TYPICAL CONTENTS OF A SITE-SPECIFIC NATURAL RESOURCE AND WOODLAND STAND DELINEATION MAP:

- A Site Context Map (1" = 200') for vicinity within 1000' of the property
- Scale of map (to match scale of submitted site plan)
- Property boundary
- Topography at no less than two-foot contour intervals
- Intermittent and perennial streams, lakes, and other water bodies
- 100-year floodplain, if mapped
- Wetlands and transition areas with legend
- Stream buffers (as required)
- Soils with legend showing soil names and characteristics including native forest species typically found on the soil type, soil erosion potential, seasonal high water table, depth to bedrock, and soil texture
- Aquifer recharge areas
- Groundwater recharge areas
- Locations of sinkholes, disappearing streams, or other features associated with carbonate rock, including limestone and dolomite
- New Jersey surface water stream classification
- Cultural features including a Phase I Assessment of archeological resources, historic sites, and critical view sheds, as mapped by the Municipality
- A statement describing the presence or absence of rare, threatened, or endangered plants or animals as per evidence on the site or as listed by the Natural Heritage Program or Endangered and Nongame Species Program.
- Land known to contain tiles that have been used to provided drainage for agricultural use
- Existing manmade structures
- Known sources of environmental contamination and/or monitoring wells
- Aerial extent of tree and woodland cover (including the canopy extent of individual trees) with delineation of woodland associations shown
- A description of woodland stands on the site including dominant and codominant species, under story species, range of sizes in diameter at breast height (DBH), health, and general condition of woodland stands shown on the plan
- Locations of individual trees of specimen quality with species, diameter, approximate height, and health noted on the plan
- Absence of exotic/invasive species should be noted. Specimen trees should be measured precisely and the species provided, along with the approximate height and health of the tree.

Once the applicant has gathered and presented this information, it is easier to make value judgments about the importance of individual tree and woodland resources on the development site. For instance, larger, older trees do not adapt as well to construction impacts, certain species of trees adapt better than others to certain kinds of impacts, and healthy trees adapt better to changes in their environment than those with problems. The priorities for preservation should then be shown on development plans and described in a report. If the applicant submits all of this information in an easy to read and understandable format, the reviewing authority will have little trouble following the rationale for decisions to save certain trees and clear others.

Priorities for woodland conservation in the community should be presented in the performance standards section of the regulations. This can include both preservation of existing woodlands, as well as planting new woodlands (reforestation) where they do not exist. There are many different ways to express this type of formula.

Some minimums are based on land use, with more intense zones required to retain less woodlands than less intense zoning districts. Some formulas call for a
EXAMPLE OF REQUIREMENTS FOR WOODED TRACT TO BE PRESERVED (APPLIED TO NET TRACT AREA WITH WETLANDS SUBTRACTED FROM THE TOTAL TRACT AREA)

- Agricultural and Natural Resource Protection: 50%
- Medium Density Residential: 25%
- Institutional Development: 20%
- High Density Residential: 20%
- Mixed Use Development: 15%
- Commercial and Industrial: 15%

EXAMPLE OF REQUIREMENTS FOR WOODED ESTABLISHMENT: MINIMUM PORTION OF AN UNWOODED TRACT TO BE PLANTED WITH WOODLANDS (APPLIED TO NET TRACT AREA WITH WETLANDS SUBTRACTED FROM THE TOTAL TRACT AREA):

- Agricultural and Natural Resource Protection: 20%
- Medium Density Residential: 20%
- Institutional Development: 15%
- High Density Residential: 15%
- Mixed Use Development: 15%
- Commercial and Industrial: 15%

percentage of existing woodlands to be retained and others use a percentage of the total site area that must be wooded. If total site area is used, it should be clear how the site area is determined, either gross area or net area. Gross site area includes the acreage of the entire tract of land. Net site area is the gross area less the area of specific site features, such as wetlands.

If the development site will not meet the minimum requirements for woodland conservation after construction is completed, then mitigation for removing trees and woodlands can be required as part of the woodland conservation ordinance. Acceptable methods and the amount of mitigation must also be specified.

