CHAPTER 4

ENVIRONMENTAL STEWARDSHIP

HARFORD NEXT
A MASTER PLAN FOR THE NEXT GENERATION

A Master Plan for the Next Generation

ENVIRONMENTAL STEWARDSHIP

Harford County is rich in natural resources that contribute to the quality of life of its residents. Harford County is committed to maintaining and enhancing these resources through the implementation of policies that promote environmental stewardship. Environmental stewardship begins with the understanding that people should live in harmony with their environment. Environmental stewardship highlights the interconnection between natural and built environments and emphasizes the need to balance responsible development with the protection of our natural resources. The Environmental Stewardship theme provides a framework of policies and implementations that preserve natural habitats, protect and enhance areas of high ecological value, and effectively manage environmental resources with limited funds. This framework is organized through the development of five principles: Protect and Restore Environmentally Sensitive Areas, Preserve Water Resources, Stormwater Management, Outreach and Education, and Natural Resource Management.

State Visions:
Environmental Protection
Resource Conservation
Stewardship
Public Participation
Quality of Life and Sustainability
Community Design
Infrastructure
Growth Areas
Economic Development
Implementation

Overlapping Themes:
Grow with Purpose
Preserving our Heritage

Environmentally Sensitive Areas

The protection and restoration of Harford County's environmentally sensitive areas is paramount to maintaining a high quality of life for our citizens. Harford County has many sensitive resources; including streams, wetlands, floodplains, forests, rare habitats, steep slopes, and other environmental assets. Streams, wetlands and floodplains provide excellent habitat for many species. These areas have also been deemed worthy of protection for their value in improving water quality. Rare or unique habitat areas need focused preservation efforts to maintain their health and biodiversity. These areas have been identified as Targeted Ecological Areas (TEAs), which are lands deemed as the most ecologically valuable in the state. The County will also utilize other GIS data sets through the Bionet system to target ecologically valuable areas. These lands are preferred for conservation and preservation funding.

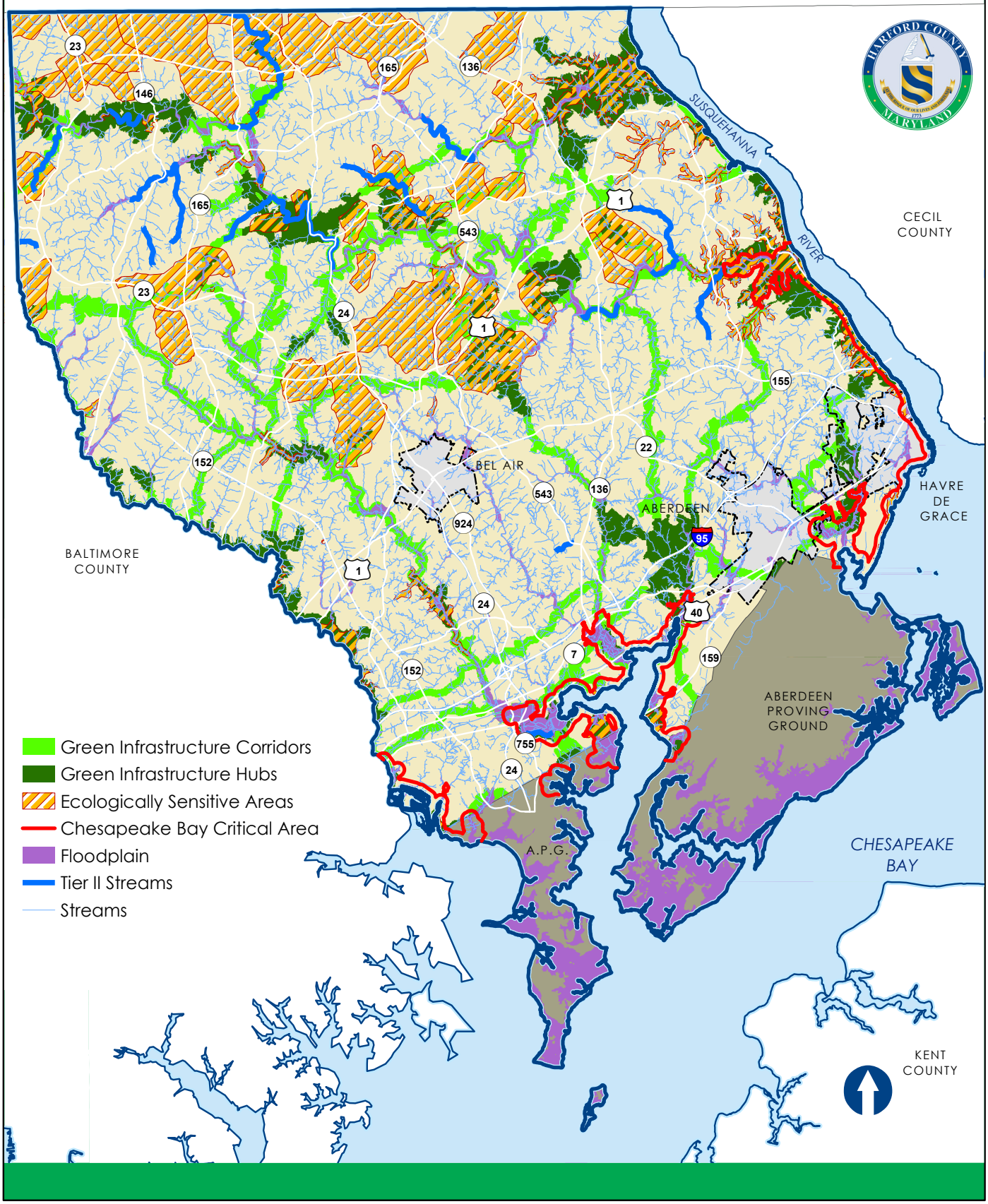
Forested resources are another important sensitive area worth protecting. By providing shade to headwater streams, reducing sediment load, and improving habitat, forests can be the most effective land cover in certain areas. Forested areas that provide hubs and corridors for wildlife are especially important for targeting protection and restoration efforts. TEAs, forested hubs and corridors will be the foundation of a future Green Infrastructure Plan for the County. The County will continue to improve the quality of our sensitive areas and environmental resources by developing new policies or building on existing efforts to protect these areas.

