

Chapter 7

Land-Use Management

Land Use in Buzzards Bay

The Buzzards Bay ecosystem is basically healthy. With the exception of waters around New Bedford, the water quality and living marine resources in the Bay have not yet experienced the degree of stress associated with other coastal areas such as Chesapeake Bay, Narragansett Bay, and Long Island Sound. However, the ability of the Buzzards Bay environment to sustain its many beneficial uses is being threatened as growth in the area continues to accelerate.

Population in the Buzzards Bay drainage area increased nearly 49% between 1950 and 1986 and is still growing rapidly. Between the years 1970 and 1995, population in the Buzzards Bay watershed is expected to increase 31%, based upon population projections from the Massachusetts Institute for Social and Economic Research (1988). This population increase reflects the development of land programmed for subdivision by the Buzzards Bay communities through their zoning bylaws. Expansion of the second-home market and the increasing willingness of home buyers to pay inflated prices to live near the coast are creating economic pressure to convert rural or agricultural land to residential development. In addition, seasonal seaside homes are now commonly converted to year-round residences. These trends are demonstrated in the Buzzards Bay drainage basin by the 100% increase in residential land use between 1951 and 1985. Most of this development has occurred in low and medium density areas, indicating a move towards suburban sprawl and away from more established urban centers.

These recently developed areas are contributing new pollutant loads to the Buzzards Bay ecosystem. These loads are the result of increased runoff from roads and lawns and increased volumes of sewage from residences and commercial establishments. Imprudent development will ultimately impact coastal ecosystems by providing pollutants such as bacteria, viruses, heavy metals, hydrocarbons, and nutrients with pathways to the Bay. The Alliance for the Chesapeake Bay (1989), in its white paper on growth management, reinforces the need for greater control and states that growth management may become the watchword of the '90s. The Alliance further indicates that managing growth is essential to protecting natural resources and that regulations, financial resources, and pollution-control devices are of limited value.

The action plans presented in the previous chapters addressed specific types of pollution sources or sensitive habitats and made specific recommendations for reducing pollutant loads and protecting areas of special concern. The individual action plan recommendations alone are not sufficiently protective; inherent in each set of recommendations is an understanding that a holistic approach to water quality protection is needed. The cornerstone of such an approach is land-use planning for growth management.

Developing a Local Land-Use Plan

The underlying assumption of growth management is that there are limits to the amount of unmanaged growth that an area can withstand without serious harm to public health, safety, or the environment. Environmental systems, and specifically coastal embayments, reach limits at which they can no longer absorb the impacts from additional development without degradation or impairment of uses. Of specific concern in Buzzards Bay are the localized embayments where the greatest amount of human activity (swimming, fishing, boating) takes place. Aggressive land-use management and planning can ensure that the water quality of an embayment is protected, particularly when drainage basins contain appreciable amounts of developable land.

A key component of local land-use planning is the identification of critical areas for protection. Escalating growth patterns place stress on these critical resource areas, and the stress is often proportional to growth. Identification of these areas will provide communities with a planning tool to begin answering questions of where to allow development, how much of it can occur, and how best to regulate potentially detrimental future land uses.

Land use can contribute all major classes of pollutants to coastal waters, i.e., pathogens, nutrients, and toxic materials. These pollutants may enter coastal waters either via groundwater or surface flows. The relative contribution of pollutants from land use depends upon the pollutant and may depend upon the distance from shore. For example, coliforms and pathogens enter the coastal environment mostly through direct surface flow from streams, stormwater discharge, and overland flow, as well as from groundwater draining from septic systems within 300 feet (91 m) of shore or streams. The area of contribution of coliforms and pathogens is relatively small and generally close to shore or close to streams, and generally has a short travel time to the receiving waters. These inputs contribute to the closure of shellfish beds and swimming areas and represent a human health risk. In contrast to pathogen inputs, nitrogen — the nutrient of most concern in coastal waters — is contributed from the entire drainage basin surrounding a coastal body of water. This is particularly true for nitrogen inputs from septic systems, because nitrates travel great distances in groundwater without attenuation. Because some drainage basins are large, nitrogen sources many miles away from shore will eventually reach the coast. Inputs of toxic compounds, like pathogen inputs, are often associated with stormwater runoff, particularly from paved surfaces, but may also originate from landfills, pesticide applications, and septic disposal of household hazardous wastes. Zones of pollution contribution can be delineated from maps of storm drainage systems, topographic, and groundwater height.

