D. Conservation Element

Element Defined

The Conservation Element is one that carries a significant amount of importance to the overall quality of life in New Castle County. The natural environment is a distinguishing characteristic of the county, and our natural resources (air, water, land, plants, and ecosystems) should be protected for the use of current and future generations. A healthy ecosystem will support biodiversity, which is key to maintaining critical environmental features, but there are many potential threats, including climate change and the increased loss of natural habitat. It is important to balance the needs of our residents and businesses with conservation of our environment. Increased development for housing, retail, industrial, and other uses can threaten or remove valuable space necessary for plants and animals to flourish and maintain our ecosystem. Environmental protection, climate change mitigation, and adaptation are important considerations in all county policies. Farmland, which contributes to New Castle County's economy, is another critical resource that is under threat, especially in the areas south of the Chesapeake and Delaware (C&D) Canal. This element incorporates the natural world into NCC@2050: wetlands and watersheds; coastal zones, sea level rise, and floodplains; erosion prone soils; forest cover, and farmland. The elements of our natural world combine to form the ecosystems in which we live. From urban treescapes to rural pastures, the Conservation element works to provide integration and enhancement to the ecosystems that comprise New Castle County. Recognizing the codependency of our natural systems, NCC@2050 strives to holistically approach the element Conservation.

What We Heard

Conservation was one of the top priorities throughout the NCC@2050 public process. Here is what we heard:

- "There are many factors when looking at open space: creating green space and nature for humans is important but also important for biodiversity. So there are times when you need to preserve land to create access for people but sometimes you also need to preserve land just to create habitat, not for humans. Biodiversity enhances resilience, which is important for humans too; we need to utilize land for both." -- Panelist Jeff Downing, Mt. Cuba Center, Deep Dive Session 1: Open Space, Conservation, Recreation, Environment

- "Standard practices include regenerative farming, native landscaping, pollinator gardens, community composting, creative stormwater management, equal access to healthy foods/produce, increased tree canopy, species diversity, AND integration of innovations in Fantastic Fungi/mycelial systems resources." – Participant, Our Places and Spaces Let's Talk Workshop

- "Climate change, environmental protection, hazard mitigation, stormwater runoff, [and] water pollution" – Stakeholder Challenge Top Priorities Respondent

- "The Sierra Club has recently launched a national campaign to preserve 30% of land by 2030. Seems like a good goal and challenging but achievable." – Public Participant, Deep Dive Session 1: Open Space, Conservation, Recreation, Environment

New Castle County Today

According to New Castle County's spatial data, approximately 27% of the approximately 250,000 acres of land (including incorporated municipalities) within New Castle County is preserved.[1] This percentage was comprised of land classified as parkland (15%), private open space (4%), agricultural easements (5%), and conservation easements (3%), as seen in ***Figure D-1***. ***Map D-1*** shows the locations of these lands in the County. New Castle County hopes to continue to increase the number of acres preserved in the County.