Forested streams provide multiple environmental benefits.

Preserve Water Resources

The County's water resources are an integral part of the landscape of the County. Preserving and protecting the quality and quantity of our water resources is fundamental to the public's health and quality of life by providing adequate drinking water supplies, waste water treatment, and stormwater management. Certain streams are drinking water sources for County residents, while other areas rely on groundwater. Measures must continually be implemented to provide high quality drinking water for all of our citizens. The County must remain environmentally

Sensitive Areas



responsible in its conveyance and treatment of waste water discharges. There are many high quality (Tier II) streams in the County, and additional efforts may be needed to ensure streams maintain their high quality. Quality and quantity of runoff from the landscape is greatly influenced by land cover; from forest, field, cropland and pasture to high-density urban uses. The impact of stormwater on streams must be analyzed to ensure that the water quality of our streams does not become impaired. There are many state and federal laws that Harford County must comply with in regards to water quality, and Harford County must continue to meet or exceed these measures. Through the implementation of sound land use planning, best management practices, monitoring, and education and outreach, all water resources will be effectively managed.

Since spring 2011, the County has invested over $48 million into upgrades for the Sod Run and Joppatowne wastewater treatment facilities to improve capacity, handling, and discharge quality of wastewater.

Adequate Stormwater Management

A responsible environmental stewardship plan encourages stormwater management facilities that are designed in harmony with the natural environment. Stormwater management systems should be designed to mimic natural hydrology patterns. Development or redevelopment should be designed in a manner that does not overburden local streams. When impacts of stormwater runoff are treated at the source, water quality is maintained.

Stormwater management techniques such as bioretention facilities treat pollution at the source.

The County should consider ways to reduce the footprint of future development activities, and partner with citizen groups and non-profit organizations to restore and enhance existing developed areas. The County should also explore restoration practices that remove impervious surfaces and promote landscaping with native plants. Expanding our outreach and education efforts to install small scale stormwater management devices such as rain barrels, rain gardens, and conservation landscaping will assist with improved stormwater management.

