
Chapter

4 Strategies To Consider For Ecosystem Protection

Strategies for protecting the ecosystem likely will affect all other segments of the community — businesses, residents, tourists, and others. As a result, the strategies produce positive results not only for the ecosystem, but also for the local economy and the community's quality of life. For most communities, a wide range of ecosystem protection strategies is available. For example, should a local effort to protect endangered plant species proceed by regulating development? Buying conservation easements? Curbing off-road vehicles? Encouraging better land management practices?

Because it is likely that most of the projects the community undertakes will concentrate on local activities, strategies that call upon volunteers to protect or restore the ecosystems are potentially useful. Working through the laws and programs that affect the ecosystem and are administered by the city, town, county, or other local government is another option. Finally, certain programs and laws administered by the state and federal governments provide ecosystem protection and may provide a basis for a local protection effort.

4.1 *Strategies Using Voluntary Activities*

Many communities have found voluntary non-regulatory ecosystem protection strategies, including volunteer cleanups, land acquisition, and public education efforts, to be useful. Other voluntary strategies involving financial incentives require changes in tax policies, and are discussed in Section 4.2.

Low Cost, Immediate-Result Voluntary Strategies

A number of simple voluntary activities are available to achieve ecosystem protection goals (Greenfield and LeCouteur, 1994). These activities encourage community pride and may produce immediate, visible results. These activities include:

- **Tree, Grassland, or Wetland Planting or Reforestation** — These activities involve planting trees, shrubs, or flowers in urban areas to improve aesthetics, or undertaking a reforestation or wetland planting program in more rural areas to improve forests that have been clear-cut or wetlands that have been damaged. These activities produce additional benefits such as lowering urban temperatures, purifying air, and controlling storm-water runoff.

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- ⁿ **Stream, Beach, or River Cleanups** — Many communities have organized efforts to pick up trash and debris from rivers, beaches, or streams, either once or on an ongoing basis.
 - ⁿ **Storm Drain Stenciling** — Many people do not realize that runoff collected by storm drains may pass untreated into a river or harbor. Stenciling “Do Not Dump” or other instructions on storm drains alerts community members that they should not use storm drains to dispose of used oil or other hazardous liquids.
 - ⁿ **Pollution Prevention** — Recycling programs, car pooling networks, and public transportation improvements all reduce pollution at its source.
 - ⁿ **Education** — Seminars at local schools can educate students about their local environment and encourage stewardship. Pamphlets encouraging recycling and explaining proper disposal of household hazardous materials or showing maps of local greenways and bike paths can increase interest in local natural resources. Some groups, such as farmers, may benefit from information on ecosystem issues specific to their occupations (for example, the importance of not filling in wetlands or benefits from reducing pesticide runoff). Community organizations and individuals also can find out more about the presence of hazardous materials in their neighborhoods through the community-right-to-know provisions that are part of the Superfund remediation program.
 - ⁿ **Amending Covenants Governing Condominium and Homeowners’ Associations** — Covenants governing condominium or homeowners’ associations can address items like reducing the use of fertilizer and pesticides on lawns or prohibiting the removal of native vegetation.
 - ⁿ **Instituting Integrated Pest Management (IPM) on Farms and in Gardens** — IPM minimizes pesticide use in favor of natural forms of pest control. These include introducing insects and animals that prey on the pests, rotating crops, planting two or more crops in the same field (making it harder for pests to find their targets), and many other techniques.
 - ⁿ **Encouraging and Assisting Businesses to Conduct Environmental Audits** — Audits involve examining business practices to see if they are environmentally friendly (for instance, does the business recycle paper and other waste products). Often, programs to reduce waste also improve business efficiency and cost effectiveness. Small businesses may be able to get assistance through the EPA Information Hotlines listed at the end of this section or through their EPA regional office.

Land Acquisition

Land acquisition, which involves the purchase of land or a land easement, can be one of the most effective ways to preserve an ecosystem. Land conservation encompasses a number of activities, not all of which involve purchasing property outright.

Who Is Involved in Land Purchases?

The state or local government can purchase land or easements (defined below) from

voluntary sellers (as opposed to exercising eminent domain) to be set aside for conservation purposes. However, many communities also have formed land trusts for this purpose. Land trusts are private non-profit corporations that acquire land or easements. They often can move more quickly than governments, and also can interact more freely with private landowners who might be wary of working with a government agency. Large land trusts that already are established, such as The Nature Conservancy, usually focus their efforts on acquiring land with rare or highly valued species and habitat.

Local governments and land trusts may have programs to make local landowners aware of these options. Landowners may not realize that they can sell some of their property rights as easements without forfeiting the land itself. Similarly, developers may not be aware of land banking (see below) or other tools for mitigating ecosystem damage.

Tools for Land Acquisition

One way to ensure that land is protected or developed according to conservation principles is to purchase it outright (called fee simple acquisition). However, this is often very expensive. There are a number of other ways to acquire an interest in or influence over the management of a tract of land without making an outright purchase (Mantell, et al., 1990).

- ⁿ **Easements** — Through an easement, a landowner voluntarily gives up or sells specific land-use or development rights but continues to hold title to the land. The easement “runs with the land”, meaning that it remains in force even when the property changes hands. Generally, the local, state, or federal government or private land trust buys the right to build on the land, which it will never exercise, thereby preventing development. Purchases of development rights are often made in areas adjacent to urban areas, where the pressure to develop land is greatest. The government or land trust also can purchase the rights to use the land for a conservation-related purpose, such as for hiking trails. In both cases, the owner retains the rights to use the land for other purposes consistent with the easement, such as for agriculture.
- ⁿ **Options and Rights-of-First-Refusal** — Both of these tools allow a purchaser to gain time before buying land or an easement. A potential buyer can purchase an option that allows the purchase of land for a specific price within a specified period of time, during which the current landholder cannot accept any other offers to buy. Similarly, a buyer can purchase a right-of-first-refusal to a tract of land, which requires the current landholder to notify the rights-holder of any other offers made. The potential buyer then has the option of matching that offer and buying the land.



