Legislative Task Force

Meeting #11

Thursday, July 17, 2014
8:00 – 11:00 AM

Rhode Island's Builders Association Conference room
450 Veterans Memorial Parkway, #301, East Providence, RI

Agenda

8:00 Welcome and Overview of Agenda – *Kevin Flynn, DOP*

8:05 Review / feedback on meeting notes - *Kevin Flynn & All*
- May 29, 2014
- June 19, 2014

8:10 Subject Topics and Technical Presentations:

Overview of Wetlands / OWTS Regulations in Maryland:

8:10 **Andrew T. Der**, Principal and Environmental Consultant, Andrew T. Der & Associates, LLC, Maryland

8:40 Questions & Discussion – (*All) - moderated by Kevin Flynn*

9:10 **Mark W. Eisner**, P.G, President of Advanced Land and Water, Inc., Maryland

9:40 Questions & Discussion – (*All) - moderated by Kevin Flynn*

10:10 BREAK

10:15 RECAP & Next Steps – *Nancy Hess, DOP*
A. Next meeting date(s) – September 18 & 25 (No Meeting in August)

10:30 Discussion: Issues - Task Force Discussion - *moderated by Kevin Flynn*

11:00 Adjourn

Legislative Task Force Meeting #9

Thursday, May 29, 2014

8:00 AM – 10:00 AM
Conference Room, Rhode Island Builders Association
450 Veterans Memorial Parkway, East Providence, RI

Task Force members in attendance were: James Boyd (Coastal Resources Management Council), Joseph Casali (Civil Engineer Representative), Russell Chateauneuf (Civil Engineering Representative), Janet Coit (DEM Director), Thomas D'Angelo and Tim Stasiuanas (Builder's Trade Association), Gary Ezovski (Business Community Representative), Kevin Flynn (DOP-Associate Director), Jane Weidman (Environmental Entity), Thomas Kravitz (Municipal Representative – Burrillville), Tom Kutcher (Wetlands Biologist), Douglas McLean (Municipal Representative - South Kingstown), Scott Moorehead (Business Community Representative), Eric Prive (Civil and Environmental Engineering Representative), and Nancy Scarduzio (Office of Regulatory Reform).

DOP and DEM also had several agency staff members present. From DEM; Brian Moore, Carol Murphy, Ernie Panciera, and Alicia Good. Nancy Hess and Sean Henry were present from DOP.

Introductions

The meeting began with corrections to the meeting notes of the April meeting. After which Kevin Flynn introduced Jane Weidman, Block Island and acting Charlestown Planning Director, representing Lorraine Joubert in her absence. Mr. Flynn also introduced Douglas McLean, representing Vin Murray, Planning Director of South Kingstown. He then introduced Nancy Hess, DOP, to inform the Task Force about the ongoing literature review by staff and Task Force volunteers.

Literature Review

Ms. Hess shared with the Task Force the literature review subgroup's efforts over the previous month and how they when about researching professional documents, academic, and peer-reviewed journals relevant to the Task Force responsibilities. The Subgroup consisted of; Task Force members, James Boyd, Russell Chateauneuf, Lorraine Joubert, Tom Kutcher, and Scott Rabideau and Carol Murphy, Dem and herself. The subgroup divided into two teams, one that would focus on wetlands-related setbacks and buffers, and the other would focus on the same issues as related to OWTS. Carol Murphy was the first group member to present her findings to the task force.

Ms. Murphy's research pertained to wetlands reports specific to Rhode Island and New England at large. She began with a summary of research previously presented to the task force, and reminded

the group about the terminology the state uses to define jurisdictional wetlands and the current setback requirements under state law. The literature reviewed by Carol was primarily related to water quality (both surface and groundwater) and habitats as they relate to the setback and buffer zones that surround wetlands. The first study ("Groffman") named several benefits that buffer zones provide to wetland-dependant wildlife species. In addition to breeding and nesting grounds, the benefits include functions such as dispersal corridors, sites for foraging, and areas to escape flooding. The authors were also about to provide a model for determining a recommended buffer width for the purposes of habitat needs. Task Force members also had questions about and discussed this study.

The second study was from 1991 and was commissioned by DEM. The emphasis was on using buffers for attenuation for storm waters. The authors also created a buffer model that includes variables for areas with high sensitivity, sloped areas, and/or high impact activities. The third study is from the Graduate School of Oceanography (GSO) at the University of Rhode Island. This study compiled minimum buffer sizes "to protect wetland wildlife habitat." It found that many studies determine buffer distances by determining species specific needs, and was able to describe "ideal buffers" for multiple uses.

The fourth document Carol Murphy studied was a recommendation study for DEM written in 1998 by herself and another author. This work was an attempt to develop a tiered buffer model that could be adopted by the state to regulate wetlands. The model was based on wetlands functions and values, and provided a simpler system than a case-by-case basis. The model used four tiers, which were determined by wetlands type (perennial watercourse, standing water, etc), surrounding habitat needs, and other factors. Task Force members discussed the tiered approach and its relation to other work done by DEM and CRMC.

Ms. Murphy presented three more documents as part of her review that were based on Rhode Island-specific data. Two were policy documents that were reviewed quickly, the third was a Low Impact Development (LID) guide created by the Horsley Witten Group for DEM and CRMC. The authors focused on two literature studies that were not limited to New England. The document includes a table based on those studies that outlines a range of recommendations for minimum buffer widths.

The last studies Carol presented were from the greater New England area. The first focused on habitat recommendations for the various freshwater dependent species in the area (Massachusetts was the subject of this study). The study examined how many species are dependent on wetlands, and then studied the ideal distances these species travel away from the wetland in order to make buffer distance recommendations. The second New England study was from 2002 and examined vernal pools and their relation to amphibians that breed within and around them. The study identified the distance that species will travel away from the pool, both in the mean and the maximum. The final study was performed by the Berkshire Regional Planning Commission. It is a resource for all things vegetated buffer, including functions and values, uses, and width recommendations.

After being presented with the literature review, Task Force members discussed buffer and setback models and variables such as uplands inclusion with habitat considerations. Habitat needs and flood attenuation were agreed to be the primary drivers of buffer distances. Members discussed the current floodplain regulations and how they affect development now, as well as levels of protection for

higher-priority wetlands vs. isolated wetlands, and the impact of grade and slope that could be included in determining the distances of setbacks and buffers. The concept of mapping the state's wetlands was mentioned as well, and that doing so should be plausible considering the size of the state and the resources available.

Next Meeting

The next meeting is scheduled for June 19, 2014 and will continue presenting the findings of the literature review. Topics will be wetlands literature regarding year 2000 plus report and general references for wetlands, and the area of OWTS impacts. Nancy Hess announced that the July meeting would have 2 guest speakers from the Chesapeake Bay to discuss their views and experiences from another region of the country. She asked Task Force members to think of and send her questions to prepare the speakers for the July meeting.

Adjourn
10:00 AM

Legislative Task Force Meeting #10

Thursday, June 19, 2014

8:00 AM – 10:00 AM
Rhode Island Builders Association
450 Veterans Memorial Parkway, East Providence, RI

Task Force members in attendance were: James Boyd (Coastal Resources Management Council, Russell Chateauneuf (Civil Engineering Representative), Janet Coit (DEM Representative), Thomas D'Angelo (Builder's Trade Association), Gary Ezovski (Business Community Representative), Kevin Flynn (DOP-Associate Director), Thomas Kravitz (Municipal Representative – Burrillville), Tom Kutcher (Wetlands Biologist), Scott Moorehead (Business Community Representative), Eric Prive (Civil and Environmental Engineering Representative), and Nancy Scarduzio (Office of Regulatory Reform).

The DOP and DEM also had several staff members present, from DEM; Brian Moore, Carol Murphy, Ernie Panciera, and Alicia Good. Nancy Hess and Sean Henry were present from DOP.

