



# Evaluating Municipal Forest Protection Capacity with the Forest–Friendly Code and Ordinance Worksheet

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USDA Forest Service Urban Forest  
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# About the Center for Watershed Protection



- National non-profit leader in watershed and stormwater management
- Mission: protect, enhance, restore and enhance our waterways
- Services: applied research, technical assistance, training and professional membership
- Learn more at: [www.cwp.org](http://www.cwp.org)



## Goals:

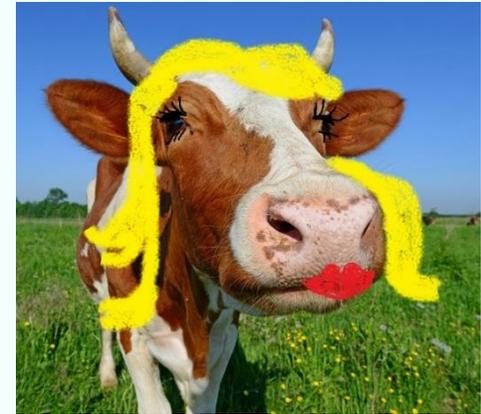
- Help communities review and revise development regulations
- Provides worksheet to evaluate how well codes promote “forest-friendly” development
- Also contains resources on best practices for urban forestry programs

This resource is available for free download at:

<https://www.cwp.org/new-resources-trees-stormwater/>

# Background on the Forest-Friendly Code and Ordinance Worksheet

- Created from the Center's recently updated Code and Ordinance Worksheet
- The COW was originally developed in 1998 through a national roundtable process and has been used to review development regulations in more than 75 communities
- Recent update included review and input from subject matter experts including foresters, planners, transportation engineers, homebuilders
- Forest-Friendly COW funded and developed in partnership with the US Forest Service



# Forest Friendly Development

- Limits clearing of trees and forests
- Requires forest conservation
- Requires forested stream buffers
- Promotes open space development
- Protects trees during construction
- Provides incentives for tree planting and conservation
- Requires tree planting as part of landscaping standards

This....



Photo credit: Colorado State

Not This....



# Examples of How Regulations can Promote Forest-Friendly Practices

Type of Code	Example Forest-Friendly Element
Zoning	Allow open space design as by-right
Forest Conservation	Establish forest conservation thresholds
Subdivision	Require planting of street trees in 6 foot minimum width tree lawns
Riparian Buffer	Establish a 100-foot vegetated buffer and identify allowable/prohibited uses
Erosion and Sediment Control	Limit clearing on steep slopes
Stormwater Management	Offer stormwater “credit” for forest conservation and/or tree planting

# How does it work?

**Step 1:** Gather documents, codes and ordinances

**Step 2:** Review each document to answer the worksheet questions

**Step 3:** Prioritize action items for revisions and a plan for adoption

Answer	Description
YES	The forest-friendly practice is required or allowed
NO	The forest-friendly practice is prohibited
CODES ARE SILENT	The regulations do not address the forest-friendly practice at all
N/A	The forest-friendly practice is not applicable in my community

# Step 1. Gather Documents, Codes and Ordinances

- Zoning Ordinance
- Subdivision Codes
- Street Standards
- Parking Regulations
- Building Codes
- Stormwater Management and Design Manual
- Buffer/Floodplain Regulations
- Natural Resource Protections
- Tree or Landscaping Ordinance
- Erosion and Sediment Control Regulations
- Forestry Manual

## Step 2: Review each document to answer the worksheet questions

Contains 52 questions in 9 categories:

1. Planning & Zoning (Q1-2)
2. Natural Resources Protection (Q3-7)
3. Buffers (Q8-16)
4. Open Space Design & Management (Q17-31)
5. Streets & Sidewalks (Q32 -36)
6. Parking Lots (Q37-39)
7. Clearing & Grading (Q40-44)
8. Stormwater Management (Q45-48)
9. Landscaping (Q49-52)

# Forest Friendly Worksheet: Caveats

- Prioritize worksheet sections most relevant for your municipality
- Review is a starting point for change and discussion
- Focuses on exact language in the code NOT process
- Focuses on HOW not WHERE



## 2. Natural Resource Protection Regulations

- Question 3. Is a natural resources inventory required that identifies and maps natural areas?
- Question 4. Is there an ordinance that requires conservation of some portion of trees or forests at development sites?
- Question 5. If forest/tree conservation is required, does the ordinance specify planting new trees at sites where existing forest is minimal to none?
- Question 6. Does a floodplain management ordinance exist that restricts or prohibits development within the 100-year floodplain?
- Question 7. Is there a local wetland protection ordinance?