In addition, as discussed in the action plan on protecting wetlands and marine habitat (which play an important role in flood control and provide special habitat for many species of plants and wildlife), shoreline areas potentially susceptible to erosion or sea-level rise, shellfish beds, bathing beaches, freshwater ponds, drinking water supplies, and flood plains also warrant special attention.

In addition to critical areas, potential buffer zones may also be identified. Buffer zones can be used either to protect certain land uses or to protect certain resources. For

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example, a municipality may want to identify a buffer zone around a coastal residential area to provide adequate protection in the event of storms or coastal erosion. A buffer zone limiting development and potential coliform pollution could be established near important coastal shellfish beds.

One tool for identifying potential development scenarios for a town is a parcel-by-parcel analysis. On the basis of zoning within the study area, these analyses quantify nitrogen inputs from existing development as residences, industries, open space, as well as from potential development after full built-out. The number of existing units can easily be determined from assessors' maps and tax data. Potential development is assessed based on existing zoning and subdivision rules and regulations. The results of a typical developable-lot analysis are illustrated in Figure 7.1. This type of analysis can be used to predict future problems and may be used to estimate nitrogen inputs from the watershed.

Cranberry farmers have been an important part of the landscape in Southeastern Massachusetts and Cape Cod for well over one hundred years. While visitors and neighbors enjoy the view of the bogs, they rarely have an opportunity to see the adjoining ponds, wetlands and woodlands that comprise the cranberry bog system. This unique environment plays an increasingly important role in the preservation of open space, water storage and conservation, groundwater recharge and in providing wildlife habitat.

Although, 12,700 acres are in actual production, cranberry growers own and manage nearly 62,000 acres of ponds, bogs, wetlands and upland forest. As the region becomes more developed, this land takes on more and more importance.

Implementing a Local Land-Use Plan

The validity of local government regulation is predicated on the broad concept of police power: the power of government to regulate for the advancement and protection of the health, safety, and welfare of the inhabitants of the community. In the Buzzards Bay area, this broad authority has been typically exercised through zoning techniques such as dimensional requirements including lot size, setbacks, and lot coverage. A handful of communities have expanded their zoning regulations to focus on the protection of water quality, and a smaller number have given the protection of Buzzards Bay water quality a high priority in their zoning codes and subdivision and health rules. The following regulatory and nonregulatory techniques represent a sampling of those methods that Bay communities could adopt to provide added protection from the pressures of growth and development.

Zoning Bylaws and Ordinances

Zoning in Massachusetts is governed by the Massachusetts General Laws, Chapter 40A (Zoning Act), which sets out the authorities and limits each municipality has in determining zoning districts. Zoning can be a powerful tool for water quality protection when used in conjunction with a carrying-capacity/buildout analysis.