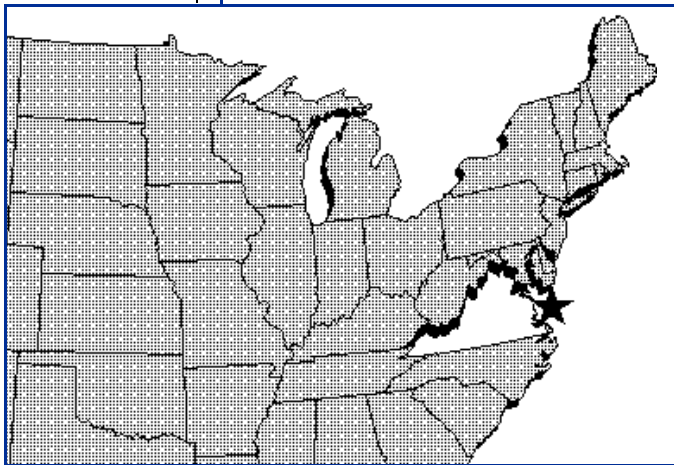
Virginia Beach's Agricultural Reserve Program

The economy of the coastal community of Virginia Beach, Virginia is based on tourism, agriculture, and military installations. As a result of recent urban growth, farms in the area face increased pressure to sell land for development. To protect the agricultural base of the area against urban sprawl, the municipality developed the Agricultural Reserve Program (ARP). Under the ARP, the municipal government purchases the development rights to working farms and holds them in a public trust. Not only do the proceeds from the sale of development rights enable farmers to reinvest in their farms, the purchase ensures that the farm is no longer a potential development site. In addition, the program provides for resale of the development rights back to the farmer after a minimum period of 25 years, if circumstances at that time indicate that the land should no longer be held back from development. (Southern Watersheds Committee, 1994)

ⁿ **Leases and Cooperative Management Agreements** — These tools allow a government or land trust to exercise control over the land without purchasing anything. Landowners either lease the land for a specified time and purpose or manage it under certain terms and conditions. The federal Conservation Reserve Program and the Wetland Reserve Program use this technique to allow farmlands to lie fallow for a period of years (usually five).

Landowners may also donate easements, options, and rights-of-first-refusal to land trusts or federal, state, or municipal governments. Such donations can improve a landowner's tax position and can be a good estate planning strategy. The *Virginia Coast Reserve* illustrates the use of land acquisition and conservation easements in protecting ecosystems (see below).

Eastern Shore, Virginia: Using Easements and Other Compatible Development Approaches to Protect Virginia's Barrier Islands



“Protecting the watershed protects economically important species such as hardshell clams.”

– The Nature Conservancy

support viable businesses compatible with the area's resources. The corporation consists of three companies with specific missions:

ⁿ **Eastern Shore Products** — This company develops, licenses, and markets a range of products. The company develops and markets nature-based tourism programs, local crafts, and specialty agricultural products grown through sustainable means.

Working with current and future landowners, The Nature Conservancy (TNC) has successfully combined conservation easements with other ecosystem preservation tools to protect part of Virginia's Eastern Shore and the Virginia Coast Reserve, the last intact coastal wilderness on the Atlantic coastline. Although federal and state agencies and TNC protect the barrier islands of Virginia's eastern shore themselves, they have concerns about the effects of development on surrounding lands. In response, they have begun to use several innovative methods for protecting the traditional resource-based economy, thus meeting the goals of this small community struggling through an economic recession while also preserving a valuable and distinct ecosystem. Two of the most innovative approaches developed are the creation of the Virginia Eastern Shore Corporation and the use of a community-based conservation easements program.

With \$2.7 million, a variety of investors including foundations, private companies, local businesses, and individuals founded the corporation. Focusing on meeting sustainable development goals, the corporation is helping identify and support

Funding for Land Trusts

Acquiring easements or fee simple land is usually expensive. Land trusts often seek grants and donations from private charities. Some land trusts have found other funding sources, including (Mantell, et al., 1990):

- **Limited Development** — The land trust can borrow to finance a purchase, and then sell off a small portion of the land for development to repay the loan. The trust can impose requirements, such as clustering or open-space allotments, to ensure that the development is appropriate.
- **Conservation Investment** — Trusts can sell a part of the land to a buyer who is willing to build an ecologically friendly vacation home as an investment. The trust also can seek investors who want to purchase an interest in a working farm or fishery, from which they get a percentage of profits. This enables land to be kept in open-space uses.

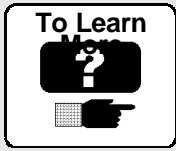
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- **Eastern Shore Venture Fund** — This company provides short-term business loans, guarantees, and venture capital to local, emerging, and ongoing enterprises that are ecologically sound.
- **Eastern Shore Lands** — This company helps implement sustainable development of the shore's landscape, just as the other two companies will help develop a sustainable economy. Eastern Shore Lands acquires and leases seaside farm and village properties, applies conservation easements and development restrictions, and then resells the land. It also provides farmland for sustainable agriculture and works to ensure that affordable housing and commercial facilities are available for local families and workers.

In the Virginia Coast Reserve region of the islands, conservation easements are used in cooperation with landowners to protect the watersheds adjoining the reserve.

Easements are valuable community tools because they bring value not only to the conservationists but also the landowner. As a result, they often allow for land uses that yield financial returns (such as agriculture, forestry, and limited residential development) consistent with the long-term health of the watershed. TNC is working with existing landowners and with future seaside farmers who are interested in purchasing TNC lands that already have conservation easements attached.

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Greenfield, Jennifer and Brian M. LeCouteur, *Chesapeake Bay Community Action Guide*, Metropolitan Washington Council of Governments, Washington, DC, May 1994. This book contains step-by-step instructions on how to organize and carry out voluntary activities.