For many communities in Hunterdon County, developable land parcels are frequently current or former agricultural fields. It makes sense to determine how much forest is present in the community and how much of that should be retained before deciding on the formula for woodland preservation minimums. If most developable sites in the community are only partially wooded, a community may find that it makes sense to retain a higher percentage of what is there.

In Montgomery County, Maryland, the ordinance requires that a minimum percentage of every development site have woodlands present after construction, whether woodlands exist before development or not. This requires developers to plant new woodlands if a specified minimum percentage of the site is not present before development.

Once woodland conservation minimums have been established, mitigation for clearing beyond those minimums can be instituted. Common mitigation techniques are:

- Planting trees on-site,
- Planting trees off-site,
- Allowing natural regeneration of woodlands (see definitions Appendix B),
- Placing other wooded land of the same character into a conservation easement, or
- Paying into a fund that is dedicated to the purchase of wooded open space.

Each of these strategies has subtle complexities and potential legal considerations. Each community should examine these and other strategies and decide which is right for them. In general, the fairest approach is to require on-site mitigation planting and, if this is infeasible, give the developer an alternative option. This is a flexible approach.
ON-SITE OR OFF-SITE PLANTING AS MITIGATION

If developers are given the option to plant off-site, then it is possible that they may clear woodland on one site and replace them on another. However, if the ratio of penalty acres planted is more than the number of acres cleared, it may be more cost effective for the developer to save more trees on the original site.

When reviewing mitigation proposals, be sure that upland wooded acres are not traded for wet wooded acres. Some protection is already afforded to wet wooded acres by the New Jersey Freshwater Wetlands Protection Act. Upland woodlands provide a different ecosystem function than wet woodlands. Woodland mitigation planting should be done on the same type of land, and preferably within the same sub-watershed or watershed, as the cleared woodlands.

If the community has publicly or privately owned sites that can be offered to the developer for planting, off-site planting may become more attractive because it eliminates the cost of buying land for planting. If public land will be offered to developers for planting, some legal issues will arise. For example, easements for long-term conservation and maintenance access will need to be provided, and the proper insurance certificates will need to be filed. Municipalities must be prepared to assume long-term maintenance responsibilities at the end of the developers guarantee period.

Most municipalities are acquiring more open space than ever. Planning must be done to determine what type of vegetative cover is most desirable for open space lands. Once vegetative cover needs are clear, planting can be directed to areas that are planned for woodland restoration.

PAYING INTO A FUND AS MITIGATION

If a fee in lieu of planting is acceptable, the municipality will have to set up an institution to serve that purpose. Some communities have existing public/private partnerships that are actively purchasing open space. It may be easiest to work with an existing framework in order to coordinate efforts and share resources.

The regulations must contain a provision to allow payments to change along with market conditions, land values, and tree nursery costs. Payment amounts must be fair to be legal. One fair way to valuate payments is to base the payment on the cost of planting an acre of woodlands, assuming land has been made available for planting. Another is to base payments on the cost to purchase an acre of wooded land in the community.

ILLUSTRATION OF MITIGATION ORDINANCE

NOTE: SAMPLE BASED ON THE MARYLAND FOREST CONSERVATION ACT
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STOCKING RATES FOR WOODLAND MITIGATION PLANTING:

- 100 trees per acre at a size of 2" caliper,
- OR 200 trees per acre installed at 1" caliper,
- OR 350 trees per acre installed as whips (5'-6' ht.) AND 40 woody shrubs per acre.
- It is recommended that combinations of the above size and stocking rates be used in the same planting for visual variety.
- Shrubs should be located at the edges of the planting and a native grass mix must be seeded over the area of the planting.
- Natural regeneration (allowing woodlands to re-establish naturally on an area of land by discontinuing mowing practices) may be proposed if conditions warrant. A seed bank must be available near the proposed site.

SURVIVAL RATES AT THE END OF THE MAINTENANCE PERIOD FOR WOODLAND MITIGATION PLANTING:

- 100% survival of shrubs and trees installed at 2" caliper.
- 85% survival of trees installed at 1" caliper.
- 75% of trees installed as whips (5'-6' ht.).
- All surviving plant material must be in good health, and disease and pest free.
- There must be no evidence of exotic and invasive plant material.