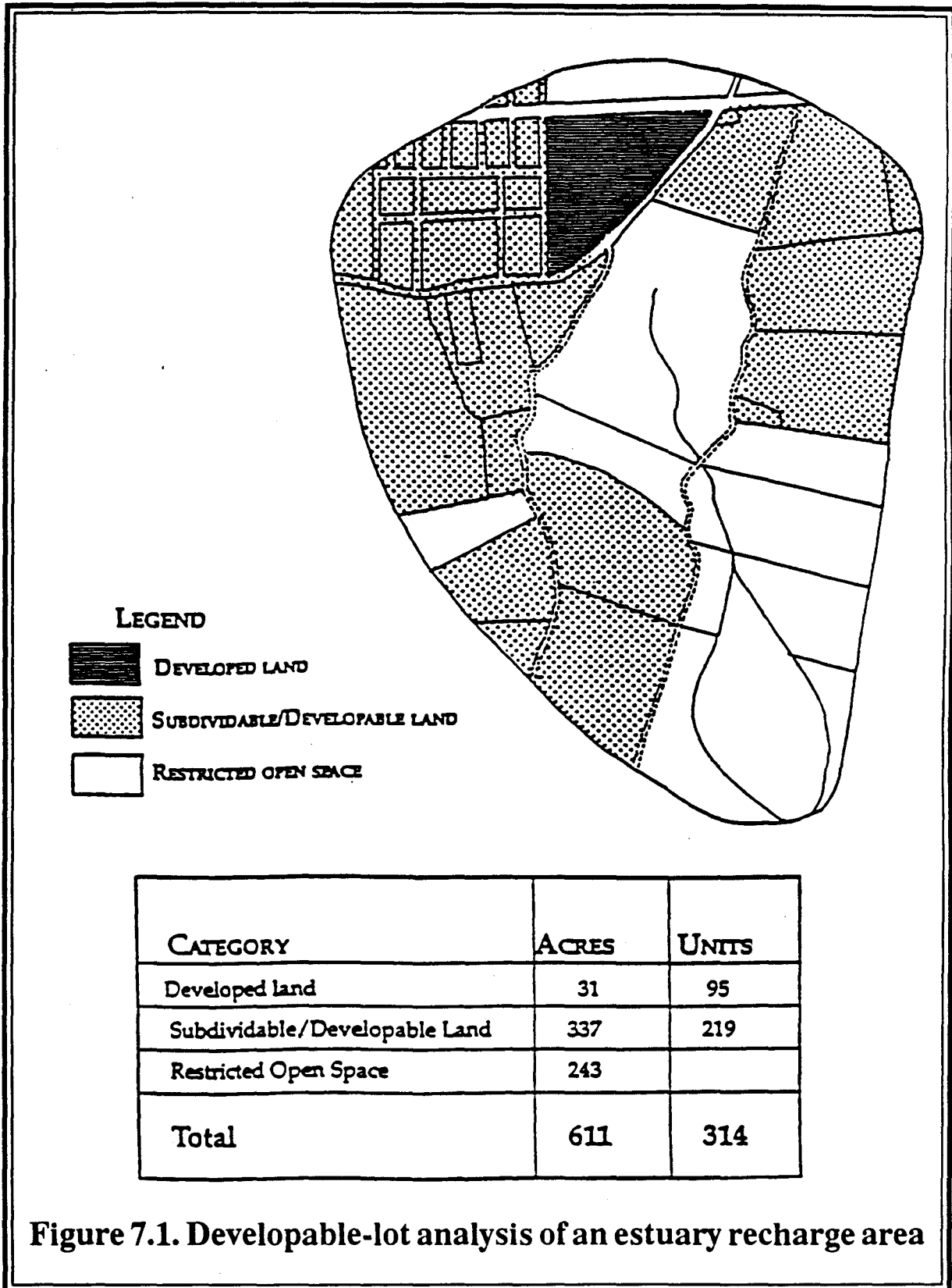


Figure 7.1. Developable-lot analysis of an estuary recharge area

Buildout Analysis in Falmouth

Description

Falmouth was the first town in Buzzards Bay to complete a buildout analysis. The assessment was conducted in 1984, at a time when the town was experiencing steady growth and the year-round population was approximately 20,000. Town residents knew that the town was growing rapidly and might develop problems in the future, but the results of the buildout analysis were sobering. They indicated that, based on allowable growth under existing zoning regulations, the population of Falmouth could more than triple, to an ultimate population of 68,000 people. With this information, town leaders can make better informed decisions to limit or control growth and its impacts on the environment.

Use

One result of the buildout study in Falmouth was the establishment of a nutrient-loading program (the portion of that program that covers nitrogen loading to coastal ponds inspired the nitrogen-sensitive-embayment concept developed by the Buzzards Bay Project). Because the program uses a mass loading formula that is principally based upon population increase, it is one of the best land-use management tools available in coastal areas. Falmouth's program goes beyond federal and state laws and increases the opportunity to protect sensitive coastal areas from the cumulative impacts of growth.

Operation of Coastal Pond Nutrient-Loading Bylaws

Developers proposing projects within the drainage basins of Falmouth's coastal ponds must determine the probable impact of the proposed development (in addition to already developed properties) on the receiving waters. To ensure that all developments are treated equally, the town has set standards for calculating the level of nitrogen loading. The developer must implement mitigating measures to reduce the nitrogen output generated by the development if analysis indicates it will cause the receiving waters to exceed their critical concentrations.