Literature Review

Kevin Flynn opened the meeting at 8:00am. He noted that scheduled was a continuation of the literature review by the Literature Review Subgroup of the Task Force. Carol Murphy of Dem, as well as several task force members, would speak today on the subject.

Ms. Murphy continued her literature review on wetland buffers functions and values from the May meeting, and answering some of the questions task force members had asked from her previous presentation. After consulting with other DEM staff on the topic of wetlands buffers, it was confirmed that the buffers had value for flood attenuation, being able to slow and store flood waters when needed. With regards to wetland methodologies in other New England states, the New Hampshire Audubon Society attempted to incorporate a number of different factors into developing a predictable method of estimating appropriate buffers for a given wetland. They determined that the factors were too complex to calculate reliably when taken together, and recommended a standard buffer width of 100 feet that would satisfy environmental and development concerns equitably. In this capacity, 'buffer' means undisturbed vegetated area. Ms. Murphy continued with several additional general reference studies. Task force members commented on the importance of buffers for habitat and water quality concerns. The studies found that, when accounting for the various functions and values of wetlands and buffers, no specific, prescriptive distance could be determined that would ideally satisfy all the needs. It was generally conceded that the greater the size of the buffer areas, the better the wetland would function.

Nancy Hess then outlined a summary report for the State of Washington describing 3 potential tiered approaches to wetlands buffer regulations for the western part of the State. This followed up on a prior request from Task Force members about obtaining information on tiered wetland systems. The summary report recommendations for the desert ecology / environment of the eastern part of the State were not considered relevant to RI. The report provided three recommendations for tiered buffers. The first was for a system with a buffer width based on ranking the wetlands into one of four categories. The second was buffer widths set based upon wetland categories and the intensity of impacts from proposed land uses. The third was the most complex, with wetlands being ranked according to a point system, and buffers widths would be set based on the points, the wetland characteristics, and impacts of proposed land use activities. It was not determined which of the systems the State had adopted.

Tom Kutcher then provided the next presentation of literature review. Mr. Kutcher reviewed four reports pertaining to the functions and values and recommendations for wetlands buffers. The first two were planning guides for local officials, which outline the different types of buffers and setbacks that local officials can use. They also outline different distances that other source materials suggest, both in 'minimum' and 'ideal' forms. The next report was a summary update report from the State of Washington on the science behind wetland regulations. He stated that this task is more complex than we thought and this work stressed the importance of buffers for infiltration of surface waters, which is beneficial for both flood attenuation and water quality. Particles, pollutants, and other sediments are filtered out as flood waters slows down, therefore finer particles require more distance to filter out than larger, heavier sediments. The final report was a synthesis of the best available science from 2008 also by the State of Washington. All of the literature points to larger buffers being more beneficial for a variety of reasons.

Jim Boyd, CRMC, provided the next section of the literature review focusing on the value of wetland buffers. His report was a study from the Maryland DNR in 2010. The study assessed the effectiveness of vegetated buffers on tributaries of the Chesapeake Bay over a 5-year period. The lands in this area have significant agricultural uses, where pollutants are prevalent. The DNR found that nitrogen reductions were relatively significant, phosphorus was lessened, and it was noted that agriculture is a very nutrient-rich use. Task force members discussed the impact of agriculture on water quality, which is not as intense an industry in Rhode Island. Task force members then asked several questions about the program; how the buffers were planted and the State's role in it. Members commented on the differences in the base nitrogen levels for both states as well as soucres.

Russell Chateauneuf provided the final literature review presentation focusing on OWTS and water quality impacts. The first document was a meta-analysis of several studies and the effect of buffer width on nutrient and particle removal. He talked about how much buffer matter in the big picture for OWTS. It was determined that buffer width only accounted for a percentage of the removal of nutrients from waters but wider is generally better. Other variables, such as slope, soil chemistry, structure, and vegetation type also have a significant impact on the effectiveness of buffers at removing sediments and pollutants from waters. The next portion of his presentation was a synthesis of OWTS-related works. It deals primarily with setbacks and nutrient removal. It was found that setbacks are measured from the jurisdictional wetland, which could be the resource edge (depending on the type of resource) or from the 'jurisdictional wetland' edge, which includes a 50 setback. These distances are

required in order to lessen the OWTS system's impact on the water quality of any nearby sources, therefore public health is the driving force behind the regulations. Nutrients can impact wetlands in negative ways, damaging the wetland and its ecology, so site-specific reviews are best. These are required for OWTS of over 5,000 gallons per day. IN RI, nitrogen is the primary concern of OWTS regulations. Phosphorus removal is fairly effective at current distances.

Members then discussed OWTS findings and current regulations, including land use issues and loading factors, emerging and advanced technology impacts, and the concerns of cumulative impacts. J. Boyd mentioned how the CRMC SAMPs take into account watershed deposition and surface runoff. Discussion moved to how difficult it is to develop a viable model that takes all of these concerns into account and remains relatively simple and predictable. The numerous functions and values to protect make tiered systems complicated to design and use, even before the relative importance and sensitivity of individual resources are considered. Discussed turned to the differences between communities vs. the State and that local have wider buffer widths. There seems to be a need for greater buffer widths in general. The Task Force needs to recommend the best that they can.

Next Meeting

The next task force meeting is scheduled for July 17th. There will be guest speakers at the meeting from the Chesapeake Bay / Maryland area. Nancy Hess asked members if they did their homework to come up with specific questions for the speakers could address and provide insight on. Members were interested in the prior regulatory experiences of the speakers, how things function in MD state government, and how the State defines buffers. Also are there differences in jurisdictions like here in RI? Members then discussed areas where they could share their expertise and other topics before K.Flynn adjourned the meeting.

Adjourn
10:00 AM

FYI> for nonmetric people: 150 meters = 165 feet.

Presentation for Rhode Island Department of Planning

Stream Buffers

by

Andrew T. Der
Principal and Environmental Consultant
Andrew T. Der & Associates, LLC

Practicing in the water resource consulting industry since 2001, previously completing 18 years of service at the Maryland Department of the Environment.