# Article 9.1. Tree Conservation

## Sec. 9.1.1. Intent

The intent of the tree conservation regulations is to preserve tree coverage, mature trees and natural resource buffers, and lessen the impact of development on the surrounding properties. The most significant trees, greater basal area tree stands and healthy trees in the most appropriate locations, should be considered when granting an alternate.

## Sec. 9.1.3. Tree Conservation Required

### A. Tree Conservation

1. Tree conservation area requirements by district are set forth below. The eligibility for tree conservation is based on the gross site area. The amount of conservation area required is calculated as a percentage of the net site area.

District	Conservation Area Required (min)
R-1, R-2	15%
All other districts	10%

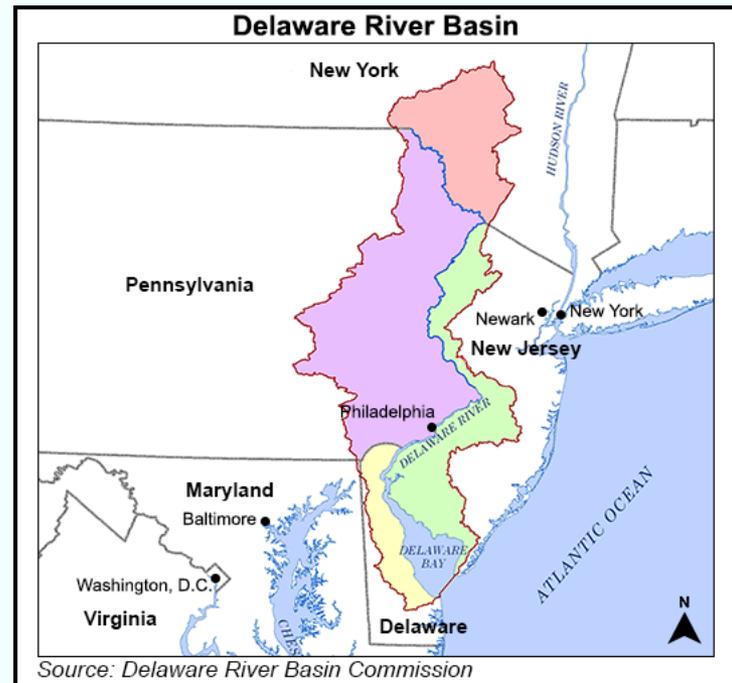
2. Any eligible tree conservation priority in conflict with a build-to requirement is not required to be protected.

## Step 3: Prioritize Action Items for Revisions and a Plan for Adoption

- Focus on questions with “No” or “Codes are Silent” answers
- Time revisions with planned updates to codes and ordinances
- Focus on code changes that are under municipal control (not state or federal)
- Consider community support and relative ‘ease’ of changes
- Focus on changes that help meet other community goals or mandates
- Prioritize changes that remove direct barriers

# Research for Targeting Regulatory Protections to Vulnerable Forests in the Delaware River Watershed

- 3-year research study funded by the Academy of Natural Sciences of Drexel University
- Partners include Rutgers University and the Pinchot Institute for Conservation



# Research for Targeting Regulatory Protections to Vulnerable Forests in the Delaware River Watershed

- Gap analysis to identify geographic areas of the basin with greatest need for comprehensive review of forest protection regulations
- Comprehensive review of forest protection regulations in priority areas of the basin
- Evaluation of linkages between varying forest protection regulations and the amount of forest measured through high resolution mapping

# Comprehensive Review of Forest Protection Regulations in Priority Areas of the Basin

- Early version of Forest-Friendly COW
- How do forest protection regulations in the study area compare to established benchmarks and how do they vary across municipalities?
- Results
  - Guide future ordinance work
  - Improve understanding of effective forest protection regulations



# Results

- Average score: 25.5% (of 100%)
- Range: 0 to 71%

**Average Percent COW Category Scores by Percent Impervious Surface**

<b>% Impervious Surface</b>	<b>Av. Score</b>	<b>Zoning</b>	<b>Buffers</b>	<b>Clearing</b>	<b>Forest</b>	<b>Floodplain</b>	<b>Open Space</b>
<b>0-5%</b>	17%	56%	31%	36%	24%	64%	38%
<b>5-10%</b>	23%	43%	47%	43%	30%	71%	42%
<b>10-25%</b>	20%	36%	12%	22%	11%	48%	27%
<b>25%&gt;</b>	15%	9%	7%	24%	3%	58%	17%