Outcome

The greatest advantage of this program is that it allows the town's regulatory boards to identify areas in which the density allowed under zoning is inappropriate. The program has also established a means by which the town can determine the developments that will contribute more than their "fair share" of nitrogen. This enables the town to objectively and equitably scale down the density. The program is designed so that the private sector shoulders the major implementation costs. The town is not forced to conduct exhaustive townwide land-use studies to allocate and regulate growth. Instead, the program is triggered on a project-by-project basis, and the developers are responsible for determining the impact of additional development. The Project is recommending a slightly different approach to address the nitrogen-pollution problem as outlined in the Managing Nitrogen-Sensitive Embayments Action Plan.

Overlay Ground/Surface Water Protection Districts

An overlay ground or surface water protection district protects resources through regulatory restrictions on activities in a drainage basin or other important land areas. These ordinances and bylaws, while varying in their approach toward resource protection (i.e., prohibition of various uses versus special permitting and/or performance criteria), are similar in their goals of defining a resource by mapping boundaries and enacting specific legislation for land uses and development within these boundaries. Whenever possible, stormwater should be contained and treated on site.

Performance Standards

Performance standards are based on the assumption that any given resource has a critical limit (carrying capacity) beyond which the resource deteriorates to unacceptable levels. Performance controls assume that most uses are allowable within a designated area, provided that the use or uses will not overload natural or man-made resources. To apply this concept to Buzzards Bay, the critical limits of nitrogen-sensitive embayments must be determined. Once determined, each development project within the drainage basin would be allowed to contribute a defined percentage of nitrogen, relative to the capacity of the embayment.

This approach may provide the only comprehensive mechanism for equitably protecting Buzzards Bay from increasing additions of nitrogen. The Bay's ability to assimilate nitrogen is limited, but establishing a program that is based upon performance regulations is an exciting and imaginative mechanism for ensuring the Bay's long-term viability.

Surface Water Buffer

Stormwater runoff is a major component of nonpoint-source pollution in surface water and contains pathogens, nutrients, and contaminants associated with road runoff. Studies have shown that undisturbed lands are generally more permeable and, as a result, allow higher levels of stormwater percolation and natural treatment of associated contaminants. Municipalities can require that undisturbed vegetative upland buffers be left adjacent to and within a defined buffer area (e.g., 100 ft) of surface waters in order to promote natural stormwater treatment.

Cluster Design

Cluster zoning is an alternative to the standard grid-style subdivision. In a cluster development, smaller building lots are allowed, with resulting land savings set aside in contiguous areas of open space. Clustering can be done at the same density that could be obtained in a grid system or with greater density "bonuses." Typically, cluster development allows shorter streets, reducing construction and maintenance costs. It provides tremendous flexibility for both the developer and municipality, and often allows for greater creativity in the division of large land parcels. Among other benefits, large open spaces may serve as buffers.

Subdivision Control

Subdivision regulations, as described in Massachusetts General Laws Chapter 41 (the "Subdivision Control Law"), differ from zoning bylaws in that they focus less on land

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use and more on engineering concerns such as street construction (grade, width, intersection angles), utility placement, and traffic patterns of individual subdivisions. Protecting water resources via subdivision control is, therefore, far less effective than through zoning, particularly because the expressed intent of the Subdivision Control Law is to have planning boards approve plans that meet a community's subdivision rules and regulations. This strategy should not be overlooked, however, as a tool for environmental protection.

Drainage Requirements

Runoff from roads and lawns within subdivisions contributes significant amounts of contaminants to the coastal ecosystem. As part of the subdivision review process, planning boards have the opportunity to protect coastal water quality through the use of strong drainage-control requirements. Criteria for type of catch basins to be used, requirement for maintenance of catch basins, and limitations on lawn-fertilizer applications are examples of drainage standards that planning boards can employ when reviewing subdivision plans. Many communities have developed strong drainage requirements through their subdivision rules and regulations, but the better ones develop standards that are geared directly toward water resource protection. Whenever possible, stormwater should be contained and treated onsite.