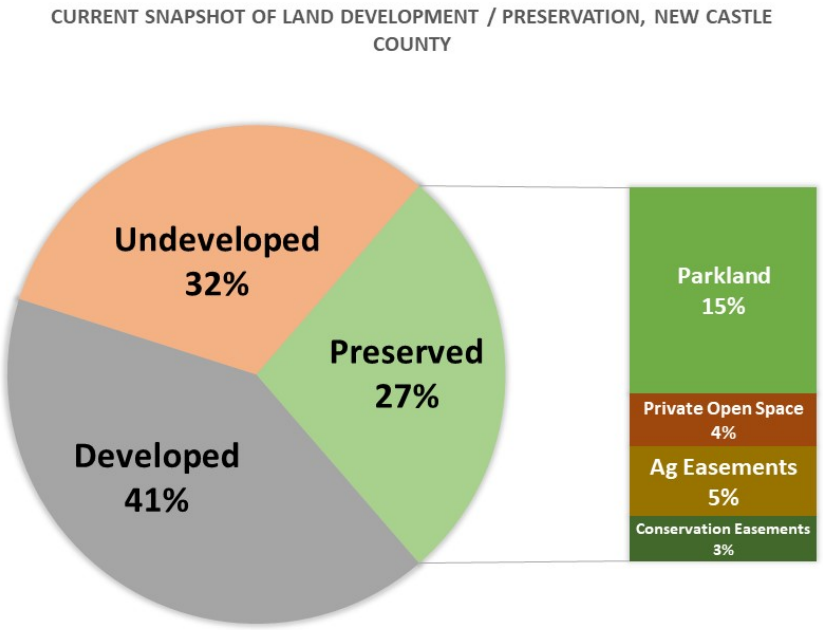
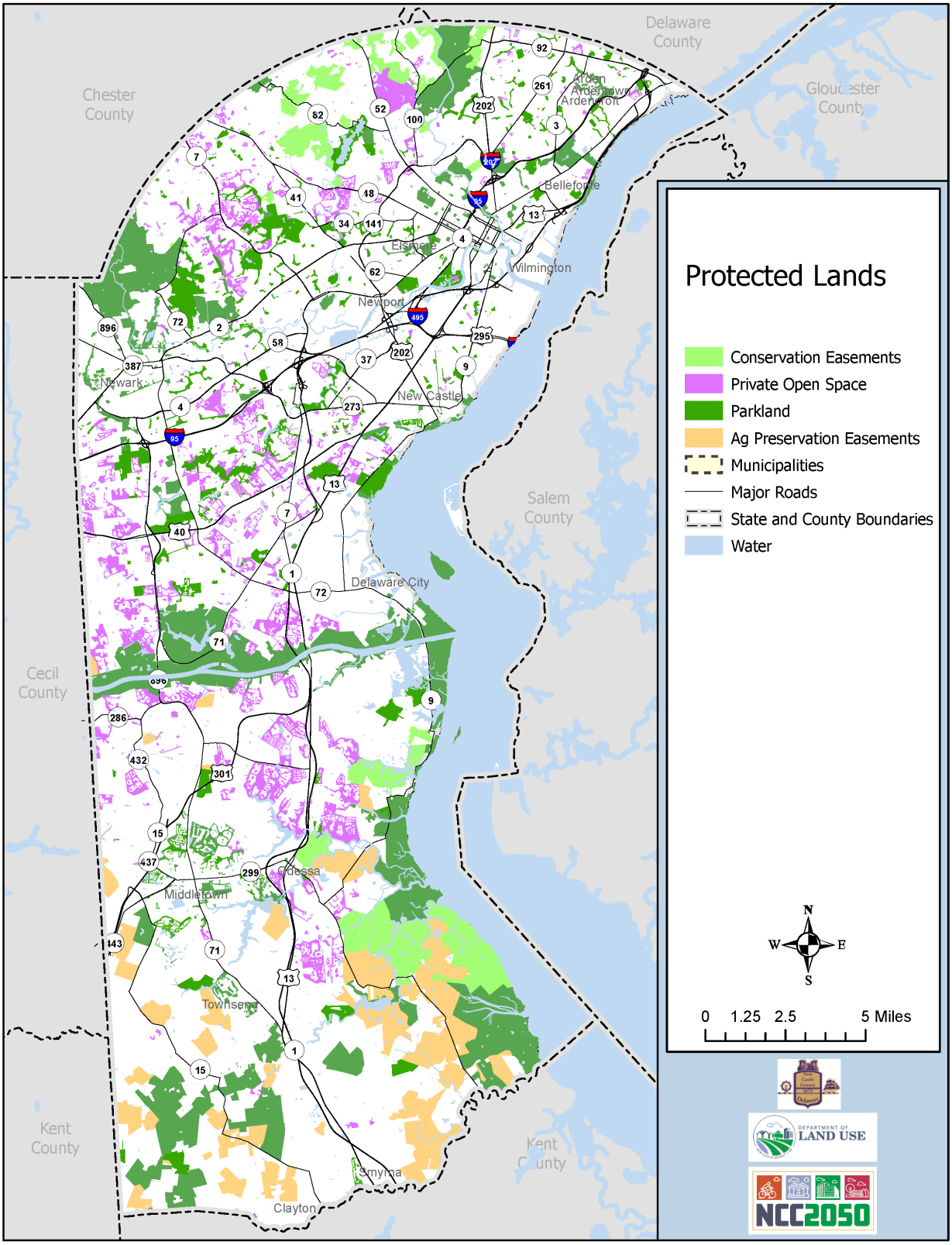


Figure D-1: Distribution of Land Use and Preserved Lands (Source: New Castle County November 2021)

[1] The Land Preservation Task Force, in its 2020 report, analyzed protected lands. This analysis, produced in 2019, reported that 25% of unincorporated New Castle County was protected. Since 2019, New Castle County has updated this analysis methodology and data inputs. Several new protected lands have also been acquired within the County, specifically in the agricultural preservation and private open space categories.

