Sussex County
Wetlands & Buffers Working Group

Sussex County West Complex Building
22215 N. DuPont Blvd, Georgetown, DE
Wednesday, May 15
2:00 pm – 5:00 pm
Process Reminders

- Working Group Etiquette
- Role of Audience
- Definitions can be revisited
- Information Distribution
Agenda

1. Review Prior Meeting
2. Buffer Approaches
3. Discuss Draft Ordinance Preamble
4. Next Meeting

Meeting Objective:
to identify mutually-agreeable buffer approaches and to get reactions to the draft ordinance preamble.
Meeting Outcomes, 4/17

1. Reviewed homework outcomes
2. Determined which buffer functions to manage for:
   - Water Quality
   - Habitat
   - Flood Mitigation / Drainage
3. Began density discussion
Assumptions

- Resources Are Important
- Buffers Are Important
- Purpose/Goals Buffers/Resources: Water Quality, Habitat, Flood Mitigation
- There are System Wide and Resource Specific Benefits
- Ordinance Should Consider Flexibility in Achieving the Goals Through Waiver and Incentive Programs
- Resources/Buffers Placed in Recordable Lot or Easement
- Buffers/Resources Should Not Reduce Land Development Density
- Sussex County Staff Can/Will Develop/Administer a Program with Flexibility
Buffer Approaches

- Mapping and Widths
- General Program Philosophies
- Incentive Programs
- Management Zones / Tiers
- Matrices
- Waivers
- Offsets
- Unique Sites / Uses
Mapping and Widths

Delineations Methods

- Tidal Wetlands/Waters
- NonTidal Wetlands
- Perennial/Intermittent/Ephemeral Streams
- Buffers

Buffer Widths
WATERCOURSE BUFFER
BUFFER IS MEASURED FROM STREAMBANK

Industrial/Commercial Setback

25'  75' Buffer

Residential Setback

75' Buffer  25'

Buffer Measured from Streambank

Credit: Lehigh Valley
Pre-Settlement Conditions
Floodplain and channel(s) connected to groundwater with expansive wetlands

Common Post-Settlement - Form A
Non-incised and perched streambed — primarily wetland riparian zone

Common Post-Settlement - Form B
Incised and perched streambed — primarily non-wetland riparian zone

Common Post-Settlement - Form C
Incised and non-perched streambed — primarily non-wetland riparian zone

Common Post-Settlement - Form D
Incised and relocated channel perched on valley margin bedrock or colluvium — primarily non-wetland riparian zone

Credit: RK&K
BUFFER WIDTHS

- Baseline Range: 15 – 100 feet
- Waiver Range: 0 – 200 feet

Credit: USDA and ELI
General Program Philosophies

- Well-defined program guidance documents
- General references to general approaches
- Systematic or Resource-Specific Protection
- Quality Resources or Degraded Resources
- Other
## General Program Philosophies

### Do we...

| Prepare a prescriptive program that has many details and guidance documents, but potentially reduces land planning creativity for sustainable projects? | OR | Prepare a flexible program that supports creative solutions but that cannot guarantee that the same protections are applied universally? | OR | Reference general guidelines for goals and approaches, and defer to site-specific reviews and applicant justifications based on a minimum baseline? |

### Is the goal to...

| Provide protection / enhancement to the system as a whole? | OR | Provide protection to / enhance each resource? | OR | Both? |

### Do we prioritize...

| Degraded systems and incentivize them for improvements? | OR | Protecting high-quality systems / resources? |
Low-order streams

High-order streams

More effective buffers

Less effective buffers

Credit: USDA
Creative Land Use Approaches

- Systematic protection
- Single resource protection
- Management Tiers/Zones
- Matrices
- Waiver / Hardship Program
- Offsets
- Incentive Programs
- Other

Photo credit: Delaware Center for the Inland Bays
Management Zones

- **Tiered Restrictions by Land Use**: the buffer zones have different requirements (widths, restrictions, maintenance, etc.). Two- and three-zone buffers are common. The widths are based on the land use adjacent to the resource; specifically, what potential impacts the land use could have on the resource.

- **Tiered Restrictions by Resource Type**: this option is similar to above; however, the basis for zones/tiers widths, etc. is the resource being protected rather than the land use adjacent, and what functions the buffer would need to provide for the resource.
For more information, contact Peter Britz, the Environmental Planner, at 610-7215 or plbritz@cityofportsmouth.com.
Matrices

- **Resource Type Matrices**: Evaluates buffers based on the resource type, this matrix assumes all resources being protected should not have the same buffer width. This system usually works when a variety of resources are included, such as forests, protected species habitat, floodplains, wetlands, streams, ponds/lakes, etc.