Performance Standards

Like drainage requirements, performance standards should be enacted at the subdivision review stage. It is possible, for example, to determine the water quality impact of a 20-lot subdivision, calculating the nitrogen contribution from road and lawn runoff and septic systems. Planning boards can use this information to regulate subdivisions by limiting development so that water quality will not be compromised.

Board of Health Review

Section 81-U of the Subdivision Control Law requires that boards of health review all subdivision plans to ensure that they do not pose any public health concerns. When used appropriately, board of health review under Section 81-U can ensure that threats to water quality are minimized. Planning boards are constrained from approving subdivision plans that the board of health stipulates are not suitable for construction due to public health issues. This review authority vests considerable power in the board of health, but also has the effect of encouraging planning boards to work cooperatively with local health boards to ensure adequate protection of public health.

Board of Health Regulations

The development of health regulations, as provided for in Massachusetts General Laws, Chapter 111, can be an extremely effective method of land-use management. Although zoning bylaws and subdivision rules and regulations have limited ability to protect water resources, regulations adopted by boards of health can be powerful protective mechanisms. This is due in part to the fact that health regulations can be adopted very quickly, only requiring a majority vote of the board of health.

Because of the extensive protection afforded to land owners through zoning, many communities have opted for regulatory programs administered by boards of health. The urgency of adopting growth controls and the impressive powers that boards of

health possess make these boards probably the most effective local institution upon which to base a strategy for land-use management. The courts have consistently upheld these powers when they have been challenged, as long as the process is well conceived, is logical in its approach, and does not totally deny the use of property. Several examples of effective board of health regulations are discussed below.

Dennis

State law currently governs the siting and operation of septic systems, requiring setbacks from environmentally sensitive areas. Concerned about the rising number of variances being granted from these regulations, the Dennis Board of Health has defined environmentally sensitive areas to include

- Land area (whether developed or not) that borders on and is within 100 ft of marshlands, tidal flats, coastal dunes, barrier beaches, coastal banks, coastal beaches and surface water
- Land area containing subsurface water that is 6 ft or less below natural ground surface elevation
- Existing or known future water supplies
- Terrestrial and/or threatened or endangered species.

Variances from septic system regulations are granted by the Dennis Board of Health in environmentally sensitive areas only under exceptional circumstances.

Brewster

Brewster requires a water quality report to be submitted to the board of health for all developments that will discharge greater than 2000 GPD of wastewater. This regulation attempts to address large projects with heavy wastewater discharge flows that will not meet the state review threshold of greater than 15,000 GPD. Proposed projects with a density of less than one unit per 2 acres are exempt.

Information submitted to the Brewster Board of Health must demonstrate that no significant impact to water resources will occur as a result of the project. Also, it must be demonstrated that the nutrient contribution of the proposed project, when added to the existing and potential nutrient level of other developments and acreage within the specific recharge or drainage area, will not result in nutrient levels that exceed the receiving water's critical eutrophic level.

Variances may be granted by the board of health, but the applicant must prove that sewage disposal will not adversely affect, among other uses, any shellfish or recreational waters. The information required is extensive and amounts to a local environmental impact report.

Bourne

The Bourne Board of Health prohibits the construction of septic systems in areas of shifting sands (coastal beaches, coastal dunes, barrier beaches, coastal banks). This is to prevent systems from being torn loose during storms and becoming health and safety hazards. In addition, in an attempt to discourage septic systems highly "mounded" above natural ground level in coastal areas, the board of health requires greater than 6 ft of separation between the original ground elevation and groundwater.

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A duplicate regulation administered by the Sandwich Board of Health was recently challenged in court. The Superior Court of Barnstable found that the restrictions are a valid exercise of the town's police power to prevent the use of property in a manner that is detrimental to the public's interest. The court also found that the regulations were promulgated in response to identifiable local concerns regarding (1) the installation of septic systems as affecting the public health, and (2) maintenance and preservation of coastal areas.