July 17, 2014

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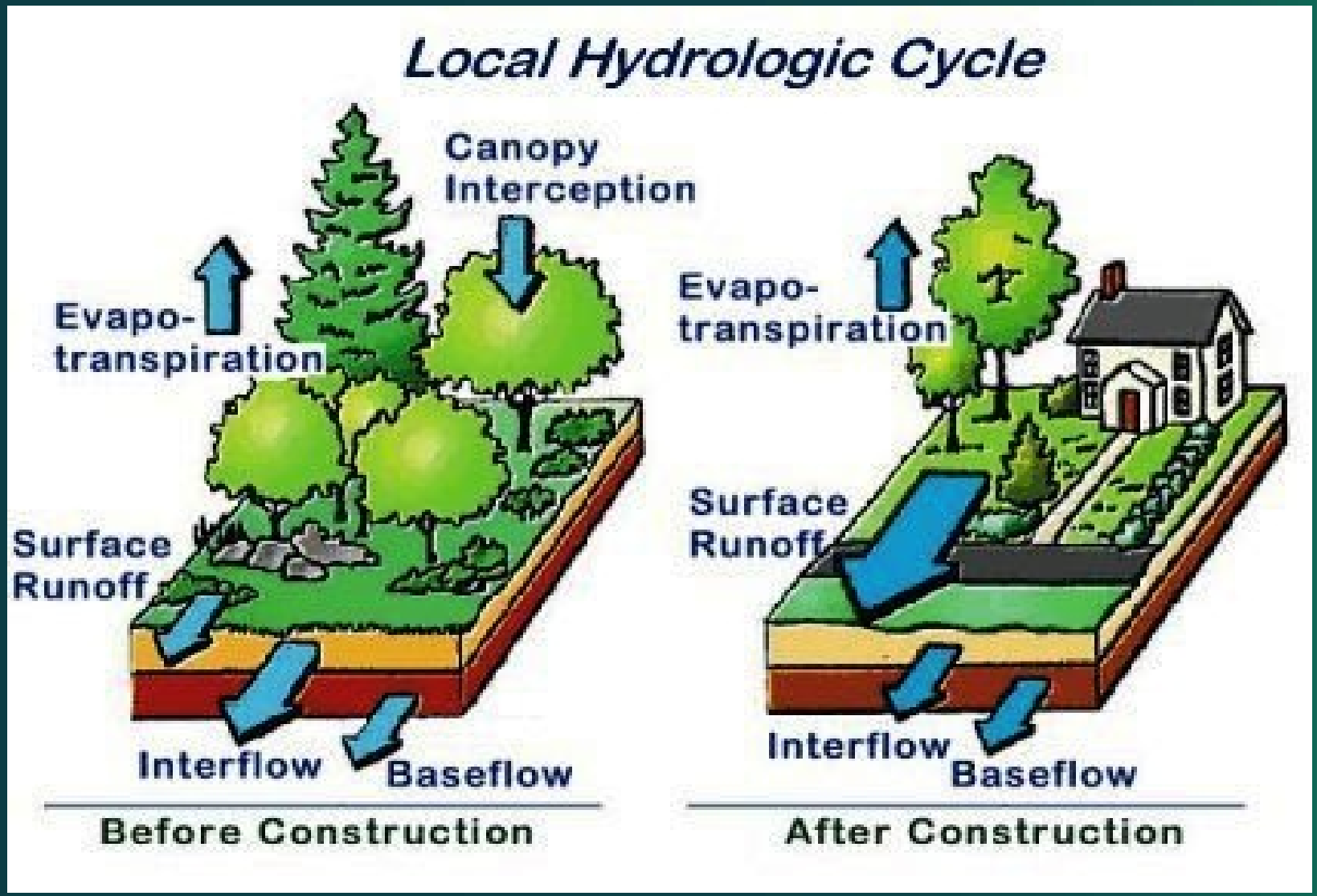
Why We are Here



Buffers vs. Setbacks at the *Planning Level* – not the same

- Buffer

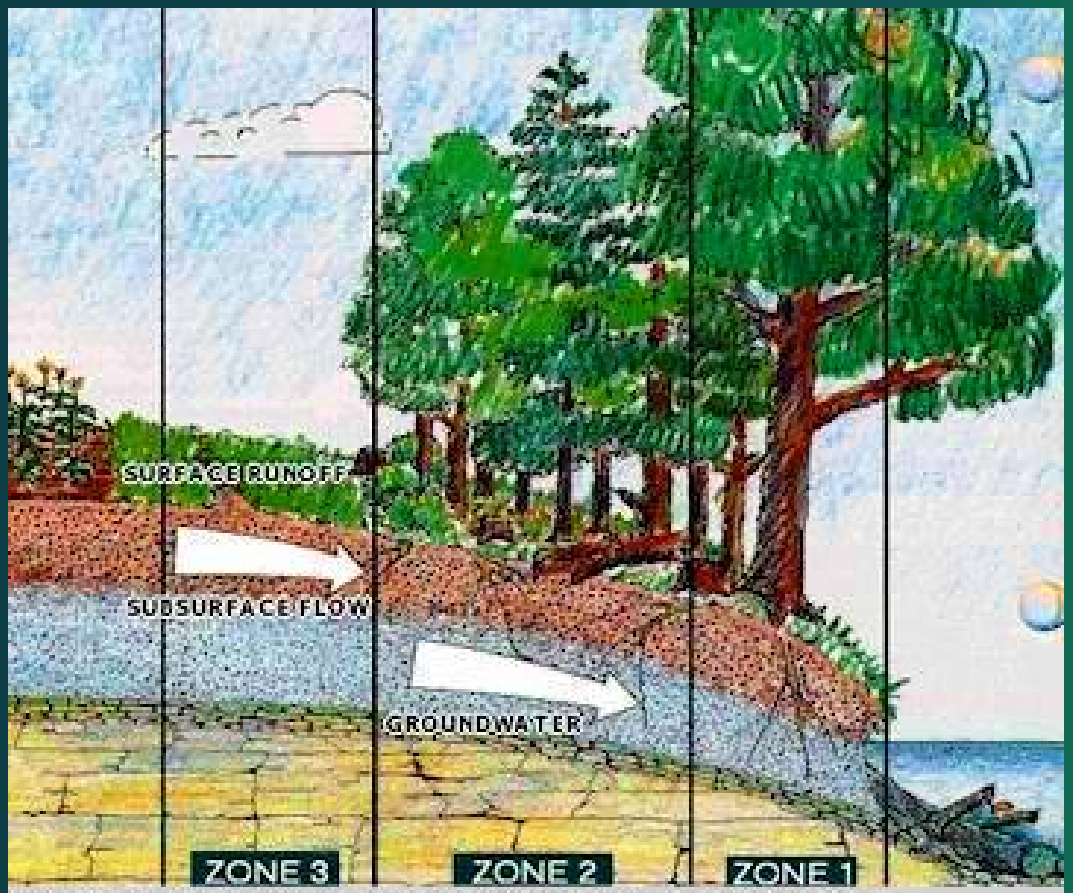
  Surface distance between nonpoint pollution source (impervious surface) and receiving water for the purpose of water quality management by filtration, biological uptake, and attenuation.

- Setback

  Horizontal spacing between activity (OWTS systems) and sensitive feature for the purpose of establishing a safety zone allowing for the adequate dispersion and dilution of potential effects

U. S. EPA National Pollutant Discharge Elimination System (NPDES) Stormwater Menu of BMPs

"Setbacks are … not designed for pollutant removal …proper buffer design can increase the pollutant removal from Stormwater runoff"



Sketch of a typical riparian forest buffer (Source: Chesapeake Bay Program, 2000)

The “Big Three” Keystone Pollutants

- Phosphorous

  Removed by association with sediments as suspended solids filtering

- Nitrogen

  Removed primarily through conversion of nitrate to nitrogen gas by denitrifying bacteria, vegetative uptake, and association with filtered sediments

- *Sediments*

  Removed with attached nutrients, toxics, and pesticides by settling out and/or filtering through soil

Environmental Law Institute Synopsis

- Phosphorous

  Removed within the first 15-30 feet of the buffer, and more within 30-100 feet (Dillaha et al. 1988, 1989, EOR 2001, Kuusemets and Mander 1999, Lowrance and Sheridan 2005, Syverson 2005)

- Nitrogen

  Mayer and colleagues (2005) suggest 3.3 – 49.2 feet can be effective. Vidon and Hill (2004) found a 50 foot buffer was effective at removing 90% of the nitrate

- Sediments

  Removed in a 15-30 foot buffer, and may be more with 30-100 feet (Dillaha et al. 1988, 1989, Magette et al. 1989, Schoonover et al. 2006). Sheldon et al. (2005) suggest that coarse sediments removed in first 16-66 feet and finer particles in 66 feet.