The National Wildlife Federation, Backyard Habitat Program, 1400 Sixteenth Street NW, Washington, DC, phone: (202) 797-6800, can provide information on how individuals can create and improve local habitat.

The Land Trust Alliance, 900 Seventeenth Street NW, Washington, DC, phone: (202) 638-4725, provides technical assistance and services to local and regional land trusts and conservation groups. Some documents published by this group include:

- *Starting a Land Trust: A Guide to Forming a Land Conservation Organization*, 1990.
- *National Directory of Conservation Land Trusts*, 1989.
- *National Directory of Local and Regional Land Conservation Organizations*, Annual Report.

U.S. Environmental Protection Agency hotlines provide information for voluntary action. Some of the most useful for citizen action include:

- Green Lights and Energy Stars Programs, phone: (800) 782-7937, Internet Website: <http://www.epa.gov/docs/gcdoar/energystar.html>, provide information and technical support on energy efficient lighting to U.S. businesses and governments.
- Hazardous Waste Ombudsman, phone: (800) 262-7937 in U.S. except metropolitan Washington, DC and (202) 260-9361 in metropolitan Washington, DC, assists the public and regulatory community in resolving hazardous waste issues. The ombudsman handles complaints from citizens, conducts investigations, undertakes site reviews, and issues reports relating to hazardous waste sites.
- Office of Environmental Justice, phone: (800) 962-6215 in U.S. except metropolitan Washington, DC and (202) 260-6359 in metropolitan Washington, DC, coordinates public communication and provides technical and financial assistance to outside groups on environmental justice issues.
- Pollution Prevention Information Clearinghouse, phone: (202) 260-1023, provides answers and referrals in response to questions from the public concerning pollution prevention.
- Resource Conservation and Recovery Act (RCRA) Hotline, phone: (415) 744-2074, responds to requests for information on hazardous waste identification, generators, transporters; treatment, storage, and disposal facilities; and recycling sites.

4.2 Strategies Using Local Laws

Some communities have found that achieving their goals requires more than volunteer strategies. Communities often turn to local laws as a means of ecosystem protection.

Zoning Ordinances

A zoning ordinance describes the ways in which a parcel of land may be used and the intensity of that use (such as the density of development). Land is zoned for industrial, commercial, or residential development or can be set aside as farmland, forest, pas-

- ⁿ RCRA/Underground Storage Tank, Superfund, and Emergency Planning and Community-Right-to-Know Hotline, phone: (800) 424-9346 in U.S. except metropolitan Washington, DC and (703) 412-9810 in metropolitan Washington, DC, provides information about the title programs and referrals for obtaining documents about these programs. Translation is available for Spanish-speaking callers.
- ⁿ Small Business Ombudsman Clearinghouse/Hotline, phone: (800) 368-5888 in U.S. except metropolitan Washington, DC and (703) 305-5938 in metropolitan Washington, DC, TDD: (703) 305-6824, disseminates regulatory and other environmental information to help small businesses enhance voluntary regulatory compliance and pollution abatement and control.
- ⁿ Toxic Substances Control Act (TSCA) Assistance Information Service, phone: (202) 544-1404, TDD: (202) 544-0551, furnishes TSCA regulation information.
- ⁿ WASTEWISE Helpline, phone: (800) EPA-WISE, provides information about EPA's voluntary program encouraging businesses to reduce solid waste.
- ⁿ Wetlands Information Hotline, phone: (800) 832-7828 in U.S. except metropolitan Washington, DC and (703) 525-0985 in metropolitan Washington, DC, disseminates information about the Wetlands Protection Program; answers questions; provides referrals concerning the value, function, and protection of wetlands; and accepts requests for certain wetlands publications.

Other useful publications include:

Diehl, Janet, *The Conservation Easement Handbook*, American Planning Association, Chicago, IL, 1988.

Mantell, Michael A., Stephen F. Harper, and Luther Propst, *Creating Successful Communities*, The Conservation Foundation, Washington, DC, ISBN 1-55963-014-0, 1990. In particular, Appendix A contains a primer on land acquisition.

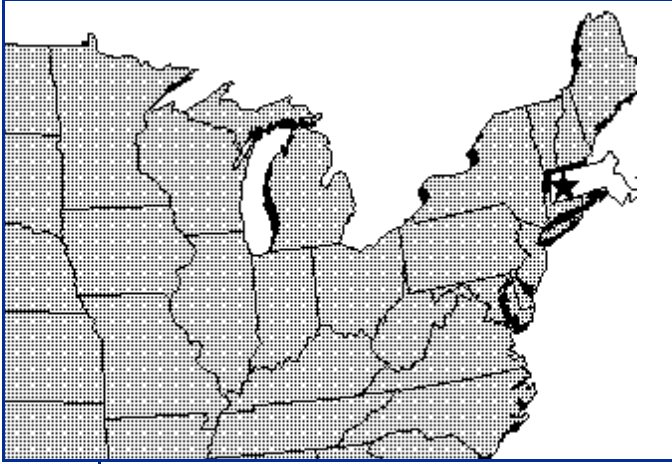
Porter, Douglas R., ed., *Growth Management: Keeping on Target?*, Urban Land Institute, in association with the Lincoln Institute of Land Policy, Washington, DC, 1986. In particular, this book discusses land acquisition for conservation by the City of Boulder, CO.

Small, Stephen, *Preserving Family Lands*, Landowner Planning Institute, Boston, MA, ISBN 9624557-1-7, 1992.

ture, open space, or habitat for wildlife and recreation. Zones can encompass a small parcel of land, such as a shoreline, or can be extended to an entire watershed.

Many zoning techniques are available for protecting an ecosystem. Bonus and incentive zoning award developers supplemental development rights, such as allowing construction of more buildings, in exchange for public benefits, such as developing within urban areas instead of in outlying areas. Buffer zones restrict activities on areas surrounding key ecosystems to minimize damage. Floodplain protection districts, located near rivers or other flood-prone areas, generally prohibit residential and commercial development. The *Westfield River Greenway Plan in Massachusetts* presents

Western Massachusetts: Local River Protection Zoning Bylaws to Preserve the Westfield River



As described in Chapter 2, a citizen group in Massachusetts developed the Westfield River Greenway Plan to ensure a regional approach to river protection.