Map D-1: Protected Lands



Wetlands and Watersheds

Wetlands provide critical habitat to many plant and animal species. Any area that has wetland plants, soils, and water at or near the land surface, particularly during the growing season, is considered a wetland. As our weather becomes more extreme due to climate change, wetlands play a vital role in protecting residents from flooding and improving water quality through water retention and wave attenuation. New Castle County currently protects all State and Federal wetlands so that that these ecosystems are preserved and can continue to offer many valuable ecosystem services to wildlife and the community.

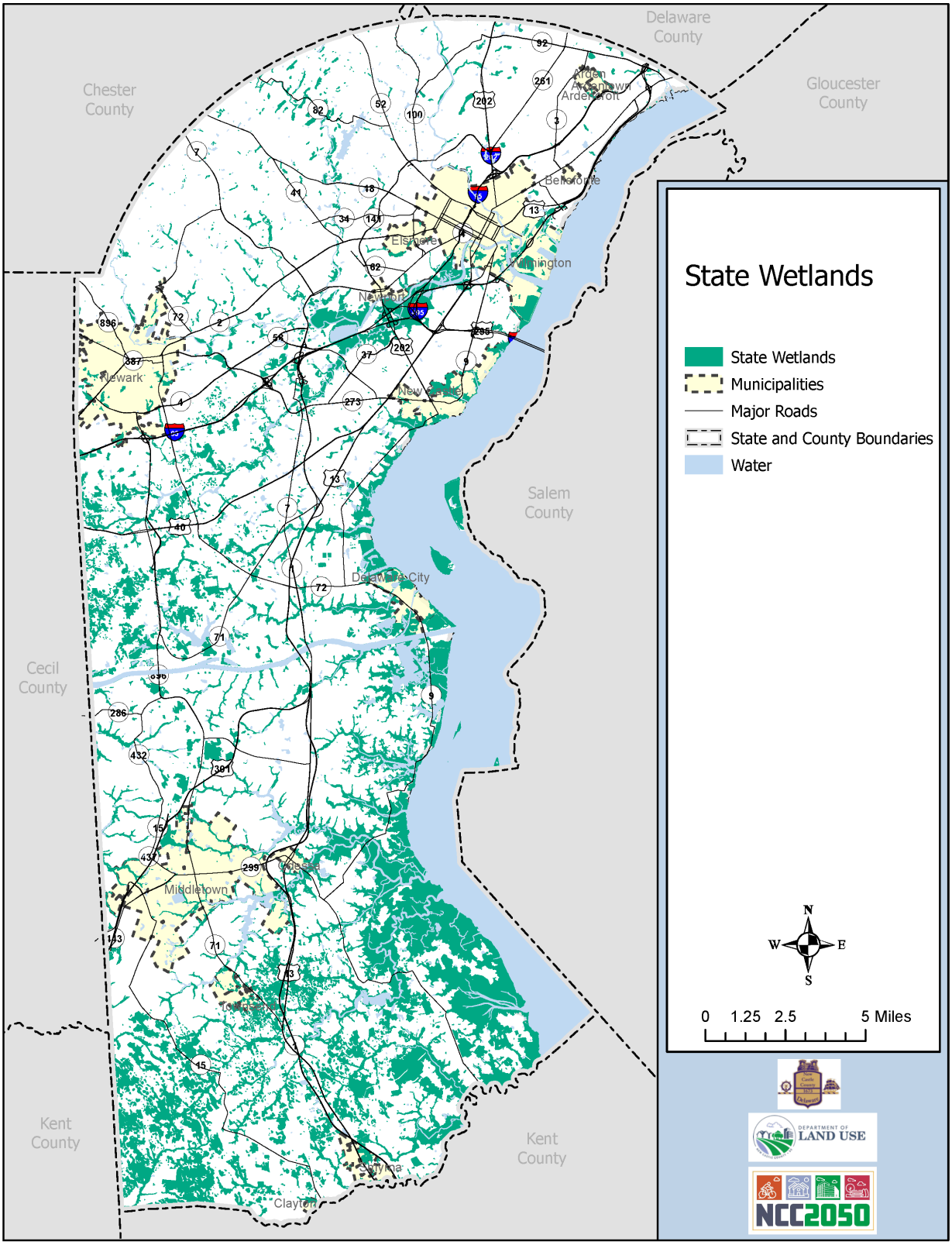
The resiliency of tidal and coastal wetlands is threatened by mainly two factors: 1) low sediment loads to build marsh elevation and 2) Sea Level Rise. As these two threats continue, tidal and coastal wetlands will naturally migrate inland. Preservation of inland open space and agricultural lands can help provide buffering for wetland migration and help reduce flooding vulnerability of coastal communities. Therefore, it is not only important to protect existing tidal wetlands but also the land surrounding them from development because of the natural benefits they provide.