U. S. EPA NPDES Menu of BMPs Synopsis

Buffer Widths

Maximum of 100'
Is recommended generically but less can be sufficient – and acknowledges can vary depending on site character

One size does not fit all

Factors that Enhance Performance	Factors that Reduce Performance
Slopes less than 5%	Slopes greater than 5%
Contributing flow lengths <150 feet.	Overland flow paths over 300 feet
Water table close to surface	Ground water far below surface
Check dams/level spreaders	Contact times less than 5 minutes
Permeable but not sandy soils	Compacted soils
Growing season	Nongrowing season
Long length of buffer or swale	Buffers less than 10 feet
Organic matter, humus, or mulch layer	Snowmelt conditions, ice cover
Small runoff events	Runoff events >2 year event.
Entry runoff velocity less than 1.5 feet/sec	Entry runoff velocity more than 5 feet/sec
Swales that are routinely mowed	Sediment buildup at top of swale
Poorly drained soils, deep roots	Trees with shallow root systems
Dense grass cover, 6 inches tall	Tall grass, sparse vegetative cover

U. S. EPA NPDES Menu of BMPs Synopsis

Pollutant removal rates in buffer zones

Reference	Buffer Vegetation	Buffer Width (meters)	Total % TSS Removal	Total % Phosphorous Removal	Total % Nitrogen Removal
Dillaha et al., 1989	Grass	4.6-9.1	63-78	57-74	50-67
Magette et al., 1987	Grass	4.6-9.2	72-86	41-53	17-51
Schwer and Clausen, 1989	Grass	26	89	78	76
Lowrance et al., 1983	Native hardwood forest	20-40	-	23	-
Doyle et al., 1977	Grass	1.5	-	8	57
Barker and Young, 1984	Grass	79	-	-	99
Lowrance et al., 1984	Forested	-	-	30-42	85
Overman and Schanze, 1985	Grass	-	81	39	67

North Carolina State University/Natural Resources Conservation Service Synopsis

Sediment reduction by grass riparian buffers

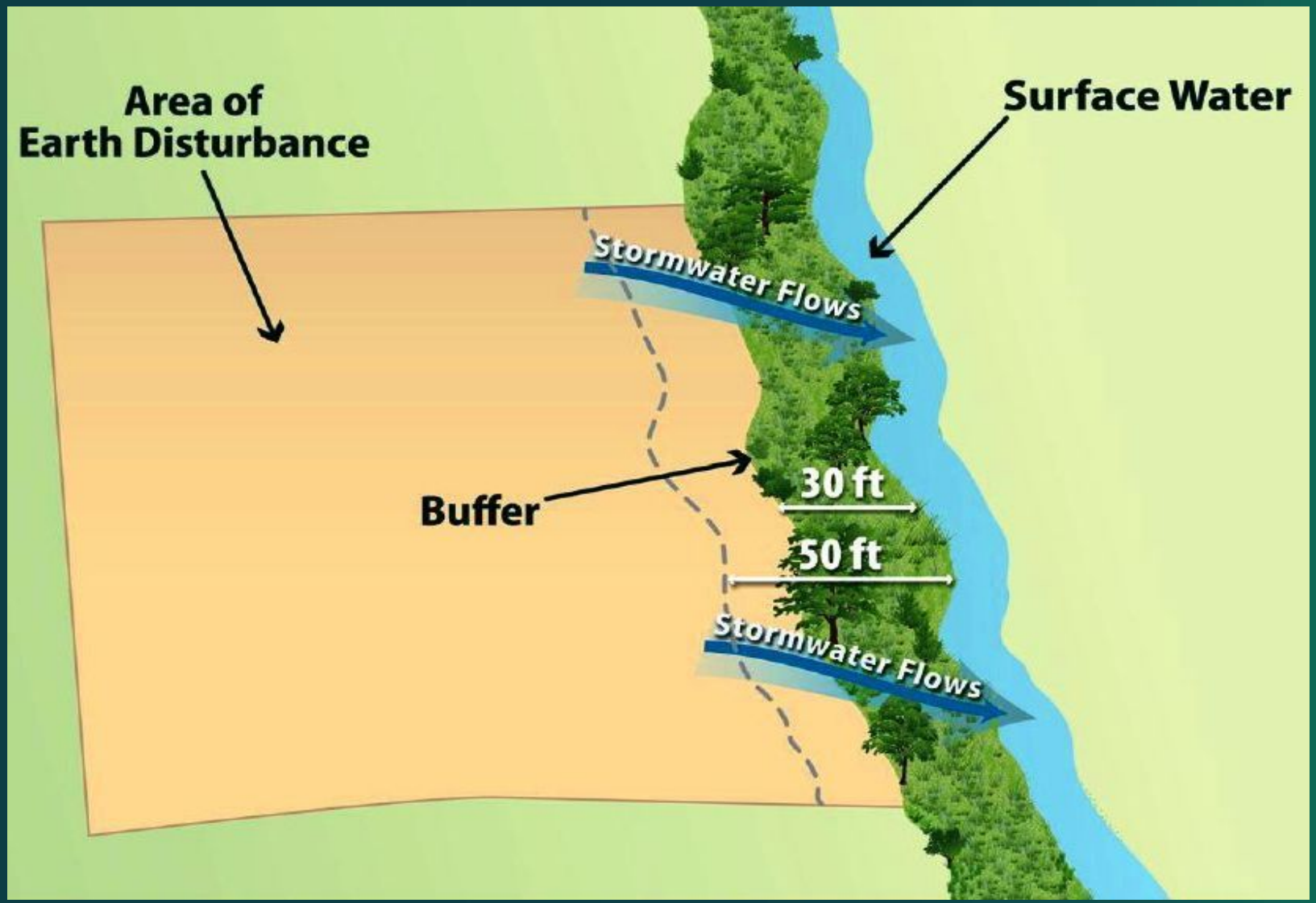
Grass Buffer Width	Plot	% Reduction
14 ft	1	71
14 ft	2	68
28 ft	1	90
28 ft	2	86

Buffer Widths

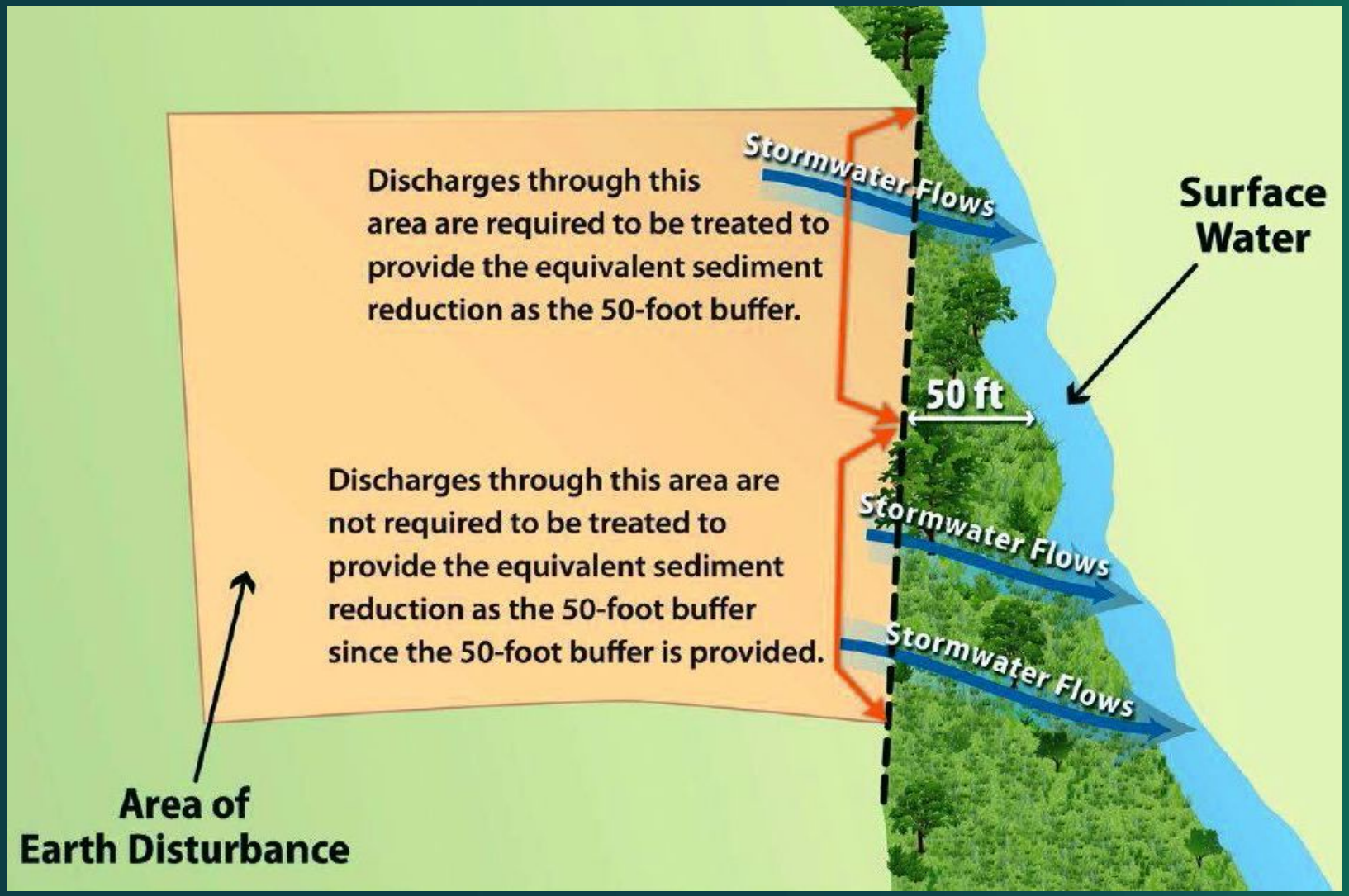
- Adequate buffers sufficiently disconnect and filter flows to reduce or eliminate need for additional SWM
- Conversely contemporary SWM criteria when combined with buffers, especially in re-development scenarios, reduce need for greater buffer width from redundancy
- Multitude of research shows most pollutants filters within buffers less than 100' feet with accelerated diminishing returns
- Expansions may apply to contiguous FP, wetlands, steep slopes, erodible soils, rare and sensitive species habitats