Nonregulatory Techniques

Most municipalities have relied upon the aforementioned "traditional" regulatory tools to protect water quality: zoning, subdivision, and health regulations. Although these regulatory tools serve a legitimate purpose, over-reliance upon them merely programs a municipality for development and allows little flexibility for change if the original program was inaccurate, or if better information has been made available since the program was devised.

Many communities in Massachusetts, including several in Buzzards Bay, have taken advantage of nonregulatory options for resource protection. Nonregulatory water resource programs include donations of land, sale of lands, tax deferments, and conservation easements.

(The Buzzards Bay Project contracted with The Compact of Cape Cod Conservation Trusts to produce two guidance documents on non-regulatory techniques: "Non-Regulatory Methods of Wetlands Protection" and "Strategy for a Town Conservation Restriction Program". These valuable documents are available through the Buzzards Bay Project.)

Donations of Land

Landowners can donate a piece of land (as part of a development project or an entire developable parcel) either to the community or a nonprofit land-holding organization. Donating the land for preservation is advantageous to land owners because of a variety of tax savings. Donations eliminate estate or capital gains taxes and avoid real-estate taxes, insurance, and maintenance costs. The entire value of the donation can be deducted, over time, from federal income tax obligations.

Purchase of Land

Many communities are committed to the acquisition of selected parcels of land deemed so significant to the town's future that it may be willing to purchase them outright at market prices. These acquisition priorities include large tracts of undeveloped land, land within defined water resource areas, land containing unique or rare and endangered wildlife, and land with unique ecological character. There are four variations:

- **Sale at fair market value:** Sale at the price a buyer is willing to pay a seller to purchase a piece of property.
- **Bargain sale:** The sale of property below fair market value to a conservation organization or municipality. The difference between fair market value and the reduced price may qualify as a charitable deduction from income taxes.

- **Installment sale:** Sale that allows the seller to spread the income from the sale of property over several years, thus deferring and, in some cases, reducing income taxes. This allows the buyer greater flexibility in raising funds for acquisition.
- **Sale with a reserved life estate:** The transfer of property upon the death of the individual land owner. This option allows landowners to sell or donate now, but continue to use the property during their lifetimes or the lifetimes of other members of their immediate families. This allows use of tax benefits now and avoids inheritance tax requirements that can lead to the sale of property later.

Tax Deferments

One factor that often pressures individuals into selling their land is the property tax, because it taxes land based on the market price for development, regardless of the land's present use. All New England states currently provide for some degree of reduction in real-estate tax for lands used for conservation. In Massachusetts, open space for forest, agricultural, or recreational uses can receive from 75% to 90% reduction in real-estate taxes. Inheritance tax generally is 50% of value. In land-rich, cash-poor situations, this can lead to the need to sell property at the highest value to settle an estate.

Conservation Easements

An easement is a limited right to use or restrict land owned by someone else. Easements are either positive (rights-of-way) or negative (conservation, scenic) and may take a variety of forms. Negative easements can effectively assist a community in protecting land from development by restricting all or a portion of the property to open-space or limited development uses. The granting of a conservation easement does not involve the transfer of ownership of the land; instead it means giving up certain development rights of the property. For example, a conservation restriction may limit the number of houses to be built upon a parcel, restrict development to specified types, or specify that portions of the parcel within sensitive areas will remain undeveloped in perpetuity.

Conservation Commission Policies

Local conservation commissions, in their role of implementing the Wetlands Protection Act, have significant land-use responsibility. For example, they have the authority to protect critical wetland areas through local initiatives that assert their jurisdiction within the 100-ft buffer zone around wetlands. Conservation commissions can protect sensitive coastal wetlands by requiring strict standards within buffer areas. A buffer zone is extremely important for the protection of both wetland functions and wildlife habitat.

Neither state nor federal government has a setback requirement in its wetland regulations, but towns are permitted to adopt construction setbacks from wetlands. Some towns have adopted wetland setbacks of 25-50 ft and, in the case of Areas of Critical Environmental Concern, 100 ft. Others, such as Falmouth, have adopted regulations requiring new construction to provide at least 25 ft of vegetated buffer to the wetland. Most towns on Buzzards Bay do not, however, have standard wetland setbacks and thus must negotiate buffer belts on a case-by-case basis. The drawback to this ad hoc approach is that negotiations begin from the wetlands edge rather than some distance away.