Outreach and Education

Community engagement is one of the foundations of environmental stewardship. The role of local government is to effectively communicate information to their citizens. The County currently has several environmentally-focused programs that use education to engage youth, such as the Envirothon. Student teams work collaboratively to develop their knowledge of ecology and natural resource management and practice their environmental problem-solving skills in preparation for Envirothon competitions. In 2011, Maryland became the first state in the nation to require students to be environmentally literate as a high school graduation requirement. One of the main goals of this requirement is to create meaningful outdoor experiences with students to foster the understanding that we are all connected to the environment. The County will continue to find ways to engage residents to foster the development of environmental stewardship for future generations.

Protecting our water resources from the impacts of nonpoint source pollution continues to be a complex challenge. This type of pollution originates from diffuse sources and effects large geographic areas, making it difficult to control and regulate. Governments at all levels have made strides in reducing pollution in sectors such as agriculture, septic systems, and wastewater treatment plants through various programs. Outreach and education was an important factor in the success of these programs. Local governments must improve outreach while encouraging grassroots efforts from concerned citizen groups and watershed associations to help make meaningful improvements on private properties at the source. The County will continue to use social media and other outlets to help build and maintain environmental outreach and education efforts.

Arbor Day tree planting events provide outreach and eduction opportunities.

Natural Resource Management

The primary goal of natural resource management is to preserve and protect our natural resources while enhancing public safety and health. The responsible management of our natural resources is an essential component to a high quality of life for the citizens of Harford County. A sound natural resource management plan emphasizes the protection and restoration of natural systems while encouraging public outreach and participation in the stewardship of our resources. Natural resources such as forests, streams, and wetlands can provide many benefits when they are effectively managed. When these resources are mismanaged, they can become a community liability. HarfordNEXT supports a systematic approach to natural resource management that promotes stewardship while recognizing the economic and quality of life benefits derived from them.

HARFORD COUNTY Natural Resources

10,782 acres of floodplain

26 miles of protected major stream buffers in Harford County

60% of the County is covered by high quality watersheds

rare, threatened & endangered habitat

Bog turtle

The bog turtle is 3-4" in size.

Fameflower

The fameflower is a rock-dwelling plant with shallow roots & is exclusive to the serpentine barrens in Harford County.

Fringe-tip Gentian

Harford County has one of the largest populations of the fringe-tip gentian in the state.

1 national champion tree

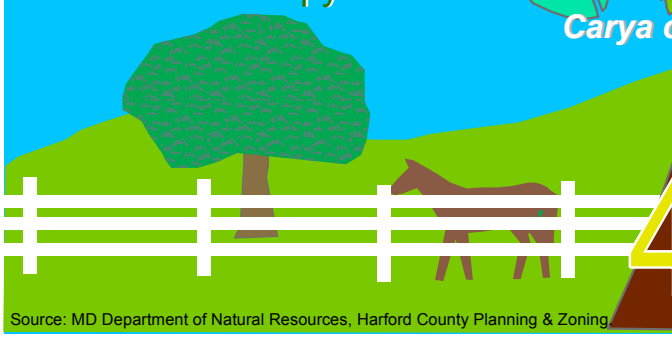
95 ft *Tall*

16 ft *Circumference*

Bitternut Hickory

Carya cordiformis

Agricultural land use has the largest amount of tree canopy



30 of the state's 147 champion trees are in Harford County

48% of the County is covered in tree canopy

Source: MD Department of Natural Resources, Harford County Planning & Zoning.

Principles, Goals, and Policies for Environmental Stewardship (ES):

PROTECT AND RESTORE ENVIRONMENTALLY SENSITIVE AREAS

Goal ES 1.1: Protect streams, wetlands, and their buffers.

Rationale: Research has shown that water quality is greatly improved by preserving or restoring areas adjacent to streams and wetlands.

Implementation

(a) Protect Tier II subwatersheds and Targeted Ecological Areas. Require the use of innovative designs and best management practices in developments located in Tier II watersheds.

Tier II waters are streams that have been identified by the State as having significantly higher water quality than the standard for the designated use of that stream.

(b) Conduct watershed studies to assess the health of streams throughout Harford County.

(c) Consider limiting forest clearing within NRD buffers.

(d) Prepare a County Green Infrastructure Plan that will identify and prioritize large forested hubs and corridors.

