

ELEMENT

Preserve open space, farmland, natural beauty, and the critical environmental areas that characterize and support coastal and waterfront communities

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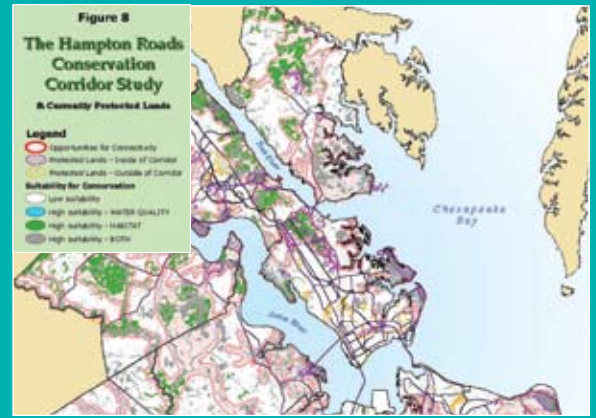
By preserving open space, farmland, natural beauty, and critical environmental areas, communities can maintain essential environmental services and improve community resilience.

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Both visitors and locals enjoy the beauty and abundant wildlife found in wetland areas.



Communities can protect important natural resources by integrating green infrastructure assessments into their comprehensive land use plans.

Natural and working lands play an essential role in the economic, environmental, and social well-being of communities. Natural areas and parks increase neighboring property values, attract businesses and residents, support tourism, offer opportunities for recreation, and provide scenic value. Farmlands provide food; working forests provide timber. Wetlands, forests, stream buffers, and other critical environmental areas provide many additional benefits, including water and air filtration, recharge of precious groundwater resources, protection of drinking water supplies, and habitat for plants, animals, and beneficial insects. Conserving these resources is important to the environmental health and well-being of any community as it grows or redevelops.

Coastal and waterfront communities depend on their working lands, waterscapes, and ecological systems. The dynamic natural processes that characterize the shifting boundary between the land and the water create beautiful landscapes that are essential to both local ecology and economy. Freshwater and tidal creeks, marshes, cliffs, dunes, estuaries, and beaches intertwine to support complex ecological systems that provide invaluable services. Wetlands provide critical habitat, mitigate flooding, and capture and retain sediments, helping to keep pollutants from reaching downstream waters. Estuaries provide essential nurseries for commercial and recreational fish species. And beach and dune systems protect the shoreline against the natural hazards of erosion, storms, and sea-level rise. Local economies fueled by such activities as sport and commercial fishing, recreation, and tourism, as well as retiree and artist communities, rely on the natural assets that support them.

Protecting the strength and health of waterfront and coastal communities' natural resources requires balancing the needs of the built environment with those of the natural one. Green infrastructure planning can help communities get this balance right. Through green infrastructure planning, a community or region can identify and prioritize natural areas that should be preserved or restored to protect long-term ecological health and build community resilience. The process begins with an assessment of an area's most important environmental assets, identifying the natural and working lands and water bodies that need to be protected or restored. Along the water, this process should include a community vulnerability assessment, which systematically identifies areas that are vulnerable to, or that can help buffer communities from, natural hazards. The result is a framework that defines which lands and water bodies need protection and which areas can best accommodate growth.

On the southern end of the Chesapeake Bay in Virginia, the Hampton Roads Planning District Commission illustrates the green infrastructure approach. The commission developed a green infrastructure plan that identifies and links riparian-based conservation corridors, defines a future land use map outlining no-development conservation areas, and identifies land purchases to protect high-priority sites. This multi-stakeholder effort balanced interests and achieved many benefits, including habitat protection, stormwater management, wetlands mitigation, comprehensive planning, and support for recreation and tourism.³¹



In Puget Sound, Washington, protecting natural areas can bring many benefits, including protecting fish stocks and encouraging appropriate recreation and tourism.



Protecting and restoring natural dunes also protects coastal property.



Wetlands provide communities with important environmental services.