State and Regional Involvement

Although it is important for local boards to adopt regulatory programs individually, it is also important that they attain a consistent level of effectiveness collectively. Such a collective approach is the only way to ensure that a resource the size and complexity of Buzzards Bay is adequately protected. In addition, collective decision-making criteria or processes can help each individual town defend its decisions and can guarantee that fair and equitable decisions are made. This is especially important when several towns contribute to the same watershed or abut a particular sensitive area. For these reasons, state and regional involvement in the planning process is desirable.

Realizing that growth and land-use management were becoming central issues to many communities in Massachusetts, the state legislature recently established a Special Commission on Growth and Change. This Commission made two major recommendations:

- Adoption of a comprehensive planning process, including the creation of state policies and regional and local plans to guide development
- Creation of new tools to empower communities to work together to plan for growth and to protect shared resources.

However, many communities have found that even when they try to take a proactive approach to land-use management, they are thwarted by a state zoning statute that effectively ties their hands. Massachusetts General Laws, Chapter 40A (Zoning Act) and Chapter 41 (Subdivision Control Law) clearly illustrate that once a town establishes its blueprint for the future through zoning and subdivision, development will occur according to that blueprint. The town must adhere to its program by granting subdivision approval and ultimately issuing building permits for residential and commercial construction. Massachusetts statutes do not currently contain a requirement for planning prior to zoning, and as a result, many communities have found that their programs call for land development that exceeds the carrying capacity of their natural resources. Once this process gets to the permit stage, there is very little that can be done to avoid unwanted development. Unfortunately, it is often at this point that a town first realizes that it has "over-zoned" a specific area and fears the effects on sensitive coastal ecosystems.

The Massachusetts Zoning Act makes it very difficult for a community to protect sensitive areas once they have been programmed incorrectly. A change by a town to more restrictive or large-lot zoning will have no effect on any subdivision plans that have been submitted under previous zoning unless actual construction does not occur within eight years. This extensive "grandfathering" provision is the major roadblock in seeking to protect sensitive areas once they have been inappropriately zoned.

This problem has become especially severe on Cape Cod as the population density around drinking water supplies, inland ponds, and coastal embayments continues to rise. The situation has led to the passage of special legislation that establishes a regional land-use agency with the authority to supersede key provisions of Chapter 40A, most notably the grandfathering provision. This regional concept is also effective in protecting resources like Buzzards Bay that extend beyond the corporate limits of a single town, and in regulating large development projects that will impact a regional

or multi-town area. Martha's Vineyard is the only other location in Massachusetts that has a regional land-use authority.

The State Special Commission on Growth strongly supports the creation of regional entities such as those on Martha's Vineyard and Cape Cod. The Special Commission recommends changing the state zoning law in ways that may impact the grandfathering provision.

State Implementation

Aside from planning and zoning, the state has regulatory tools that can be used to address land-use management through water quality protection. Two such tools are the "antidegradation" provisions of the state water quality standards and the review process required by the Massachusetts Environmental Policy Act (MEPA). Antidegradation provides that water quality cannot be degraded in a way that would eliminate any existing uses of the water body. It also provides special levels of protection for waters classified as high quality or outstanding resource waters. MEPA requires the state Executive Office of Environmental Affairs to review the potential environmental impacts of all activities conducted, funded, or permitted by the state. In particular, MEPA requires an analysis of the potential cumulative (or collective) impacts of a proposed project and a special level of state review for Areas of Critical Environmental Concern (ACECs), which are designated by the Secretary of Environmental Affairs.

Together, these two provisions could be effectively used as tools for land-use management. For example, any development project needing a state permit (e.g., for a wastewater discharge) could be required under MEPA to conduct a cumulative analysis of the impact of nitrogen in its discharge, combined with existing nitrogen inputs, to a receiving embayment. Any increase in nitrogen over the carrying capacity of that embayment could be considered a degradation of an existing use (e.g., that use of the embayment by eelgrass habitat would be lost due to excessive nitrogen loading) and therefore not permissible under the state water quality standards.