Goal ES 1.2: Preserve 100 – year floodplains.

Rationale: By discouraging development within the 100-year floodplains, the risk of flood losses is reduced. Floods can result in the loss of life and property along with increased risks to health and safety.

Harford County entered the National Flood Insurance Program on March 2, 1983. This allows County residents and businesses to purchase flood insurance, and allows the County to receive federal disaster funding.

Implementation

(a) Utilize advanced mapping and data tools to more accurately depict floodplains in coordination with the Department of Public Works.

Maintaining floodplains is important to protecting life and property from major flood events.

(b) Encourage property owners in flood prone areas to elevate structures higher than the two foot freeboard requirement to minimize damage and reduce the cost of flood insurance.

(c) Improve the County's Community Rating System (CRS) score through updated regulations, outreach, and improved flood warning dissemination, which can reduce flood insurance rates for our citizens.

(d) Pursue grants for protecting County infrastructure from flood damage.

Harford County is currently a Class VII community in CRS, which gives citizens a 15% discount on flood insurance.

Goal ES 1.3: Protect rare, threatened, and endangered species (RTE) and ecologically significant areas from encroachment.

Rationale: Unique combinations of climate, soil, topography and vegetation provide habitats for rare plants and animals. Focused preservation efforts will ensure the health and biodiversity of these areas.

Implementation

(a) Identify ecologically high-value land that is worthy of preservation based upon the presence of RTE species or other environmental assets.

(b) Pursue grants that improve rare habitats or other environmental features.

Harford County is one of four Maryland counties that still have one of North America's smallest and rarest turtle, the bog turtle (Glyptemys muhlenbergii).

(c) Improve outreach to landowners that have RTE habitat utilizing various methods; including the web, social media, and webinars to protect our most valuable resources.

(d) Targeted Ecological Areas should be prioritized in the County's Green Infrastructure Plan.

Harford County (excluding APG) is approximately 49% TEA, most of which is located in the northern tier of the County.

(e) Support actions to maintain habitat conditions for sensitive fishery resources in sections of Deer Creek and Little Gunpowder.

Goal ES 1.4: Protect and restore forest resources.

Rationale: Preserving forests provides numerous benefits such as improved water and air quality, reduced erosion and pollutants from surface and ground water, and habitat and temperature regulation for aquatic species.

Implementation

(a) Identify gaps in forest canopy coverage and prioritize funding for planting projects in these areas.

(b) Create incentives for land owners to reforest and restore ecologically valuable land.

(c) Develop a County program to assist property owners in planting riparian forest buffers.

(d) Apply for grants to help improve habitats on properties with existing Rural Legacy easements.

(e) Work with homeowner associations to plant unused open space areas that are routinely mowed.

(f) Partner with DPW to strategically reforest along designated County road rights-of-way to improve water quality and wildlife habitat.

(g) Enhance buffer yard requirements by requiring the use of native plants for new construction.

(h) Create a Tree Canopy Ordinance within the Green Infrastructure Plan.

PRESERVE WATER RESOURCES

Goal ES 2.1: Ensure high-quality drinking water to Harford County's citizens.

Rationale: Maintaining and improving the quantity and quality of our water is important to the health, safety, and welfare of our citizens and business community.

Implementation

(a) Coordinate with municipalities and APG to make decisions on system adequacy.

(b) Protect quality of drinking water sources with a specific emphasis on the Winters Run watershed.

(c) Explore water reuse capabilities such as greywater and rainwater recycling for certain land uses to increase efficiency and save costs.

Harford County's water system has over 600 miles of water mains with 12 storage tanks that hold over 12 million gallons of water. See WRE in Appendix II for maps of existing and future conditions of water and sewer service areas.

Goal ES 2.2: Provide the necessary infrastructure to meet wastewater demands while improving the quality of discharge from treatment plants.

Rationale: Ensuring the proper and effective treatment of wastewater is critical to meeting water quality standards established by the federal government for our streams, rivers, and bay.

Implementation

(a) Improve the quality of discharge waters in accordance with our National Pollutant Discharge Elimination System (NPDES) permit.

(b) Work with the Health Department to identify areas currently served by private septic systems and assist property owners who elect to convert to public sewer.