New Castle County wetlands are most densely concentrated along the eastern edge of the county and in the southern part of the county, as mapped by the state and shown in ***Map D-2.*** Today, wetlands comprise 53,504 acres, or 17%, of land in New Castle County. In the southern portion of the county (south of the C & D Canal), wetlands account for 27% of the land area. This percentage has remained unchanged since the *2012 Comprehensive Plan*.

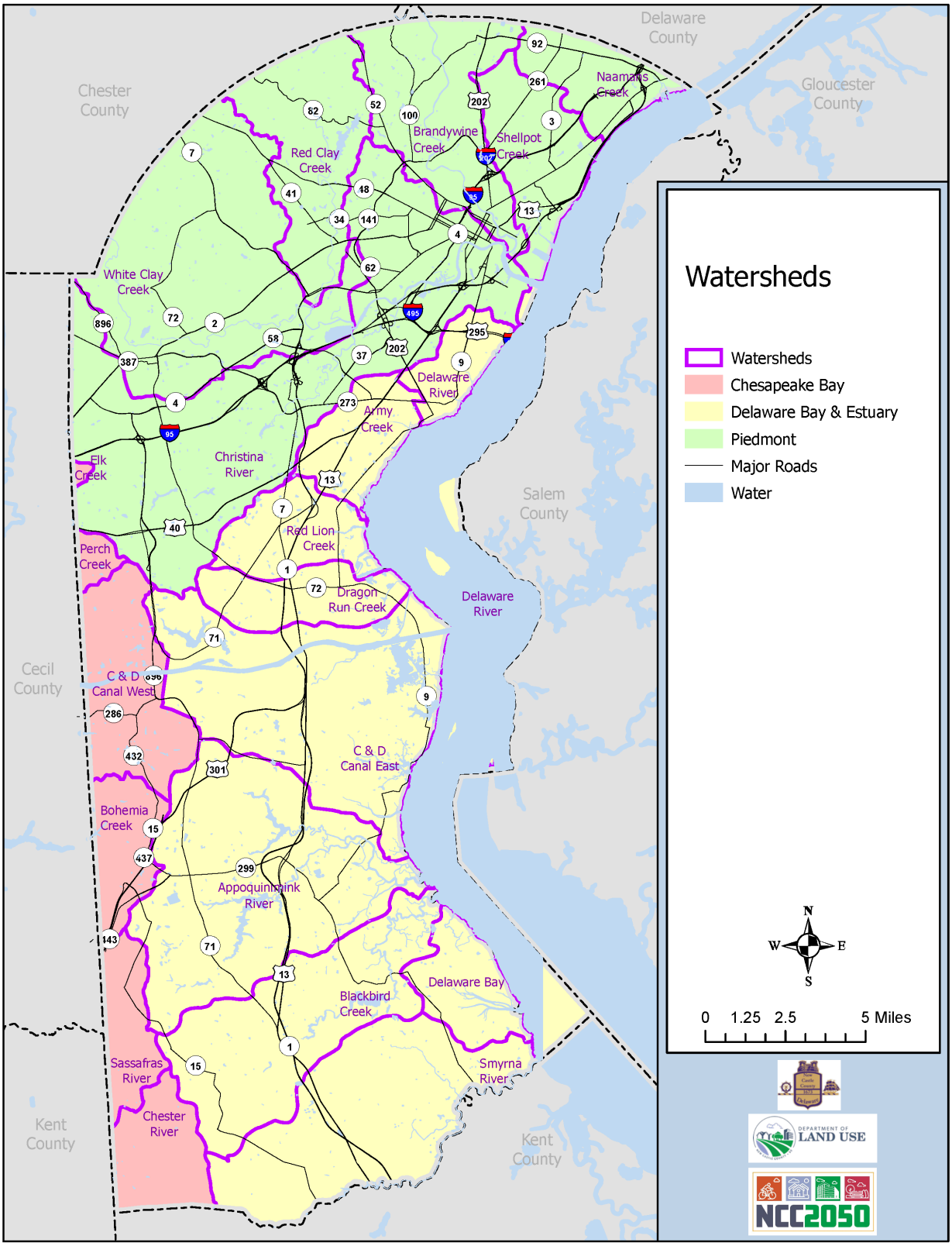
Wetlands play a key role in watershed health, as do many of the other elements of conservation, like tree coverage, responsible agricultural practices, and stormwater management. There are 20 watersheds in New Castle County, with three major drainage basins, as shown in ***Map D-3***. The Piedmont Basin (green) is in the northern part of the county, the Delaware Bay and Estuary (yellow) drains the eastern half of the county, and the Chesapeake Bay (red) drains western New Castle County. New Castle County has one federally designated Wild and Scenic River: White Clay Creek in northwest New Castle County. All land cover including plants, structures, infrastructure, and natural habitat within a watershed play an important role in the overall system. Today, the state of Delaware, New Castle County, and other community partners are working hard to create awareness around watershed protection and restoration.