More Not Necessarily “Better” if no SWM

Example - Buffer Management Only



Example - Buffer Management *and* SWM



Buffers can be less with SWM – and improve water quality by re-development

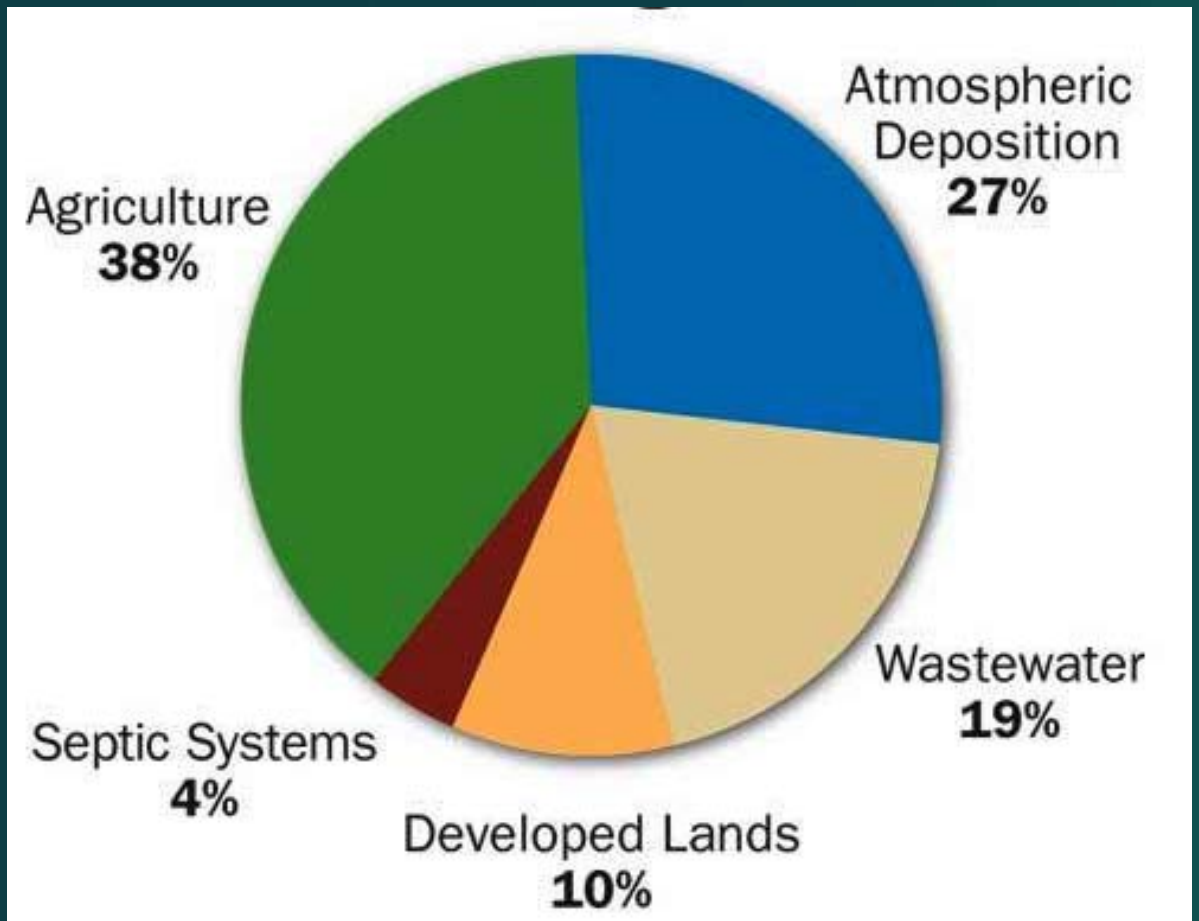
Wildlife Buffers at Planning Level

- For habitat rather than water quality filtration
- Better done at project level through approval processes (development, subdivision, grading) and permits via coordination with agencies
- Look at the big picture and put the buffer where most bang for the buck
- ELI - “Required buffers may be reduced if the impacts are mitigated and result in equal or better protection of wetland functions.”

What are some Maryland Examples?

- Waters defined congruent with Corps Waters of US and have 100 foot buffers via local development and subdivision ordinances
- Includes 100 year FP and can be expanded as discussed
- As such, no state buffers are applied to nontidal streams
- 25' state buffer applied to nontidal wetlands as they already have bioaccumulation and filtration properties *and SWM assumed*
- Tidal water has state 1000 "Critical Area" Chesapeake Bay buffer of 100 foot from MHW – expanded to include contiguous wetlands
- Corps by federal act have no jurisdiction in uplands

Where are N Sources in Chesapeake Bay?



Source: Chesapeake Bay Program Phase 4.3 Watershed Model, 05/11.
Values do not add up to 100% due to rounding.

Summary

- Consider a 100' stream buffer to be generic maximum that can be reduced if SWM, and 25' for wetlands when SWM
- SWM can be more effective in lieu of additional buffer since diminishing returns, especially if re-development
- *Always* ground-truth for unique character or sensitive areas before final overlay established
- Consider Waters of the U. S. as baseline definition

  Already defined (for all CWA Section 401, 402, 404) when needing permit as being navigable waters up to and including intermittent channels including adjacent wetlands and potential association by a "nexus"
- Ephemeral channels would not warrant a buffer, but could be considered as a bump-out if sensitive habitat