- **Quality of Resource Matrix**: evaluates the quality of the resource. The higher quality the resource, or those resources with more documented functions receive wider buffers.

- **Site Condition/Drainage Matrix**: evaluates the buffers based on site drainage patterns (slope, sheet flows, swales, etc. This matrix focuses on benefits to managing water/drainage.

- **Land Use Type – Density**: Evaluates the land use proposed adjacent to the resource, and more impact uses (higher impervious cover, potential groundwater impacts [landfills, industrial discharges, site WW treatment facility, etc.]) require wider buffers.
### TABLE 1
RELATIONSHIP OF VEGETATION TYPE
TO RIPARIAN BUFFER EFFECTIVENESS

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Grass</th>
<th>Shrub</th>
<th>Tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabilize bank erosion</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Filter sediment</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Filter nutrients, pesticides, microbes</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>• Sediment bound particle removal</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>• Soluble particle removal</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Aquatic habitat</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Wildlife habitat</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>• Range/pasture/prairie wildlife</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>• Forest wildlife</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Flood protection</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Water temperature</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

Source: Natural Resource Conservation Service.

<table>
<thead>
<tr>
<th>Wetland Category</th>
<th>Standard Buffer Width (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I:</td>
<td>Natural Heritage or bog wetlands</td>
</tr>
<tr>
<td>Habitat score 29-36</td>
<td>200</td>
</tr>
<tr>
<td>Habitat score 20-28</td>
<td>150</td>
</tr>
<tr>
<td>Not meeting above criteria</td>
<td>125</td>
</tr>
<tr>
<td>Category II:</td>
<td>Habitat score 29-36</td>
</tr>
<tr>
<td>Habitat score 20-28</td>
<td>100</td>
</tr>
<tr>
<td>Not meeting above criteria</td>
<td>75</td>
</tr>
<tr>
<td>Category III:</td>
<td>Habitat score 20-28</td>
</tr>
<tr>
<td>Not meeting above criteria</td>
<td>50</td>
</tr>
<tr>
<td>Category IV:</td>
<td></td>
</tr>
</tbody>
</table>

Appendix II. Matrix Approach to Buffer Distance

Island County, Washington:

This excerpt is based on Island County’s draft ordinance from November 2007... The ordinance first prescribes buffers for a few types of particularly sensitive wetlands...with wider buffers for more intensive uses. Then it establishes matrices to calculate buffers for other wetlands based on land use intensity, habitat condition, and wetland sensitivity (as predicted by slope and presence or absence of a surface water outlet). Wetlands that lack outlets are adjoined by steep slopes are presumed to be more sensitive to accumulation of sediment and contaminants, so receive larger buffers. For most wetlands both habitat and water quality buffers are calculated separately and the larger buffer (usually habitat) is applied.

<table>
<thead>
<tr>
<th>Land Use Intensity</th>
<th>Habitat Functions Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>50 or higher</td>
</tr>
<tr>
<td>Moderate</td>
<td>42-48</td>
</tr>
<tr>
<td>High</td>
<td>39-41</td>
</tr>
<tr>
<td></td>
<td>32-38</td>
</tr>
<tr>
<td></td>
<td>Less than 32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land Use Intensity</th>
<th>Habitat Buffers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>150 ft</td>
</tr>
<tr>
<td>Moderate</td>
<td>225 ft</td>
</tr>
<tr>
<td>High</td>
<td>300 ft</td>
</tr>
<tr>
<td></td>
<td>125 ft</td>
</tr>
<tr>
<td></td>
<td>175 ft</td>
</tr>
<tr>
<td></td>
<td>200 ft</td>
</tr>
<tr>
<td></td>
<td>100 ft</td>
</tr>
<tr>
<td></td>
<td>150 ft</td>
</tr>
<tr>
<td></td>
<td>110 ft</td>
</tr>
<tr>
<td></td>
<td>75 ft</td>
</tr>
<tr>
<td></td>
<td>Use Water Quality &amp; Slope Tables</td>
</tr>
</tbody>
</table>

The water quality calculation includes differing buffers based on wetland type (A-E) and whether there is a surface water outlet from the wetland.