(c) Coordinate with municipalities and APG to routinely review system adequacy.

(d) Support the use of Bay Restoration Funds for new and replacement septic systems within 1,000 feet of perennial streams and require these systems to use Best Available Technology (BAT).

Harford County has nearly 800 miles of sewer mains and lateral lines to maintain.

Goal ES 2.3: Reduce stormwater runoff that impacts our streams, river, and bay.

Rationale: High quality water that is clean and free of pollutants is an important component of a healthy community and economy.

Implementation

(a) Promote and enhance the implementation standards of the County's NPDES permit.

(b) Support the actions of the existing Watershed Implementation Plan (WIP).

(c) Construct enhanced best management practices to reduce pollutants to streams and wetlands, where appropriate.

(d) Update and refine the County's nonpoint source loading analysis to accurately assess future priority projects.

Goal ES 2.4: Protect groundwater quality to ensure a safe and adequate drinking water supply.

Rationale: Protecting drinking water supplies that are derived from groundwater is important to the health of citizens in areas not served by public water.

Implementation

(a) Evaluate existing impervious surface limits of the County's Water Source Protection District regulations.

(b) Identify and mitigate potential sources of contamination to reduce environmental liability and minimize the need for groundwater cleanup.

(c) Work with APG to identify strategies for maintaining and improving the quality of the County's groundwater supply wells in Perryman.

In 2014, the Potomac Group Aquifer provided 1.4 billion gallons of groundwater to County citizens.

ADEQUATE STORMWATER MANAGEMENT

Goal ES 3.1: Reduce the footprint of development through innovative design concepts.

Rationale: Water quality and quantity can be positively affected when natural topographical and hydrological conditions are maintained.

Implementation

(a) Evaluate parking standards to reduce impervious cover.

(b) Establish stricter limits on impervious surfaces and forest clearing within the Green Infrastructure Plan.

(c) Develop design standards that place an emphasis on maintaining natural landscapes.

(d) Require the inclusion of native plants as part of landscape plans to improve habitat.

(e) Evaluate height restrictions on structures to allow flexibility in new developments and reduce the impervious footprint.

Goal ES 3.2: Establish a tree canopy program that encourages citizens to maintain and increase tree canopy in rural and urban environments.

Rationale: Increasing tree canopy in more densely developed areas helps to mitigate pollution from stormwater runoff. Other benefits include improved air quality, reductions in the urban heat island effect, and reduction in thermal pollution to streams and rivers.

Thermal pollution can degrade streams with native trout populations.

Implementation

(a) Increase the County tree canopy coverage (currently 48% as determined by the 2013 County Tree Canopy Assessment), by two percentage points over the next ten years.

(b) Work with homeowner's associations to plant trees within existing developments, with an emphasis on planting passive open spaces.

(c) Conduct a County tree canopy study every 10 years to track progress.

(d) Identify priority areas for reforestation efforts by utilizing GIS.

(e) Require the use of resilient native tree species that can tolerate the conditions of urban/suburban areas to increase survival rates.

(f) Partner with SHA, DPW, Parks and Recreation to incorporate tree canopy into the design of projects.

Goal ES 3.3: Increase outreach and education activities related to stormwater management.

Rationale: Treating stormwater runoff at the source significantly reduces the cumulative effects on streams and rivers. Low-cost solutions like rain barrels, rain gardens, and conservation landscaping can help improve local water quality, enhancing the quality of life.

Implementation

(a) Train citizen groups to perform water quality monitoring.

(b) Assist citizen groups through grant-funded demonstration projects of stormwater best management practices.

(c) Implement an impervious surface removal outreach campaign.

(d) Partner with Parks and Recreation, DPW, and HCPS to create more stormwater management demonstration projects.

(e) Establish a rain barrel incentive program for County residents.

OUTREACH AND EDUCATION

Goal ES 4.1: Increase Citizen Stewardship of land and resources.

Rationale: Partnering with concerned citizen groups and watershed associations can help make meaningful improvements to our resources.

Implementation

(a) Encourage community gardens, community cleanups, or other enhancement initiatives.

(b) Educate citizens about environmental issues through programs such as Envirothon, 4-H, and Anita Leight Estuary Center.

(c) Implement a certification program for rain garden installers and inspectors.