When monitoring reveals that waterways do not meet Delaware's water quality standards, the Federal Clean Water Act (CWA) requires states to develop Total Maximum Daily Loads (TDML) for the pollutants of concern. These pollutants could be chemicals, bacteria, sediments, or heat that could injure a waterway's natural health. Delaware has been establishing TDMLs since 1998 using monitoring and other types of data to develop models that can predict how water quality will change under a variety of pollutant loading scenarios, according to DNREC. TDMLs are just one step in improving water quality in Delaware. DNREC identifies voluntary and regulatory actions, or pollution control strategies, for these waterways and other types of watershed plans are developed to achieve water quality standards.

Map D-2: State Wetlands



Map D-3: Watersheds



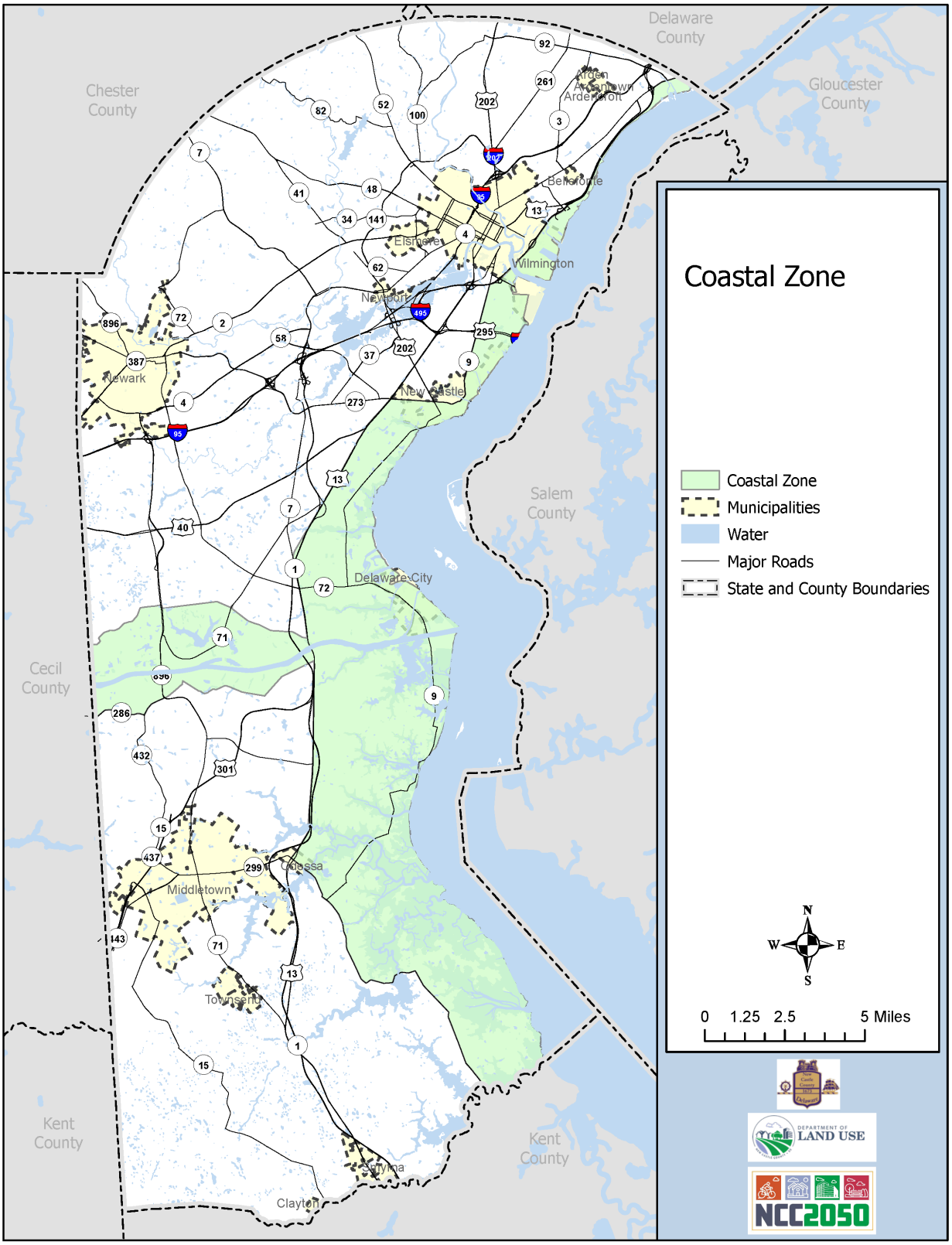
Coastal Zones, Sea Level Rise, and Floodplains

New Castle County is found on the edge of the Delaware River, which flows into the Atlantic Ocean. As such, the entire eastern edge of the County is comprised of coastal habitats, as is much of the land found along the C & D Canal. *Map D-4* highlights the Coastal Zones within New Castle County.

The State of Delaware passed the Title 7, Chapter 70 Coastal Zone Act (CZA) of 1971 to control development within coastal zones and promote restoration. The act identifies legally defined areas called Coastal Zones as “the most critical areas for the future of the State in terms of the quality of life in the State” and therefore, the act enables State control over development within the Coastal Zones. New Castle County, having a significant amount of coastline, works directly with the State in maintaining the vitality of its coast.