Mark W. Eisner, P.G., President

M.S. Geology; University of Delaware; 1986

Former Maryland Water Resources Regulator

28 Yrs Enviro. & Hydrogeological Experience

OWTS Setbacks and Policies – The Maryland Experience

Chesapeake & Narragansett Bays – Pretty Similar Overall

Recommendations for A Consistent, Science-Based Approach

Vegetated Buffer Distances Protect from Stormwater

OWTS Setbacks Differ: Health, Practical and Legal

Distance-Based Maryland OWTS Setbacks

Feature	Separation Distance
(1) All steep slopes (>25 percent)	25 feet
(2) Springs	100 feet
(3) Drainage ways and gullies	25 feet
(4) Flood plain soils	25 feet
(5) Rock outcrops	25 feet
(6) Elevation of spillway crest water level in a water supply reservoir	300 feet
(7) Stream bank 3,000 feet or less upstream from a water intake on a water supply reservoir or intake on a stream used as a potable water supply	200 feet
(8) Stream bank greater than 3,000 feet upstream from a water intake on a water supply reservoir or intake on a stream used as a potable water supply	100 feet
(9) Water bodies not serving as potable water supplies including intermittent and perennial streams	100 feet
(10) Water well system in unconfined aquifers	100 feet
(11) Water well system in confined aquifers	50 feet
(12) Sink holes underlain by karst topography	100 feet
(13) Building foundations	10 feet

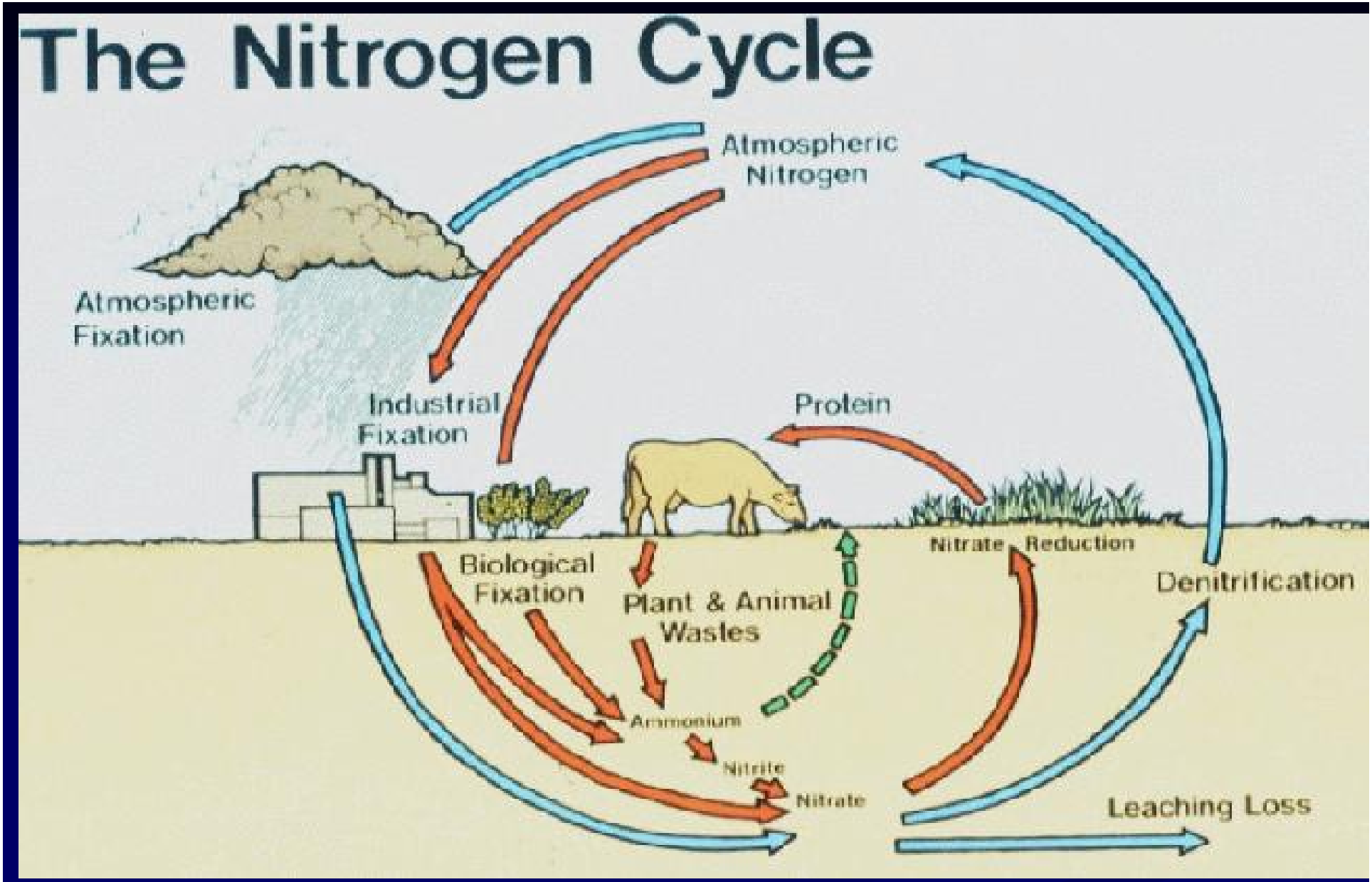
Source: http://www.dsd.state.md.us/comar/getfile.aspx?file=26.04.02.04.htm

OWTS Setbacks in Typical MD Critical Area

Distance Requirements (per Anne Arundel County Private Sewage Disposal Code) Table 1600.4.3

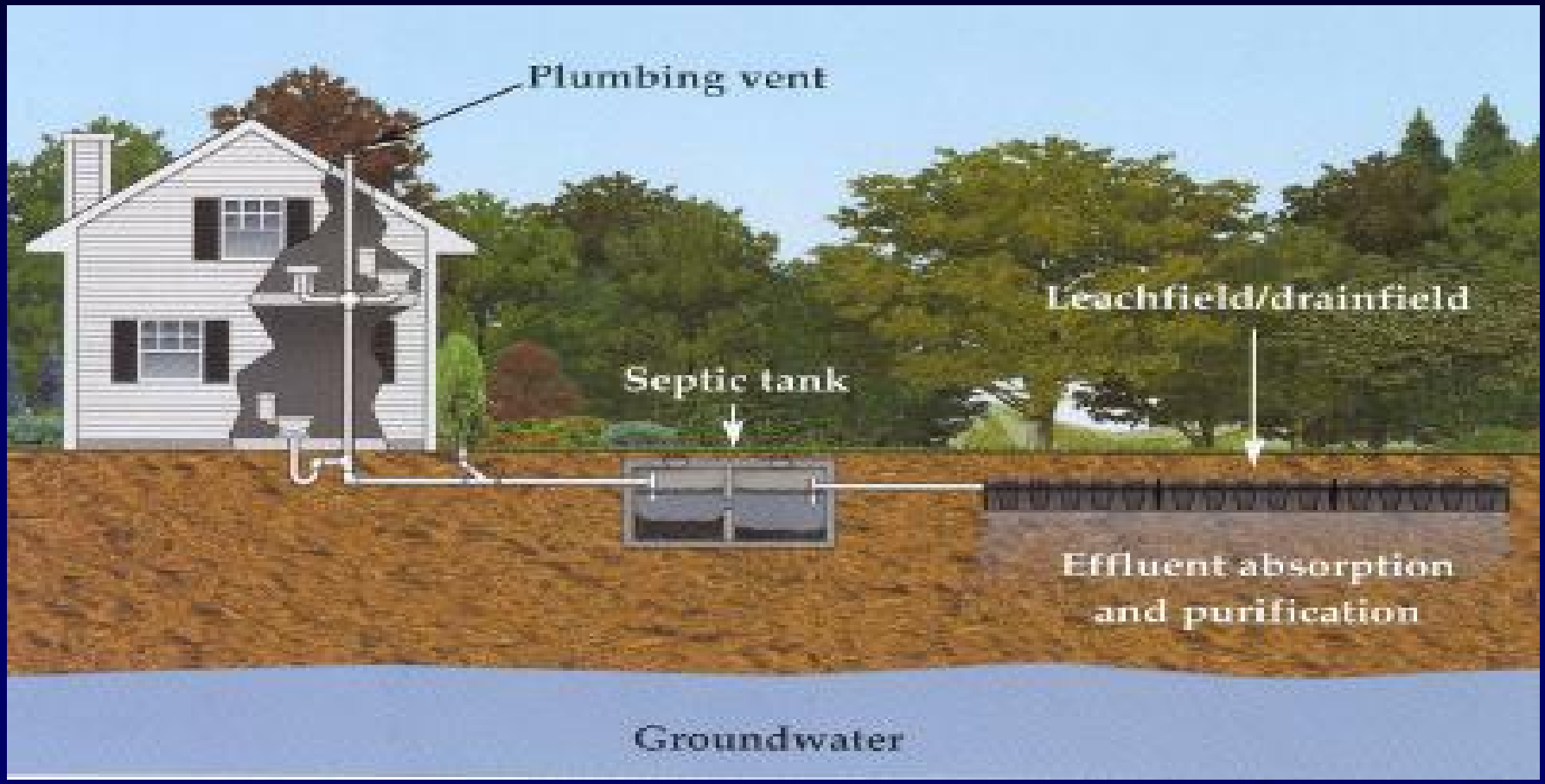
All distances are in feet.	Well in Unconfined Aquifer	Well in Confined Aquifer	Septic Tank	Distribution Box	Disposal Field	Dry Well	Drain Field
Building sewer other than cast iron or approved PVC	100	--	50	--	--	--	--
Building sewer cast iron or approved PVC	10	10	--	--	--	--	--
Septic tank	100	50	--	5	10	10	10
Distribution box	100	50	5	--	--	--	--
Drainfield**	100	50	10	5	--	--	--
Dry well*	100	50	10	5	--	--	--
Disposal field (including mound systems)	100	50	10	5	--	--	--
Building with basement	30	30	20	20	20	20	20
Building without basement	30	30	10	20	20	20	20
Property line	10	10	10	10	10	10	10
Water line	--	--	10	10	10	10	10
Road or right of way	15	15	10	10	10	10	10
Retaining wall; 25% or greater slopes	--	--	25	25	25	25	25
Swimming pool	10	10	10	20	20	20	20
Storm drain*** (closed conduit)	--	--	10	10	10	10	10

