deemed to comply based on **defined** design requirements



# Proprietary Recommendations

## Two Step process

- Provisional Testing

- 3<sup>rd</sup> Party test at or near the design flow and loading ; stress testing; influent/effluent testing; seasonal variation
- Examples NSF 245, EN 12566-3

- Field Testing

# Field Testing

- Third party field testing
- 12 field sites minimum
- 4 sampling events minimum per site over 4 seasons.
- All sampling and analyses must follow 40 CFR 136 24-hour composite samples
- Paired influent and effluent sampling to verify the TN reduction capability, unless the state accepts an assumed influent (e.g., 60 mg/L).
- Influent parameters to be tested include BOD<sub>5</sub>, TSS, flow, pH, TKN, and alkalinity.
- Effluent parameters to be tested include BOD<sub>5</sub>, TSS, pH, TKN, nitrite-N, nitrate-N, and alkalinity.

- Long term averages
- Mean of treatment units averaged and then all units averaged
- Data Reciprocity between states encouraged

# Non-Proprietary

## Two Step Approach

- Engineering Justification that follows SEP for nitrogen removal
- Testing 1-2 years in duration, seasonal to verify individual performance

Watershed Wide Approval for non-proprietary can be pursued by submitting supporting documentation to the WWTWG and going through similar review as others in Report

# BMPs Exsitu (Treatment)

BMP	Gross N Reduction
NSF 40 or Equal	20%
Constructed Wetland	20%
Intermittent Sand Filter	20%
Recirculating Sand/Gravel Filter	50%
Anne Arundel Co. IFAS	50%
3 <sup>rd</sup> Party Certified + Field Testing	50%

# BMPs Insitu (Soil)

BMP	Gross N Reduction
Shallow place, pressure dosed (drip, LPD)	50%
Elevated sand mound	50%
Permeable reactive barrier	Case by case

# Net N Reduction of Combined BMPs

- All onsite systems consist of some type of treatment and soil dispersal system
- Have to look at the whole system to assess the final N reduction
- Lots of combinations available
  - Septic tank effluent + drip
  - NSF 40 + drip
  - 50% N reducing unit + mound
  - etc

# BMPs – Defining N Reduction

- *Baseline 20%*
  - 5 kg/person/yr from septic tank to drainfield
  - 4 kg/person/yr at edge of drainfield
  - That's a 20% reduction
- *BMPs*
  - Compare reduction in TN with BMP to TN of 4 kg/person/year at edge-of-drainfield to obtain NET N Reduction



# The Number to BEAT

Always compare to EDGE OF DRAINFIELD

Always compare to

**4 kg/person/yr**

4 kg = 8.82 lb or approximately 9lb

$\frac{1}{2}$  or 50% = 2 kg or approximately 4.5 lb

# Net N Reduction Example

**Proposed:** NSF 40 treatment system PLUS shallow drip

5 kg TN → NSF 40 unit

NSF 40 unit reduces the TN by 20%

TN out to drainfield → 4 kg TN

4 kg TN → shallow drip

shallow drip reduces TN by 50%

TN to edge of drainfield → 2 kg TN

**NET TN Reduction  $((4-2)/4) \times 100 = 50\%$**

# Net N Reduction Example

**Proposed:** Septic tank with shallow drip

5 kg TN → Septic Tank

Septic Tank reduces the TN by 0%

TN out to drainfield → 5 kg TN

5 kg TN → shallow drip

shallow drip reduces TN by 50%

TN to edge of drainfield → 2.5 kg TN

**NET TN Reduction  $((4-2.5)/4) \times 100 = 38\%$**

# Combined BMPs

Treatment	Soil Dispersal	Net N Reduction
Septic Tank	Gravity DF	0%
Septic Tank	Shallow Drip	38%
Intermittent SF	Gravity DF	20%
Intermittent SF	Shallow Drip	50%
50% N Unit	Shallow Drip	69%

# BMP Verification

- BMPs were intentionally set at a conservative level and only includes well documented practices
- Verification of a BMP is required by the model
- Ongoing sampling to verify too expensive
- Panel made the case that due to the conservative nature of the BMPs, verification that the system was functioning as designed was adequate and ongoing sampling not needed.