A 100-foot, no-development buffer zone along the river is the most critical part of the plan. The plan recommends that management of land use along the Westfield River remain primarily a local responsibility, and that the six communities along the upper river branches adopt river protection bylaws as the mechanism for protection. The Pioneer Valley Planning Commission, directed by 43 member communities, worked with the six communities along the river to pass these bylaws at

town meetings. The bylaws establish a river corridor to protect the river's natural and scenic values by prohibiting roads, public recreation facilities, and development inconsistent with the river's wilderness character.

Each municipality also has the option to tailor its conservation efforts through its zoning bylaws. Towns are encouraged to expand the buffer to include important natural features. The degree of restrictiveness of zoning within the protected corridor can be tailored to meet resource protection needs. This flexibility allows towns to implement more stringent measures if the community places a relatively higher value on a particular area.

Deciding on a 100-foot buffer required considerable research and investigation of other communities' experiences. Minimum septic system distance from the river, distances needed to filter out non-point source pollution, and buffer strips adopted by other communities were a few of the factors considered. All the communities adopted the bylaws over four years ago, and the

buffer appears to be working well, with no legal challenges to date.



The Role of Wetlands in Flood Protection

Scientists have just begun to understand the role of wetlands in protecting developed areas from flooding. Floods occur in peaks; that is, they do not occur along the entire stretch of a river simultaneously. As high water moves downstream, it spills over the stream's original banks, flooding everything in its wake and often damaging property. Wetlands allow flood waters to spread out over a wide area, slow the flow of the water, and temporarily store it. This decreases the size of floodpeaks and slows their movement. If wetlands are filled in and the banks are altered (a process called channelization), developed areas can suffer more severe flood damage.

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a good example of an ecosystem protection plan that uses floodplain (and buffer) zoning to preserve a river ecosystem (see across). Overlay, open-space, and conservation zones can be applied to a specific resource with defined boundaries, such as a wetland, that is already bound by a zoning ordinance. These zones apply additional restrictions on development and other activities, over and above those in the underlying ordinance, to ensure that a resource or ecosystem is protected from damage. The *Urban Forestry Demonstration Project in New Jersey* illustrates one New Jersey county's use of overlay zones.

Other zoning approaches include cluster zoning and interim development controls. Applied to a subdivided tract, cluster zoning ensures that development is concentrat-

New Jersey: Urban Forestry Improves Urban Living

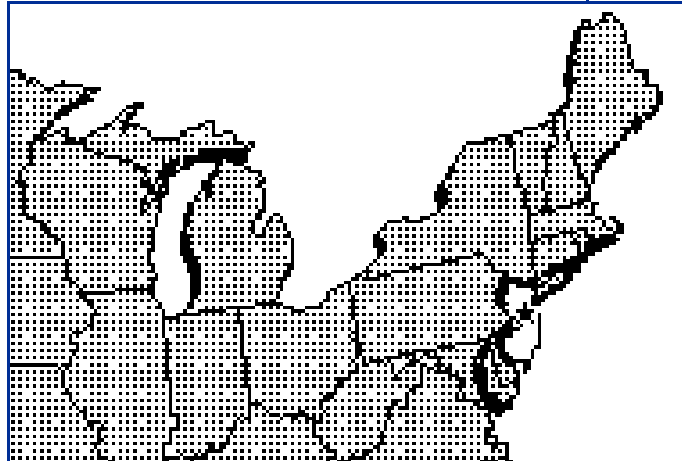
An innovative demonstration project in New Jersey has allowed five communities to assess their unique environmental conditions and to involve citizens in improving the quality of city life through natural resource management.

The Urban Forestry Demonstration Project includes Mercer, Middlesex, and Passaic counties, and the urban communities of Newark and East Orange. Demonstration projects in the three counties focused on long-term resource protection, while in the urban areas, neighborhood revitalization and improved resource management are highlighted.

Mercer County's Green Links Project has inventoried the interconnected network of streams, wetlands, woodlands, and open spaces remaining in the county. The project has identified these resources as vulnerable to development and has targeted them for future protection as a component of the county's comprehensive natural resource map. Middlesex County has devised a strategy to protect a large percentage of the remaining forest land in the county through a model protection and management overlay zone covering 250 miles of continuous stream corridors. Passaic County has completed a comprehensive natural resource management plan to provide a framework to guide the open-space and development plans for the 16 municipalities that make up the county. These planning efforts have revealed a multitude of high-priority projects at the local level for ecological restoration and enhancement.

Newark and East Orange, as adjacent municipalities, share some common problems associated with neighborhood revitalization, restoration of vacant land, enhancement of riparian areas and city streets, and re-creation of neighborhood pride through community forestry activities.

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ed within a small portion of the tract, leaving large areas as open space. The *GreenSpace Alliance in metropolitan Philadelphia* is an example of a group using cluster zoning to encourage the preservation of green space (see below). Interim

development controls include temporary ordinances, such as a moratorium on building permits or water and sewer connections, to slow growth in the short term.



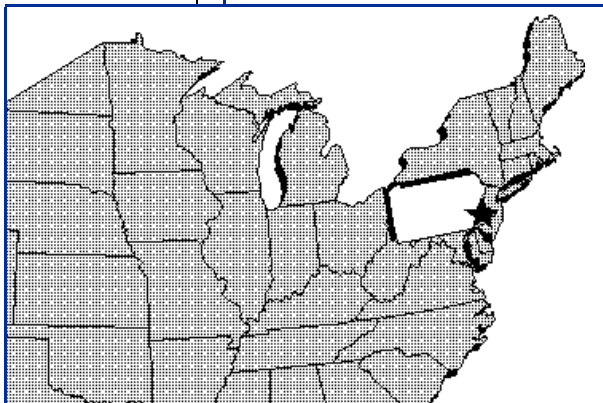
Pittsburgh's Split Tax

A highly successful example of a preferential assessment is Pittsburgh's "split tax", which taxes owner- or tenant-occupied downtown buildings, as well as buildings under active renovation, at lower rates than abandoned and deteriorating buildings. Pittsburgh's "split tax" has revitalized the city by reducing the number of abandoned or deteriorating buildings while increasing the city's overall property tax revenues. In addition, as abandoned or deteriorating buildings are renovated, they provide valuable new commercial and residential space within the city, thereby reducing pressure to build structures outside the downtown business district and community neighborhoods.