Source: http://aahealth.org/pdf/brf-distance-req.pdf



Many Natural Process Change Nitrate to N Gas

OWTS Biomat: One Natural Process That Dentrifies



Gill and Others (2009). Nutrient Loading on Subsoils From Onsite Wastewater Effluent, Comparing Septic Tank and Secondary Treatment Systems, Water Research WR 7342.

Biomat is a Filter for N and Bacteria

Forms in Drainfield As Consequence of Discharge

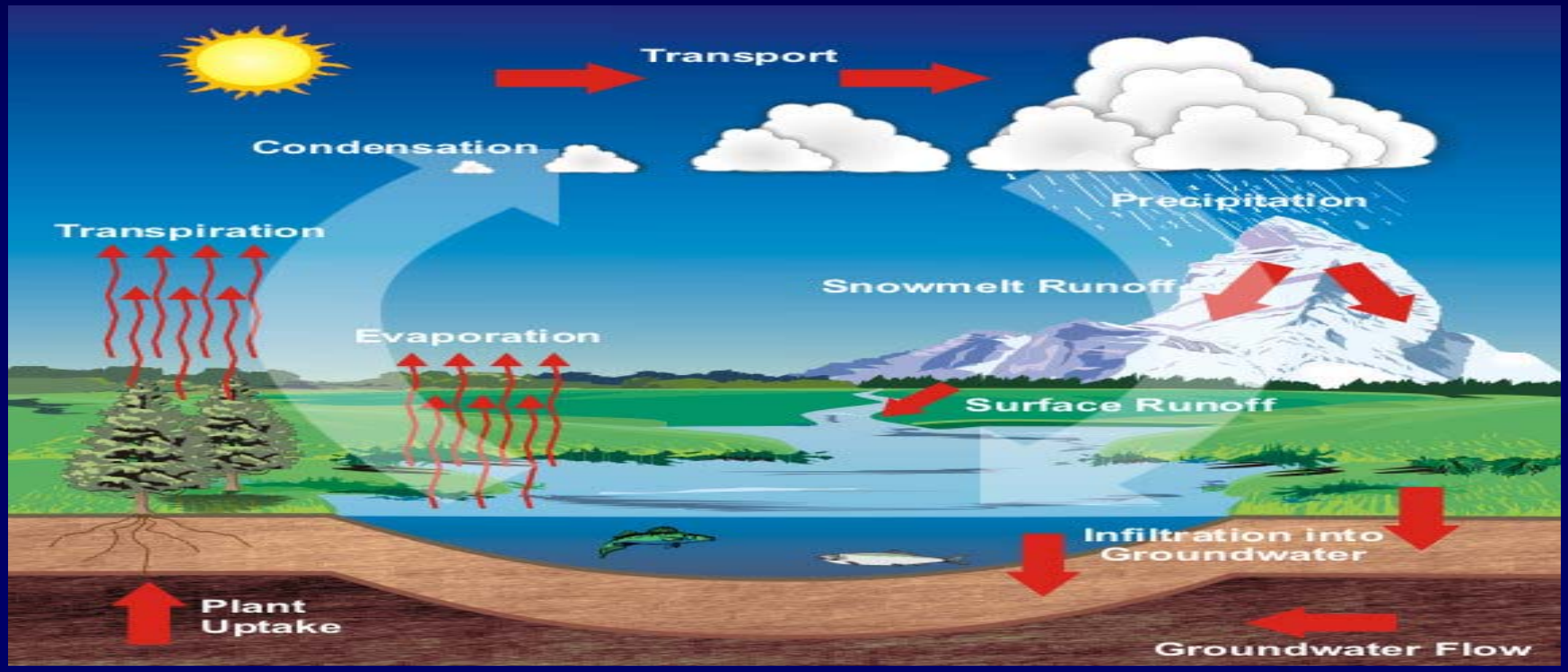
Important and Necessary for the Removal of Suspended Solids, Bacteria and Viruses

Anaerobic on the Top Side – This De-Nitrifies NO3

Develop in All But Very Coarse Soils (i.e. Sands)

Less or No Biomat in Drainfields that have BAT / IA

OWTS Dilution Originates From Precipitation
Older Groundwater Has Lower Nitrogen



Dilution Reduces Concentration to Background Concentration

Lindsey and Others (2003). Residence Times and Nitrate Transport in Groundwater Discharging To Streams in the Chesapeake Bay Watershed. USGS Water Resources Investigation Report 03-4035.

Domestic OWTS Setback Considerations

Based on Dilution Concepts Developed by Stone, JE, 1976. Land Application of Wastes: Nitrogen Considerations, Module 15, Educ. Prog. Cornell Univ., NY State Coll. Ag. & Life Sci., Ithaca, New York	Without IA	With IA	Comparison
Typical Lot (RI Design Flow)	460 gpd	460 gpd	Same
Nitrate Strength at Discharge (Assumes No Biomat – Sand!)	45-60	20-30	Setback (Assuming No Biomat) is Directly Proportional to Nitrate Concentration in Raw OWTS Effluent
Acreage Needed to Dilute to Federal Drinking Water Std.	1 ac	½ ac	
Rec. Setback For Sandy OWTS on 40,000 Sq. Ft. Lot	100 ft	50 ft	

Conclusions and Recommendations

Soil Type at Discharge is More Critical Than Either Setback Distance or Presence of BAT / IA

Sandy Soils Should Have IA Denitrification Because Little Natural N Reduction Occurs in Drainfield; Continuation of 50 Foot Setback w/IA is OK. More is Unnecessary, if IA Exists.

Non-Sandy Soils Achieve Biomat-Based Nitrate Reduction Comparable (or Better) Than IA (at 50). IA Not Recommended.