(d) Educate citizen groups about grant opportunities that improve environmental resources.

(e) Use social media to raise awareness about environmental programs or initiatives.

Harford County teams have won the state Envirothon competition a record nine times.

NATURAL RESOURCE MANAGEMENT

Goal ES 5.1: Preserve our agricultural heritage and resources for future generations.

Rationale: Preserving productive farm land ensures that our rich agricultural heritage will survive and be a valuable asset to future generations. Local farms are important to creating and maintaining food hubs and encouraging fresh locally-sourced products that promote healthy communities.

Implementation

(a) Direct development towards areas within the Development Envelope and Rural Villages to relieve development pressure on productive farmland.

(b) Identify opportunities to create a greenbelt that strengthens the viability of farms and limits external encroachments.

(c) Maintain contiguous tracts of farmland to increase the viability of productive land.

Goal ES 5.2: Protect and improve local air quality.

Rationale: Clean air is important to promoting healthy communities and reducing the incidence of chronic respiratory diseases.

Implementation

(a) Ensure that burning laws are adequate to protect air quality.

(b) Encourage citizens to use electric or manual lawn mowers and yard tools instead of gas-powered machines.

(c) Encourage drivers to consolidate vehicle trips to reduce emissions.

(d) Pursue Congestion Mitigation and Air Quality (CMAQ) Grants for implementation projects that aim to decrease pollutants.

(e) Promote reforestation in urban environments to reduce the urban heat island effect, improve air quality, and increase energy efficiency of buildings.

Bike lanes give citizens options for commuting, recreation, and improves our air quality.

Goal ES 5.3: Conserve mineral resources.

Rationale: Mineral extraction companies are a valuable resource and commodity for the County.

Implementation

(a) Balance the operational needs of active quarries with those of surrounding land uses.

(b) Explore the feasibility of converting inactive quarries into drinking water reservoirs or other community asset.

Goal ES 5.4: Reduce the amount of solid waste transferred to local landfills.

Rationale: Reducing solid waste while expanding recycling programs conserves space in existing landfills, which increases life and reduces costs.

Implementation

(a) Evaluate expansion of recycling programs as new cost-effective opportunities arise.

The Maryland Recycling Act required counties to recycle up to 35% of solid waste by the end of 2015 with a voluntary target of 55% by 2020.

(b) Expand County compost operations that remove additional compostable materials from the solid waste stream.

(c) Partner with Maryland Environmental Services (MES) to find cost-effective measures for reducing solid waste in the County.

Goal ES 5.5: Incorporate coastal resiliency strategies into the development of the Green Infrastructure Plan and future updates of the Harford County Hazard Mitigation Plan.

Rationale: Coastal resiliency strategies and planning will help communities better prepare for natural disasters, recover from them faster, and protect critical infrastructure.

Implementation

(a) Identify critical infrastructure, property, and populations at risk in order to make informed programmatic decisions to protect County resources.

(b) Analyze risk and vulnerability, and evaluate and identify cost-effective solutions to increase coastal resiliency.

(c) Apply for grants to fund implementation of projects that mitigate or reduce risk to coastal communities or government infrastructure.

(d) Incorporate new studies and coastal floodplain management measures into the Hazard Mitigation Plan.

Goal ES 5.6: Improve efficiency by increasing access to, and availability of alternative energy sources.

Rationale: Renewable energy technologies such as wind and solar have a much lower environmental impact than conventional energy sources.

Implementation

(a) Evaluate public schools and County buildings to determine the viability of installing rooftop solar.

(b) Identify local regulatory impediments to streamline the use of alternative energy sources.

(c) Consider allowing solar farms in a variety of zoning districts.

Goal ES 5.7: Encourage sustainable maintenance practices for County-owned land.

Rationale: Harford County can increase efficiency, reduce costs, and be a model for sustainability by adopting sustainable maintenance practices.

Implementation

(a) Establish low-mow zones to save County resources and minimize air pollution.

Low-mow zones help to minimize air pollution and save County resources.

(b) Plant native flowering plants in median strips and other public spaces.

(c) Develop Invasive Plant Management plans for County parks and continue support for the Noxious Weed program.

(d) Consider developing a County-run native plant nursery to use trees and plants for capital projects or other needs.