Property Taxes and Municipal Fees

Taxes or fees for services can affect the behavior of residents and developers in

The Philadelphia GreenSpace Alliance: Innovative Policy Tool Preserve Open Space and Concentrate Development



By encouraging cluster development as a means of preserving open space, Philadelphia is melding land conservation and development. Although the population of southeastern Pennsylvania dropped 3.6 percent in the last 20 years, over 175,000 acres of additional land was developed. Without intervention, prospects for the future are discouraging. Experts predict that an additional 173,000 acres of now open land — an area more than twice the size of Philadelphia — will be developed by the year 2020.

Metropolitan Philadelphia has responded to this threat by forging the GreenSpace Alliance (GSA). The alliance is working to foster coordinated planning among neighboring municipalities as one way to foster its goal of a linked, regional system of protected green spaces that

preserve key agricultural, natural, and historic resources in the region.

Land-use laws in the Philadelphia region require that individual townships zone to allow for all possible uses (such as industrial, residential, commercial) while also accepting a "fair share" of projected growth in the region. One method to achieve the GSA's goal is to use "zoning jointures" that allow neighboring municipalities to develop a single comprehensive plan and zoning ordinance. This allows participating communities to account for all necessary uses, and to control future development for combined territories, allowing communities to maximize open space by clustering development. Jointures are allowed under the metropolitan planning code (MPC) but are seldom used in southeastern Pennsylvania. The following figure compares typical development patterns under the MPC with land use under zoning jointures, where each square represents a township and each circle represents development.

One GSA pilot project with the Federation of Northern Chester County has developed a joint comprehensive plan with nine municipalities, laying the groundwork for joint zoning in the future. Other GSA projects include the Buckingham Township Project, which is using the transfer of development rights (TDR) to "transfer" the right to develop certain lots

ways that encourage ecosystem protection. For example, property tax breaks can be given in return for agreements from landowners to protect habitat on their property or to leave their property's shoreland in a natural state. Alternatively, localities can preferentially assess properties for taxes at a portion of their value if used in a manner consistent with conservation goals (such as farming) or if left in a natural state (such as a forestland). Increases in building permit processing fees can discourage building or help fund conservation activities.

Performance Standards

Some localities have begun to enact standards that not only control general uses, such as commercial or industrial development, but also establish strict guidelines for how tracts of land can be developed, regardless of use. For example, some towns regulate the placement or servicing of septic systems. Alternatively, localities can assign a tract of land with an impervious surface ratio that limits the amount of space that can be covered by roads, sidewalks, parking, and other impenetrable surfaces. This is intended to limit runoff and other environmental problems and to encourage the use of

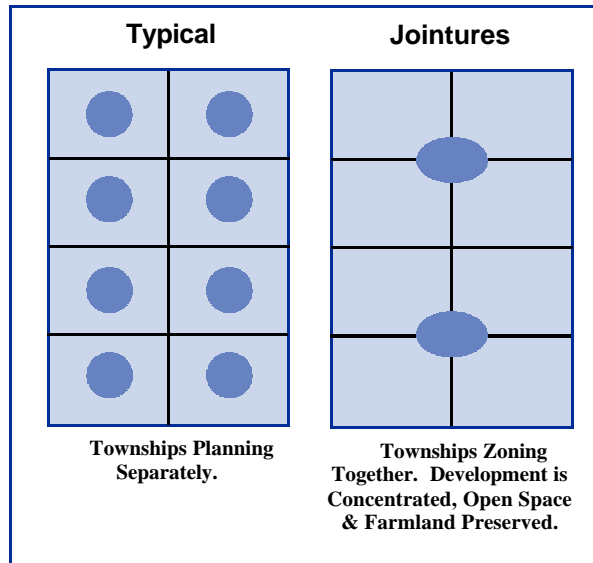
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in agricultural areas to areas more appropriate for development. Developers buy development rights from local farmers in an agricultural "sending area" and then build on land in a designated "receiving area" adjacent to existing development.

The alliance also works with the five counties in the region to promote open-space protection. In two counties, over \$150 million has been committed to the purchase of green spaces, but in Delaware County voters rejected a \$100-million proposed open-space program over the issue of taxes.

Recently, the GSA completed a comprehensive GreenPlan for southeastern Pennsylvania that describes its agenda for the creation of a linked regional system of green spaces and the building of green communities. The GSA now is seeking endorsement from a wide variety of organizations and interests to make this plan a reality.

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gravel driveways or reduce the size of parking lots. Finally, municipalities can require developers and other parties to purchase performance bonds, which insure the locality against damage caused to ecosystems. Developers, for example, would purchase these bonds from the local government. If ecosystems are damaged, the municipality can use those funds to repair the damage.

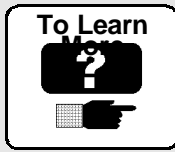
Transfers of Development Rights (TDRs)

TDRs involve transferring the rights to develop a site or building, or a portion of a site or building (including the “air rights” above it), to another site or building. The state or county separates the rights to build on a site from the deed, and allows the landowner to sell these rights to a developer looking to develop in a predesignated “receiving” area where the community wants to concentrate growth. This often allows the developer to exceed a zoning limit on the new site or building. TDRs can be used to protect farms, forests, and other areas by shifting development from one area and concentrating that development elsewhere. (See the earlier description of the *Philadelphia GreenSpace* initiative.)