# Status

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VDH will utilize the recommendations in the report to develop VA's BMP policy for **small AOSSs**

Deadline: December 7, 2013

# Status

- Workgroup 1 – Internal VDH group to work through VENIS data entry and BMP verification procedures (forming-Eric A lead)
- Workgroup 2 – External Stakeholder Meetings to develop policy for accepting Treatment Units as 'approved' BMPs
- Workgroup 3 – Roll in guidance for N into draft Implementation Manual and finalize (forming-Marcia D lead)

# Workgroup 2

- Stakeholder meetings held September 25 and October 9
- Key components of a policy outlined and comments received from both groups
- Minutes and summaries out for approval
- Outline of policy being drafted



# Workgroups 1 and 3

- Workgroup 1 on VENIS interaction: Eric Aschenbach to lead this group. If interested in working with them, please contact one of them.
- Workgroup 3 on general guidance: Marcia to lead this workgroup to finalize implementation manual and roll N guidance in. If interested in working on this, contact Marcia

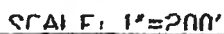
# Questions?

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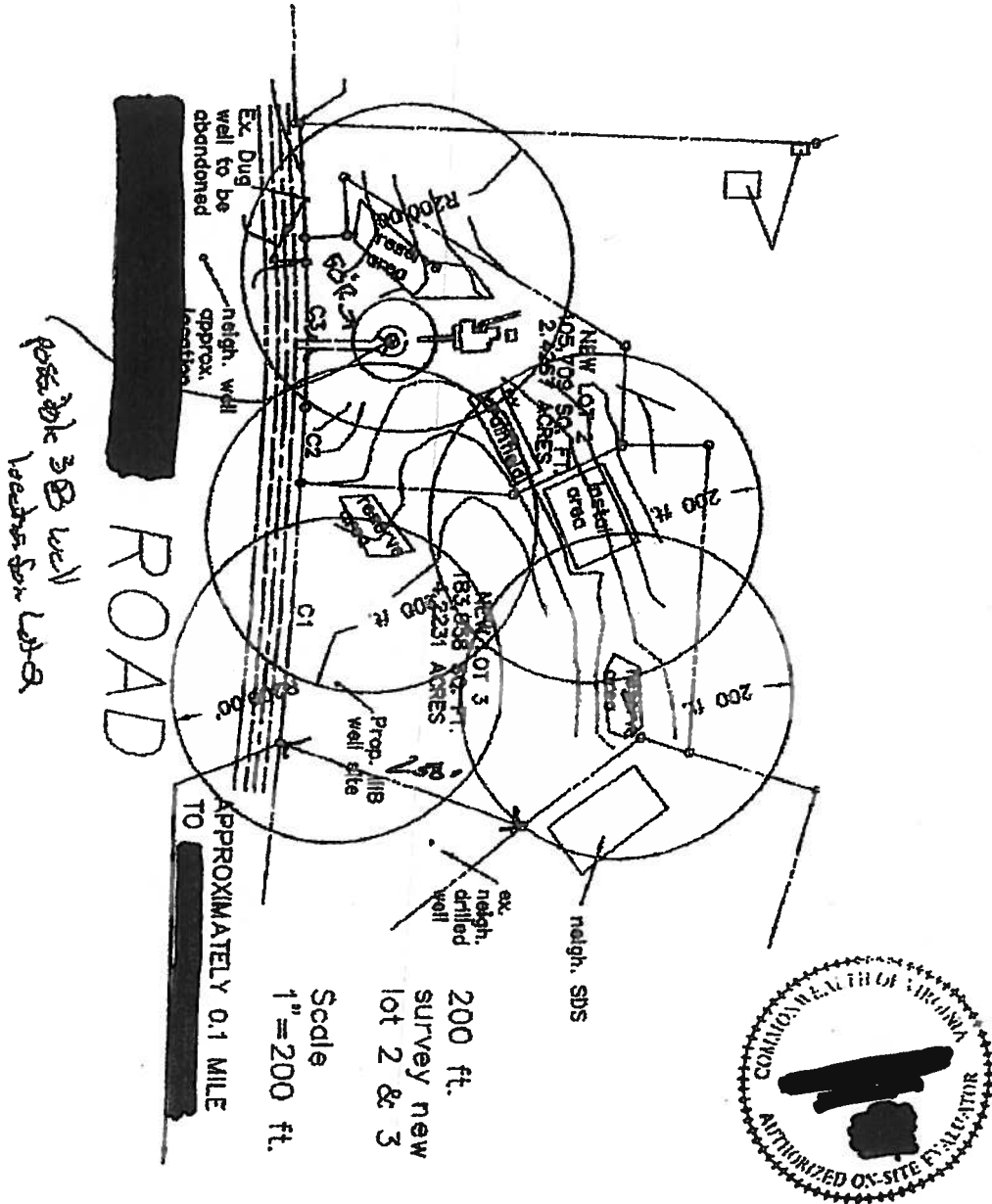
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