<table>
<thead>
<tr>
<th>Wetland Outlet</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40 ft</td>
<td>35 ft</td>
<td>30 ft</td>
<td>25 ft</td>
<td>20 ft</td>
</tr>
<tr>
<td>No</td>
<td>75 ft</td>
<td>50 ft</td>
<td>40 ft</td>
<td>35 ft</td>
<td>25 ft</td>
</tr>
<tr>
<td>Yes</td>
<td>90 ft</td>
<td>65 ft</td>
<td>55 ft</td>
<td>45 ft</td>
<td>30 ft</td>
</tr>
<tr>
<td>No</td>
<td>105 ft</td>
<td>90 ft</td>
<td>75 ft</td>
<td>60 ft</td>
<td>40 ft</td>
</tr>
<tr>
<td>Yes</td>
<td>125 ft</td>
<td>110 ft</td>
<td>90 ft</td>
<td>65 ft</td>
<td>40 ft</td>
</tr>
<tr>
<td>No</td>
<td>175 ft</td>
<td>150 ft</td>
<td>125 ft</td>
<td>90 ft</td>
<td>50 ft</td>
</tr>
</tbody>
</table>

The water quality value is then adjusted for slope:

<table>
<thead>
<tr>
<th>Slope Gradient</th>
<th>Additional Buffer Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14%</td>
<td>1.0</td>
</tr>
<tr>
<td>15-40%</td>
<td>1.3</td>
</tr>
<tr>
<td>&gt;40%</td>
<td>1.5</td>
</tr>
</tbody>
</table>

This matrix approach is more complex than a single number, but can better reflect scientific understanding, particularly with diverse wetland types and land use conditions in a locality. With appropriate public outreach and technical support, a matrix-driven buffer can gain public support and achieve good results.

Credit: City of Portsmouth
Waivers

- **Hardship**: this waiver is included in many programs, and recognizes that not all sites are the same, and that site configuration or land use can have unique considerations. This type of waiver usually defines a hardship and often has a mitigation alternative.

- **Site Size**: this waiver is included to provide relief to small single-family lots, grandfathered lots, redevelopment uses, etc.

- **Averaging**: this waiver allows an applicant to reduce the buffer width/area on a portion of the property in exchange for same width/area on another portion of the property. Averaging programs usually have a minimum buffer width that must be maintained and maximum width that cannot be exceeded.
Offsets

- **On-Site Improvements**: an applicant could offer exceeding Code for stormwater management (SWM) for water quality, forest protection, open space preservation, or other techniques on the site in exchange for reduced buffers. In this offset the applicant would need to demonstrate how the offset met the goals and purposes defined in the code for buffers.

- **Off-Site Improvements/Restoration of Resources**: Off-site improvements may include performing restoration of a resource defined in the code (such as a degraded stream/wetland) in exchange for reducing buffers. This could be for resources adjacent or up- or down-stream of the development site. This category could also include SWM and forest protection. This offset is similar to the on-site improvements above but are on adjacent lands (provided they are in same subwatershed).

- **Fees to County**: rather than the developer implementing the improvements, the developer would pay a fee to Sussex County to implement the improvements which the County would then own/maintain.

- **Trading Buffer Adjacent Lands/Upstream**: an applicant could work with an adjacent property owner (developed or undeveloped) and provide a buffer on their property for reduced buffer on the development property. This off-site land would need to be included in an easement or subdivided out of the existing property. This option would be similar to a Buffer Averaging Waiver and could be used to create forested buffers on developed sites that have been grandfathered or on agricultural lands in Conservation/Preservation programs.
Incentive Programs

- **Save Mature Trees**: can a landowner be incentivized to retain mature trees on a property rather than clear-cutting to the resource edge by offering reduced buffer widths, or reductions in other code requirements?

- **Plant Trees Pre-construction**: can a landowner be incentivized to plant/vegetate a buffer with approved plantings prior to development (rather than having un-stabilized soils during construction) by offering reduced buffer widths or reductions in other code requirements?

- **Living Shoreline for tidal buffer reduction**: in the tidal portions of the watershed, can an applicant provide a living shoreline for a tidal marsh edge or bank in lieu of a buffer or for a reduced buffer width (i.e., provide protection for a resource waterward instead of landward)?

- **Perimeter Buffer Exchange**: a Sussex County-identified potential incentive to add to code. The concept would be to reduce perimeter buffers in exchange for buffers to resources. The idea would be to not limit site densities by exchanging the restricted areas.
Unique Sites / Uses

- Environmental Learning Centers/Waterfront Uses: many programs identify special land uses that need to be in close proximity with the water’s edge. Some programs use the Waiver program for all uses, but some identify these special uses and allow case-by-case submittals for buffer compliance or create separate buffer program for these uses.

- Sites <1 acres, <5 acres: many programs include a Waiver or Exceptions for smaller sites in categories <1 acre, < 5 acres, etc. Site size can be significantly influenced by resources and buffers for certain land uses. These clauses are intended to reduce “Land/Development Rights” takings filings.

- Industrial Processes: Ordinances often indicate that buffer widths are only associated with residential, commercial, or public use land uses, while industrial sites require site-specific evaluation for buffers and always wider and more restrictive than the standard program.
Ordinance Preamble

Refer to Suggested Revisions from Group
Next Meeting

- Wednesday, May 29
- Anticipated Goals
- Homework