Growth Planning in Local Communities

Many communities are developing comprehensive growth management plans that combine a number of land-use strategies in an effort to concentrate development within the city limits. Growth management techniques include:

- ⁿ **Development of “Brownfields” Sites** — Using cluster or bonus zoning, communities can encourage re-development of “brownfields” sites, underutilized or abandoned areas such as railroad yards, warehouses, docks, or industrial sites. Because these areas are usually near or in the urban core of the community, this type of development both revitalizes urban areas and curbs sprawl by reducing pressure to develop industrial areas outside of town.
- ⁿ **Infill and Minimum-Density Requirements** — Infill development targets existing but underused urban or suburban areas for development. If pockets of undeveloped or less developed land exist in these areas, communities can set infill or minimum-density requirements to increase development there. This reduces pressure to build in undeveloped areas.
- ⁿ **Urban Service Limits and Urban Limit Lines** — These techniques mark the farthest reaches of city services as well as the edges of the city itself. To restrict development to city areas, planners can limit the degree to which utility extensions (such as sewer lines) are granted beyond the city boundaries.
- ⁿ **Adequate Public Facilities Requirements** — These requirements limit development to levels that the infrastructure currently can support and mandate that future funding sources for infrastructure be identified in all plans for new development.
- ⁿ **Increasing Public Transportation** — Primarily intended to mitigate air pollution, this technique involves increasing bus and subway service, implementation of high-occupancy-vehicle (HOV) designations for commuter traffic, installing bike lanes and paths, creating pedestrian walkways, and designing other measures to reduce the use of personal automobiles.



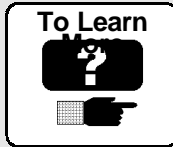
American Planning Association, 1313 E. Sixtieth Street, Chicago, IL 60637-2891, phone: (312) 955-9100, offers many services and publications. For example:

- ⁿ **Planners Bookstore** sells hundreds of useful guides, books, reports, analytical tools, and bibliographies on a wide range of planning topics, including land use, growth management, transportation, zoning, geographic information systems, economic analysis and development, and habitat protection. The association can also provide you with model conservation zoning ordinances.
- ⁿ **Planners Advisory Service** is a fee-based research service that can assist in developing strategies related to regional planning, land use, growth management, sustainable development, and most other planning topics.
- ⁿ Recommended publications available through the American Planning Association include:
 - *Journal of the American Planning Association*, a scholarly journal published quarterly on a wide range of planning topics.
 - *Planning*, a monthly magazine published for a general audience and professional planners.
 - APA Planning Advisory Service, *Performance Controls for Sensitive Lands*, 1975.
 - Beatley, Timothy, *Habitat Conservation Planning*, University of Texas Press, 1994.
 - Butler, Kent, *Protecting Wildlife and Open Space*, 1992. 90-minute VHS video.
 - Endicott, Eve, *Land Conservation through Public/Private Partnerships*, Island Press, Washington, DC, 1993.
 - Nelessen, Anton, *Visions for a New American Dream*, 1994.
 - Smith, Herbert H., *A Citizen's Guide to Zoning*, American Planning Association Planners Press, Chicago, IL, 1993.
 - Steiner, Frederick, *The Living Landscape: An Ecological Approach to Landscape Planning*, McGraw Hill, 1990.

The following publications from other sources also might be useful:

- ⁿ Arendt, Randall, *Designing Open Space Subdivisions - A Practical Step-by-Step Approach*, Natural Lands Trust, Media, PA, 1996.
- ⁿ Beatley, Timothy and Greg Low, *Planning for Tomorrow*, The Nature Conservancy, Washington, DC, 1989.
- ⁿ Collins, Beryl R. and Emily W. B. Russell, eds., *Protecting the New Jersey Pinelands*, Rutgers University Press, New Brunswick, NJ, ISBN 0-8135-1267-0, 1988. This book discusses the transfer-of-development-rights system set up to preserve the New Jersey Pinelands.

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- ⁿ Diamond, Henry L. and Patrick F. Noonan, *Land Use in America: The Report of the Sustainable Use of Land Project*, Island Press, Washington, DC, 1996. This publication summarizes the major trends and controversies in land use, including the impact of urban sprawl on habitat.
- ⁿ Einsweiler, Robert C. and Deborah Miness, *Managing Community Growth and Change, Volume I: Managing Growth and Change in Urban, Suburban, and Rural Settings*, Lincoln Institute of Land Policy, Cambridge, MA, October 1992.
- ⁿ Ewing, Reid, et al., *Best Development Practices: Doing the Right Thing and Making Money at the Same Time*, Florida Department of Community Affairs, Tallahassee, FL, May 1995. This guidebook provides recommendations for growth management that take into account financial interests of developers and the general public. It also includes an excellent annotated bibliography.
- ⁿ Little, Charles E., *Greenways for America*, The Johns Hopkins University Press, Baltimore, MD, 1990.
- ⁿ Mantell, Michael A., Stephen F. Harper, and Luther Propst, *Creating Successful Communities*, The Conservation Foundation, Washington, DC, ISBN 1-55963-014-0, 1990. In particular, Chapter 1 discusses conservation of agricultural land, Chapter 2 discusses rivers and wetlands, and Chapter 5 discusses the value of open space.
- ⁿ McHarg, Ian L., *Design with Nature*, John Wiley & Sons, Inc., New York, NY, ISBN 0-471-55797-8, 1992. This book discusses the effects of development on various ecosystems and offers suggestions about how to minimize ecosystem damage from development.
- ⁿ Miness, Deborah and Robert C. Einsweiler, *Managing Community Growth and Change, Volume II: Bibliography of Academic and Professional Literature on Growth and Growth Management*, Lincoln Institute of Land Policy, Cambridge, MA, October 1992.
- ⁿ Porter, Douglas R. and David A. Salvesen, *Collaborative Planning for Wetlands and Wildlife*, Island Press, Washington, DC, ISBN 1-55963-287-9, 1995. This book provides case studies in protecting sensitive lands from development.
- ⁿ Templin, Elizabeth E., *Managing Community Growth and Change, Volume III: Bibliography of Educational Material for Local Officials on Growth Management*, Lincoln Institute of Land Policy, Cambridge, MA, October 1992.
- ⁿ U.S. Environmental Protection Agency, Office of Water, *Protecting Coastal and Wetlands Resources: A Guide for Local Governments*, EPA 842-R-92-002, Washington, DC, 1992. In particular, Chapter 3 addresses zoning tools, Chapter 4 addresses land acquisition, and Chapter 5 addresses the use of taxes, fees, and other incentives.