# Results

## Strongest Protection:

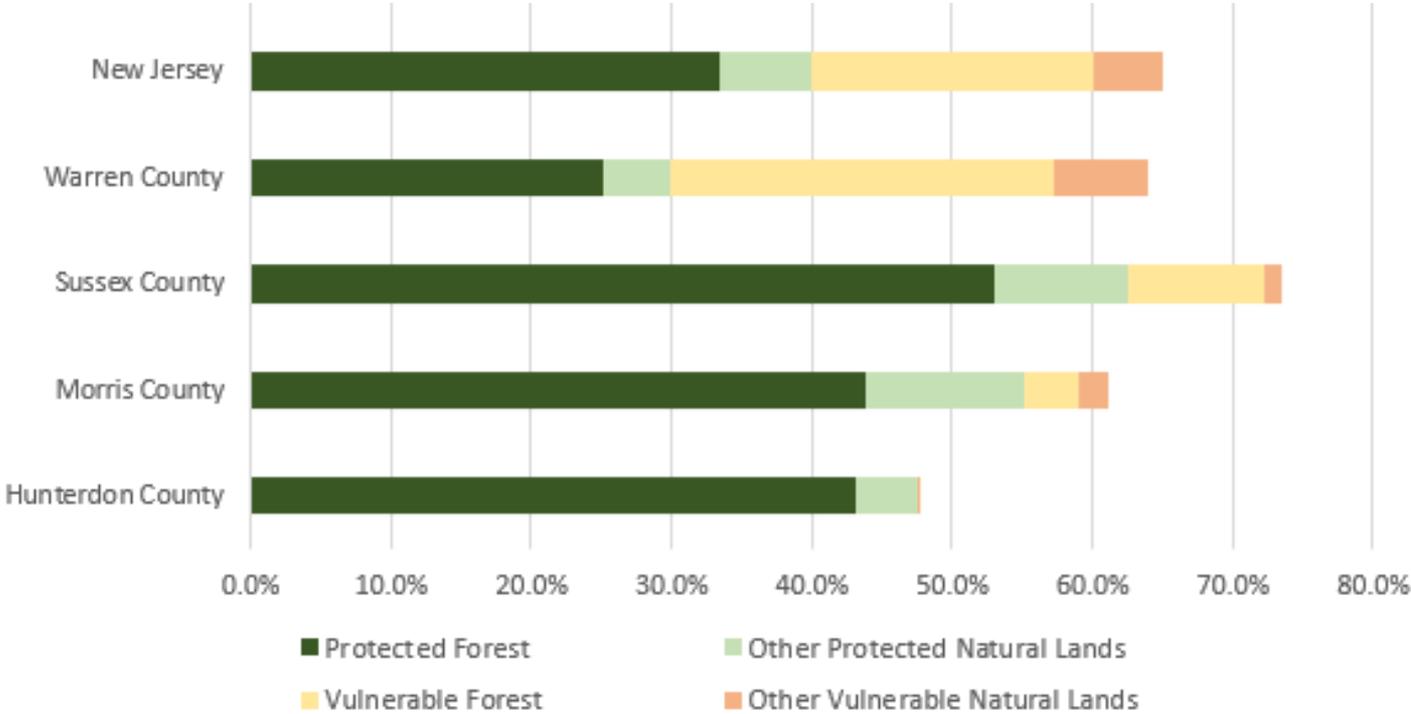
- Floodplain ordinance
- Open space subdivisions allowed
- Minimum % of buildable land required to be open space
- Entity responsible for managing open space
- Preservation of native/hydric soils, natural vegetation or steep slopes

## Weakest Protection:

- Buffers on commonly owned parcel
- Minimum % of buffer should be native
- Incentives to conserve land above and beyond required
- LOD shown on plans and marked at site

# Comparison of COW Results with Land Cover Metrics

- % forest cover and developed land
- % forest and developed land within stream buffer
- % “protected” forest



# Evaluation of linkages between varying forest protection regulations and the amount of forest measured through high resolution mapping

## Results:

- Wide variation across municipalities
- NJ municipalities have less developed land in the stream buffer than PA municipalities
- COW buffer scores and proportion of 50' buffer with forest correlated in both states but stronger in NJ
- NJ municipalities had strong relationship between COW scores and protected lands

# Thank you!

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