Simple/Conservative Dilution Equations Suggest 50 Feet is OK w/ IA &/or Established Biomat. Setback of 100 Feet Achieves N Dilution to Background w/o Biomat or IA for Silt/Clay Soils.

Clarify Buffers vs. Setbacks. They Are Not the Same.

RECAP

2013 Public Law 42-64.13-10

Legislative Charge to Assess: *(Sept)*

► the adequacy / gaps of wetland protection in setbacks related to:
all land disturbances & OWTS

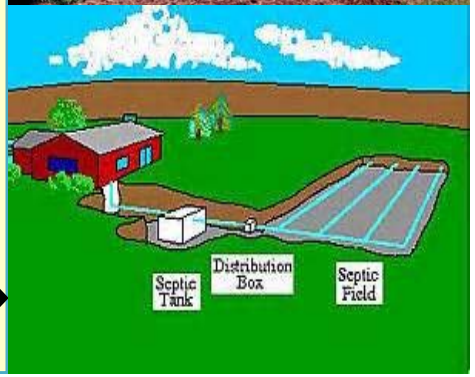
► recommend statutory or regulatory changes to protect wetlands statewide

Overview of Wetland / OWTS Management in 2014

- Prior Stakeholder processes *(Oct)*
- Existing Gen. Laws for wetland buffers and land disturbances from OWTS *(Sept/ Oct)*
- DEM Rules/Regulations *(Oct)*
- CRMC Rules/Regulations *(Oct)*
- Municipal Ordinances *(Oct/ Feb)*
- Other New England States *(Feb/April)*

Technical Presentations & Guest Speakers

- Wetlands Functions and Values *(Nov)*
  - Habitat Functions for Wetland Buffers *(Dec)*
- OWTS Basics & Groundwater Science *(Jan)*
  - Water Resource Issues
  - OWTS 101 Basics
  - Impacts & Nutrients in Buffer and Riparian Zones
- Local Wetland Review: Two Case Studies & Two Perspectives *(March)*
- Wetlands & OWTS in Maryland *(July)*



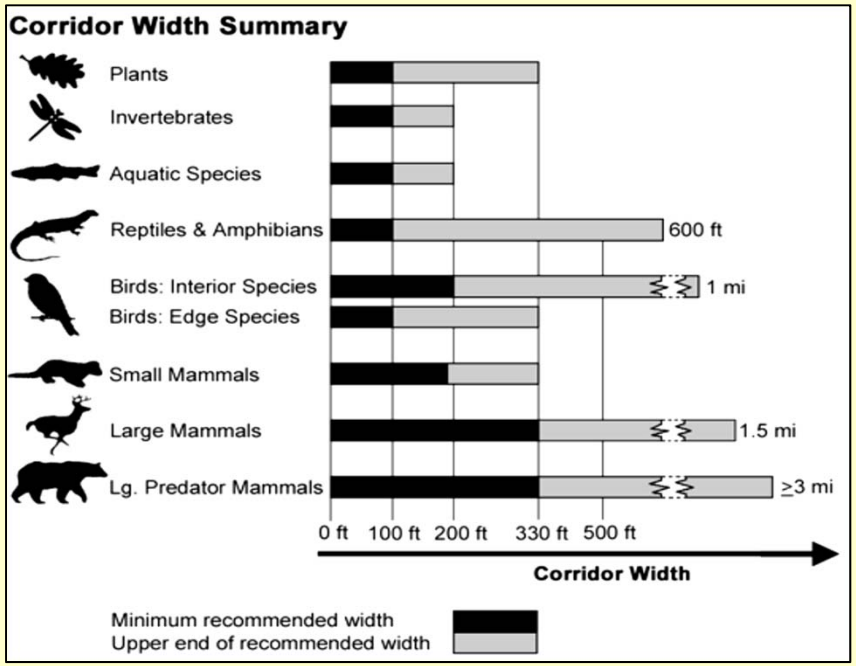
RHODE ISLAND DIVISION OF PLANNING

RECAP

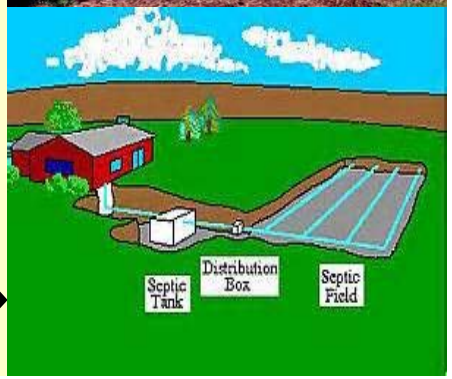
Scientific Literature Review *(May/June)*

- Wetlands and All Land Disturbances
  - Functions & values– dependent on species -> range of 100 – 300’

- OWTS & Water Quality Impacts
  - No magic number, too site specific but larger buffer reduces risk
  - Alternative technology systems:
    - there are more things in wastewater than just nitrogen
    - advanced systems for phosphorus do not exist at this time



Bentrup, G. 2008, *Conservation buffers: design guidelines for buffers, corridors, and greenways.* Gen. Tech. Rep. SRS-109. Asheville, NC: Department of Agriculture, Forest Service, Southern Research Station.



RHODE ISLAND DIVISION OF PLANNING

RECAP

Timeline

AUGUST 2014

No meeting – Working Group prepares preliminary draft report

SEPTEMBER 2014

18th - DEM

Topics: Preliminary Draft Report

25th - DEM

Topics: Preliminary Draft Report

Also Working Group prepares draft recommendations

OCTOBER 2014

No meeting - Working Group – prepares final report & recommendations

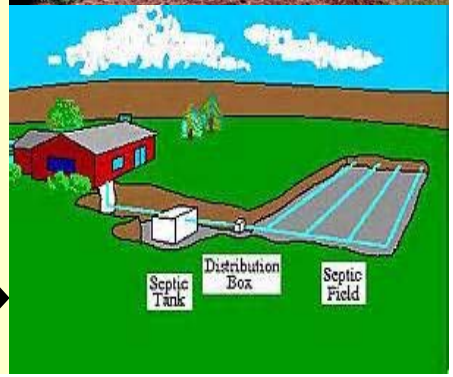
NOVEMBER 2014

20th – (Third Thursday) - DEM

Topics: Review and census on final report & recommendations

DECEMBER 2014

DOP produces final report and submits by 12-31-2014



RHODE ISLAND DIVISION OF PLANNING

RECAP

Issues

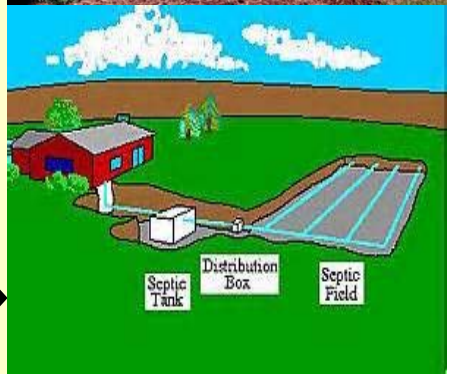
Adequacy of wetland protection & gaps:

- Overview of literature says need buffers larger than 50 feet
  - Buffers should be larger than 50 feet for effectiveness →but how big?
    (75 % of most functions & values supported at 100')
- Need to define & protect vernal pools
- Higher standards for smaller steams vs. already urbanized large rivers

Statutory or regulatory changes to protect wetlands:

- Permitting:
  - Most discussion centered on freshwater wetlands
  - A single, clear & predictable regulatory review process at state level
    - Eliminate dual permitting on setbacks
    - Eliminate varying standards on setbacks due to dual permits
- Statutory Implications
  - Change definitions & clarify buffer vs setback
    - 50-Foot Perimeter around swamps, marshes, bogs, and ponds
      100-Foot or 200-Foot Riverbank adjacent to rivers and streams.
    - Define authorities

Yours ?



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