4.3 Strategies Based On Federal and State Laws and Programs

Federal and state laws address a wide range of environmental issues. Regulations issued under federal and state laws set limits on releases of toxic substances, require cleanup of contaminated sites (sometimes with government funding), or control specific practices (such as the management of underground storage tanks). Many laws require public notice and comment, offering communities a way to participate in the regulatory process. Some laws provide for citizen law suits to enforce their provisions or impose penalties for violations. This section describes relevant federal and state laws and discusses how to work with them.

Federal and State Laws Affecting Ecosystems

Federal and state lawmakers have introduced an extensive set of laws designed to protect the environment. A complete discussion of these laws would be far too lengthy for this resource book. However, Table 4-1 presents a brief discussion of some federal laws that may be applicable to your ecosystem. Phone numbers for the suggested contact organizations are included in Appendix A.

State laws complement and expand upon many of the federal laws. They often are enacted when states want more stringent environmental requirements than those called for by the federal government, where the state has been delegated responsibility for implementation of a federal program, or when there is a specific, unique ecosystem or problem area that the state government wishes to regulate. For example, state laws may address coastal management issues, severe air pollution (California), or widespread hazardous waste contamination (New Jersey).

In addition, statewide growth management laws have been enacted by Florida, Georgia, Maine, Maryland, New Jersey, Oregon, Rhode Island, Vermont, and Washington. Of these, seven have policies for curbing urban sprawl that require or encourage contained development and strive to protect rural and natural areas (Maine, Maryland, New Jersey, Oregon, Rhode Island, Vermont, and Washington); two (Georgia and Vermont) provide for special review and approval of large-scale projects; and two (New Jersey and Washington) have criteria for assessing new community proposals (Ewing, et al., 1995).

Working With Federal and State Laws

The following are examples of how federal and state laws and regulations may interact with communities' ecosystem protection efforts:



EPA's Community XL Project

To give communities the opportunity to implement their own ideas for improving their ecosystems, the U.S. EPA has developed the Community XL program. Communities accepted into the program have developed innovative environmental protection plans that promise superior environmental protection to what would be achieved under the current regulatory system. EPA then works with state and local agencies to grant the community regulatory flexibility to try the plan.

To learn more about Community XL, contact the Information Line, phone: (703) 934-3241, fax: (202) 260-8590, Internet Website: <http://www.epa.gov/Project XL>. To submit a proposal for your community, submit four copies of the proposal to Regulatory Reinvention Pilot Projects, FRL 5322-9, Water Docket, Mailcode 4101, U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

Table 4-1

Federal Laws Relevant to Ecosystem Protection¹		
Statute	Description	Contacts/Opportunities for Local
Clean Water Act (CWA) Section 402	The CWA covers a number of regulatory, funding, and education programs aimed at protecting and restoring the nation's surface waters. These include a permitting system that limits the amount and type of pollution that facilities and other individual sources can discharge. Dischargers must obey national discharge guidelines, as implemented to achieve state water quality standards.	Usually, the Office of Water within the U.S. Environmental Protection Agency delegates this program to the states. Communities can ask the state department of environmental protection for a review of how well local industries are complying with pollution discharge limits. Also, the CWA has a number of funding programs to help municipalities build wastewater facilities and control polluted runoff from farms, storm sewers, and other sources.
Coastal Zone Management Act of 1972	This statute helps coastal states manage and protect coastal resources from threats such as development, erosion, and pollution. States must develop programs to control polluted runoff from farms, storm sewers, and other sources that affect coastal waters.	Administered by the National Oceanic and Atmospheric Administration within the U.S. Department of Commerce, this program provides technical assistance and grants to states in developing coastal management plans. Communities can ask their state for an evaluation of whether development in coastal areas is consistent with their state's plan, and can seek state funding for projects in the community.
Coastal Barrier Resources Act	This statute provides federal funding for protection of barrier islands.	Administered by the National Oceanic and Atmospheric Administration within the U.S. Department of Commerce.
National Environmental Policy Act (NEPA)	All federally funded projects and activities as well as projects built on federal property (including highways, ports, dams, power plants, airports, drinking water plants and pipes, and sewage treatment plants and pipes) must comply with NEPA, which requires the submission of an Environmental Impact Statement (EIS) describing the project's effect on the local ecosystem as compared to other alternatives.	This program is administered by the U.S. Environmental Protection Agency. The community can examine previous EISs to determine the effects of similar projects on its ecosystems and can participate in public hearings on proposed development projects.
National Flood Insurance Program	This statute provides federally subsidized flood insurance for those communities that have adopted floodplain management regulations (e.g., wetlands protection) that will minimize future flood damage. Generally, flood insurance is required before federally guaranteed mortgages or loans can be issued.	This program is administered by the Federal Emergency Management Agency (FEMA). By incorporating floodplain management regulations into local zoning ordinances and building codes, communities can become eligible for floodplain insurance.
Endangered Species Act (ESA)	This statute provides for the protection of endangered wild plants and animals.	The U.S. Fish and Wildlife Service administers the ESA. As part of the process of determining which plants and animals should be considered endangered, the FWS conducts hearings to obtain public input. Communities also can participate in the development of Habitat Conservation Plans, which developers must design if their proposed development affects an endangered or threatened species.
National Wild and Scenic Rivers Act (NWSRA)	This statute protects extraordinary rivers from damming and other forms of development.	The National Park Service, which administers the NWSRA, manages all rivers that are protected. Through its Rivers and Trails Assistance Program, the Park Service also provides technical assistance to states and localities in developing conservation plans for rivers and river segments.
North American Waterfowl Management Plan Conservation	This program was started in 1986 to enhance waterfowl populations and habitats. The plan stipulates the use of subsidies, financial incentives, and tax adjustments favorable to landowners to promote conservation.	Management of the plan is delegated to state and regional levels, which work with the U.S. Fish and Wildlife Service as well as over 40 conservation organizations. Communities can get involved by asking authorities to assess whether local habitat is eligible for protection under the plan.