Also, the ACEC designation could be used to provide an extra level of review and protection for nitrogen-sensitive embayments. ACECs may be nominated for selection at the municipal level and, in the past, designation has been most effective when an activity required a specific state regulatory review. The cumulative impacts from growth in ACECs have not been adequately addressed by local government, and management of resources within and adjacent to the boundary areas has not occurred. Moreover, because of the optional nature of the program, only two areas, both in Bourne, have been designated in Buzzards Bay. A more aggressive approach for protecting ACECs could be taken by the state.

Goal

To manage and direct growth so that critical resource areas are protected from cumulative impacts.

Recommended Actions

Local Actions

1. Each town in the Buzzards Bay area should conduct a buildout analysis to determine its maximum potential use under current zoning and subdivision bylaws.

The results of a buildout analysis will allow land-use plans to be developed as a first step in implementing a program. This may ensure the protection of critical resource areas.

2. Each town in Buzzards Bay should adopt a strategy of using existing rules and regulations and provide for project oversight or tracking.

Under the current management framework the most effective approach to land-use management combines adoption of compatible zoning bylaws, subdivision rules, health regulations and nonregulatory techniques. This strategy provides a comprehensive approach that takes effect at all levels of land permitting and development.

3. Towns should be aggressive in using the full authority of their local boards to carefully regulate land-use activities so that the most valuable and sensitive areas receive full protection.

Boards of health, in particular, have extensive powers and authority to expand their historic role of protecting public health to protecting public health and the environment. Under current legislation, boards of health are probably best suited to protect critical resource areas from the cumulative effects of growth and development, although planning boards and conservation commissions have authority to implement regulations protective of natural resources.

4. Towns should preserve and enhance the viability of existing cranberry bogs through appropriate land use management regulations.

Cranberry and surrounding uplands, when properly managed, have less impact on the environment than the same land used for residential or commercial development and for these reasons, should be preserved.

5. Towns should establish buffer zones around cranberry bogs through the use of cluster zoning or other appropriate land use techniques. Residential structures should not be constructed within 200 feet of a bog.

This would create a buffer zone to protect cranberry bogs from the adverse effects of development and also protect the public from exposure to pesticide applications on bogs.

Regional Actions

1. Regional planning agencies (RPAs) should provide technical assistance to communities in conducting buildout analyses and planning for land-use management.

RPAs should encourage the creation of management plans for areas that extend beyond community boundaries. They should also work with all communities around Buzzards Bay and provide effective management tools for regulating land-use activities. Performance standards, such as nitrogen-loading bylaws, are particularly valuable.

2. RPAs should be aggressive in protecting critical resources.

When they comment on development projects through the MEPA process, RPAs should focus attention on the protection of critical resource areas. Moreover, the regulations and management tools that will be developed by the newly formed Cape Cod Commission (CCC) should be used as models by other regional agencies. The CCC will be establishing guidelines for regulating developments of regional impact, i.e., extremely large projects and projects that will affect critical resource areas that cross town boundaries. Regional agencies are the appropriate bodies for coordinating these types of inter-municipal projects.

3. RPAs should work to establish uniform regulatory controls for the Cranberry Industry for use by towns to minimize confusion and allow for efficient compliance.

State Actions

1. Massachusetts should take a leadership role in land-use management by adopting the recommendations of the Special Commission on Growth and Change and incorporating that report into comprehensive legislation.

2. The Executive Office of Environmental Affairs should develop guidelines for ACEC management plans and require that towns and regions develop and adopt plans.

This concern can be addressed through broadening and strengthening the ACEC program. The Executive Office of Environmental Affairs should be aggressive in nominating and designating ACECs, and then mandating local and regional management plans as required. Management plans should contain specific provisions that will adequately protect the resource areas.

3. The Environmental Protection Agency and the Department of Environmental Protection should codevelop a policy on antidegradation as it relates to nutrient (especially nitrogen) inputs to embayments and other pollutants.

Projects that are reviewed through the MEPA process should be addressed in terms of the cumulative effects from excessive levels of nitrogen. Permits should not be issued for development projects that exceed the critical limits of any pollutant in a sensitive embayment.

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4. Massachusetts should create agricultural incentive zones, similar to an ACEC, to protect intensive farm areas from encroachment by development projects.