A variety of tools can be used to protect high-priority areas on land or in the water. On land, preservation and protection tools include the purchase or transfer of development rights, direct purchase of the land, and various types of conservation easements. For example, in 1990, San Juan County on Puget Sound, Washington, established a land bank to permanently protect areas with environmental, agricultural, and scenic value. Since its inception, the land bank has protected 4,300 acres using funds generated from a real estate tax, donations, and grants. The San Juan County Land Bank's work is guided by county ordinance and overseen by a citizen commission.³²

Central to any planning process along the shore must be the recognition that shorelines are constantly changing systems. Erosion, flooding, storm surges, and sea-level change in response to tides, waves, and storms are all natural and familiar processes, as are Great Lake water level fluctuations, but when they clash with the built environment, they can be hazardous. Furthermore, these processes are likely to intensify under some climate change scenarios.³³ Smart shoreline development can mitigate the

damaging effects on the built environment caused by these changes by incorporating land use approaches that reduce the risks from coastal and waterfront hazards. For example, protecting, maintaining, and, where possible, restoring natural areas along the water can create buffers that protect development from environmental changes. Communities can use a variety of tools to implement this approach, including development setbacks (e.g., from the high tide line), conservation easements, and rolling easements, which shift automatically with natural changes in the shoreline. Capitalizing on the inherent resilience of these assets by properly protecting them can help protect people and property from the impacts of natural hazards and the additional challenges posed by a changing climate.

Coastal and waterfront communities depend on their natural and working lands and the water. By preserving open space, farmland, natural beauty, and critical environmental areas, communities can maintain essential environmental services and improve community resilience.



CASE STUDY

Brays Bayou, Houston, Texas

The National Oceanic and Atmospheric Administration's (NOAA) Coastal and Estuarine Land Conservation Program (CELCP) was established in 2002 to protect valuable coastal and estuarine lands. One of CELCP's projects is in Brays Bayou in Houston, Texas. Through direct acquisition, CELCP grant funds are helping to protect about five

acres of undeveloped floodplains along the bayou in a mixed-use neighborhood in East Houston. The city of Houston, in association with the Houston Parks Board, initiated this project in an effort to set aside land for public open space, restore and maintain water quality, reduce the potential for flood damage, and enhance wildlife habitat along the bayou.

Although CELCP funds are buying only a small number of acres, these lands will complement previously acquired parcels and be combined with several planned acquisitions along the stream corridor. By improving access to the bayou, including walking and biking trails as well as scenic, shaded spaces for picnics, this project protects open



KEY ACTION OPTIONS	POLICIES, TOOLS, AND TECHNIQUES FOR IMPLEMENTATION
<p><i>Plan with nature, anticipating dynamic waterfront and coastal processes (e.g., storms, sea-level rise, lake level fall, erosion) and manage ecological systems to be adaptive to changes caused by human activity</i></p>	<ul style="list-style-type: none"> • <i>Conduct community vulnerability assessment to determine natural hazard risks; model future scenarios; include participatory approaches to understand risks perceived by the community</i> • <i>Link community hazard mitigation plan to community comprehensive plan; incorporate into zoning, capital expenditure plans, and other local land use management tools</i> • <i>Use green infrastructure assets (such as natural buffer zones) to accommodate projected risks from climate change</i> • <i>Protect, restore, and enhance vulnerable shorelines through acquisition, rolling easements, living shorelines, buffers and setbacks, or site-level green infrastructure/LID stormwater management practices</i>
<p><i>Protect, maintain, and, where feasible, restore ecological systems, including submerged lands and shore habitat</i></p>	<ul style="list-style-type: none"> • <i>Use green infrastructure planning to identify community and regional environmental assets</i> • <i>Designate marine or terrestrial management areas</i> • <i>Use purchase of development rights, transfer of development rights, and land or marine conservation agreements to protect critical areas</i> • <i>Use best management practices promoting on-site stormwater infiltration, native species, and living shorelines</i> • <i>Protect or restore connectivity between natural areas where needed to support ecosystem function</i> • <i>Define appropriate indicators to measure and monitor ecosystem function and health over time</i> • <i>Produce report cards and illustrative maps, based on goals and community vision, to align science with management priorities and to convey results to the public</i>
<p><i>Preserve open space and natural lands for scenic resources and recreational opportunities</i></p>	<ul style="list-style-type: none"> • <i>Partner with community land trusts to protect high priority lands</i> • <i>Designate protection of waterscapes or coastal viewsheds within zoning schemes</i> • <i>Create nature preserves, hiking and blue trails</i> • <i>Use targeted funding for open space and habitat preservation</i> • <i>Zone waters for specific uses based on local circumstances and constraints</i>

space to reconnect a historically underserved urban community with the water. Restoration efforts undertaken by local volunteers and school groups are not only restoring marshland vegetation and wildlife habitat, but are also teaching the participants about the value of functioning wetlands. By keeping the land undeveloped and permeable to capture runoff

from storms, this project will help reduce the potential for flood damage in an area that, since its early history, has had significant flooding problems. The project is also providing important wildlife habitat and a welcome community amenity that will strengthen residents' connection to the bayou.



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