Table 4-1 (continued)

Federal Laws Relevant to Ecosystem Protection¹		
Statute	Description	Contacts/Opportunities for Local
Reserve Program/Wetlands Reserve Program	The Conservation Reserve Program uses financial incentives to encourage farmers to leave sensitive lands, such as riparian zones and steep slopes, out of agricultural production. The Wetland Reserve Program is similar, focusing on wetlands.	The programs are administered by the Natural Resource Conservation Service within the U.S. Department of Agriculture. Local farmers can enroll in the grant program, which involves signing 10-year agreements with the government for the receipt of grant funds.
Clean Water Act (CWA) Section 404	This section of the CWA regulates the discharge of dredged material (silt excavated from the bottom of a waterway) and fill into U.S. waters, including wetlands, and establishes a permit program to ensure compliance with environmental requirements.	This program is administered by the U.S. Environmental Protection Agency Office of Water and the U.S. Army Corps of Engineers. As a part of the permitting process, the Corps holds hearings on proposed dredge or fill discharge permits. Communities can use these hearings as a forum for expressing concerns about potential projects.
Swampbuster Program	This statute discourages the conversion of wetlands into farmland by making persons who raise crops on wetlands ineligible for most federal farm benefits.	This program is administered by the U.S. Department of Agriculture.
Resource Conservation and Recovery Act (RCRA)	RCRA regulates the design, location, operation, and monitoring of new and old municipal landfills and facilities that manage hazardous waste (e.g., landfills, recyclers, and incinerators). It also regulates the generation and transport of hazardous waste, requires cleanup of contaminated hazardous waste facilities, and requires inspection and cleanup of underground storage tanks at gas stations and other sites.	This program is administered by the Office of Solid Waste and Emergency Response within the U.S. Environmental Protection Agency, in conjunction with state waste management agencies. Permitting of hazardous waste management facilities includes provisions for public participation; communities may wish to take part in these forums.
Clean Air Act (CAA)	CAA regulations include permits to businesses and industries to limit the amount of pollution they emit to the air. Development that would increase air pollution is limited in areas that do not meet federal air quality standards.	The CAA requires that states develop plans for maintaining air quality and reducing air pollution. Emissions permitting includes provisions for public participation; communities may wish to take part.
Congestion Mitigation and Air Quality Program under the Intermodal Surface Transportation and Efficiency Act (ISTEA)	ISTEA promotes mass transit, rails-to-trails programs, and regional transportation land-use planning. The Congestion Mitigation and Air Quality Program provides grants for projects aimed at reducing transportation-induced congestion, safety hazards, and pollution.	This program is administered by the Federal Highway Administration and Federal Transit Administration under the Department of Transportation. Communities can apply for grants for projects that reduce traffic congestion and improve air quality.
Cooperative Forestry Assistance Act	This Act provides technical and financial assistance for both urban and rural forest management and community development activities that protect and restore ecosystems.	This program is administered by the USDA Forest Service in cooperation with the state forester in each of the 50 states.
Emergency Preparedness and Community Right-To-Know Act (EPCRA)	EPCRA requires facilities using hazardous chemicals to notify the community of chemical spills or leaks. It also requires facilities to publish lists of the hazardous chemicals used or stored on site and to develop spill response plans.	At the local level, EPCRA is administered by a Local Emergency Planning Committee (LEPC). Through the LEPC, communities can find out what hazardous chemicals are present in the area and can participate in developing spill response plans.
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	This statute regulates the application of pesticides and other pest control substances to crops.	Through a system of review and permitting, FIFRA provisions can ban the application of substances that may harm sensitive ecosystems. Communities can take part in this permitting process.

¹ Federal statutes not discussed here include a number of laws that regulate federal lands managed by the U.S. Forest Service, the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service.

- ⁿ **Public Disclosure and Community Involvement Laws** — Many laws have been enacted in recent years to promote the public disclosure of information. These include, for example, the Toxic Release Inventory, the Environmental Impact Statement (EIS) process described above, the Freedom of Information Act, which provides citizens the right to access to all types of federal government information (except national security or confidential business information), and requirements under the Intermodel Surface Transportation and Efficiency Act (ISTEA) and the Clean Air Act (CAA) for government evaluation of the impacts of development.
- ⁿ **Land-Use Planning** — The many land-use requirements and grant programs in federal laws (e.g., the Clean Air Act, the Coastal Zone Management Act, and the Flood Insurance Act) support growth management and protection and restoration of habitats, farms, forests, wetlands, and open space.
- ⁿ **Supplemental Enforcement Program** — The U.S. EPA's Supplemental Enforcement Program (SEP) is a compliance agreement program whereby the EPA requires public or private groups that have violated an EPA-administered law to restore or protect habitats or to modify their operations in an environmentally beneficial way, rather than paying a fine. Communities can be involved in negotiating a SEP agreement.

You can contact federal and state governments through their public information offices, or you can contact the office in the relevant state agency that administers the program you're interested in. The offices can provide you with information on the specific requirements and resources of their programs, information on how to obtain



Diamant, Rolf, J. Glenn Eugster, and Christopher J. Duerksen, *A Citizen's Guide to River Conservation*, The Conservation Foundation, Washington, DC, ISBN 0-89164-082-7, 1984. Pages 27-68 address laws and economic tools that apply to conservation efforts.

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