These are critical habitats that feature unique wildlife and plants must continue to be protected; they also serve as a barrier between the Delaware Bay and inland development. Proper management and restoration of coastal land will be a strong force against continued sea level rise, particularly in the large coastal areas found in southern New Castle County. Coastal zones provide for economic viability as well, though some industries are regulated or prohibited in costal zones as regulated by the Delaware Department of Natural Resources and Environmental Control. The *Coastal Zone Act* controls the location, extent, and type of industrial development in the State's coastal zone, including lands contiguous to the Delaware River and Bay and Delaware Canal. This act prohibits the construction of new heavy industries in the coastal zone, such as oil refineries and steel manufacturing plants. New bulk product transfer facilities for the movement of materials from vessel to shore or vessel to vessel are also prohibited. New non-manufacturing business uses, such as commercial, residential, warehouse, and distribution facilities, are not covered by the Act.

Map D-4: Coastal Zone



The Delaware Bay shoreline, an important and ecologically significant coastal area, extends from Pea Patch Island in New Castle County to the City of Lewes in Sussex County. DNREC's Delaware Bayshore Initiative collaboratively helps to improve the shoreline economy by encouraging recreational activities like fishing, hunting, boating, and ecotourism. The initiative focuses on three major areas for improvement: land conservation, recreation and education, and community engagement.

In July 2012, DNREC performed a sea level vulnerability assessment. The published document, *Preparing for Tomorrow's High Tide,* revealed that there would be a significant amount of acreage affected by sea level rise in New Castle County:

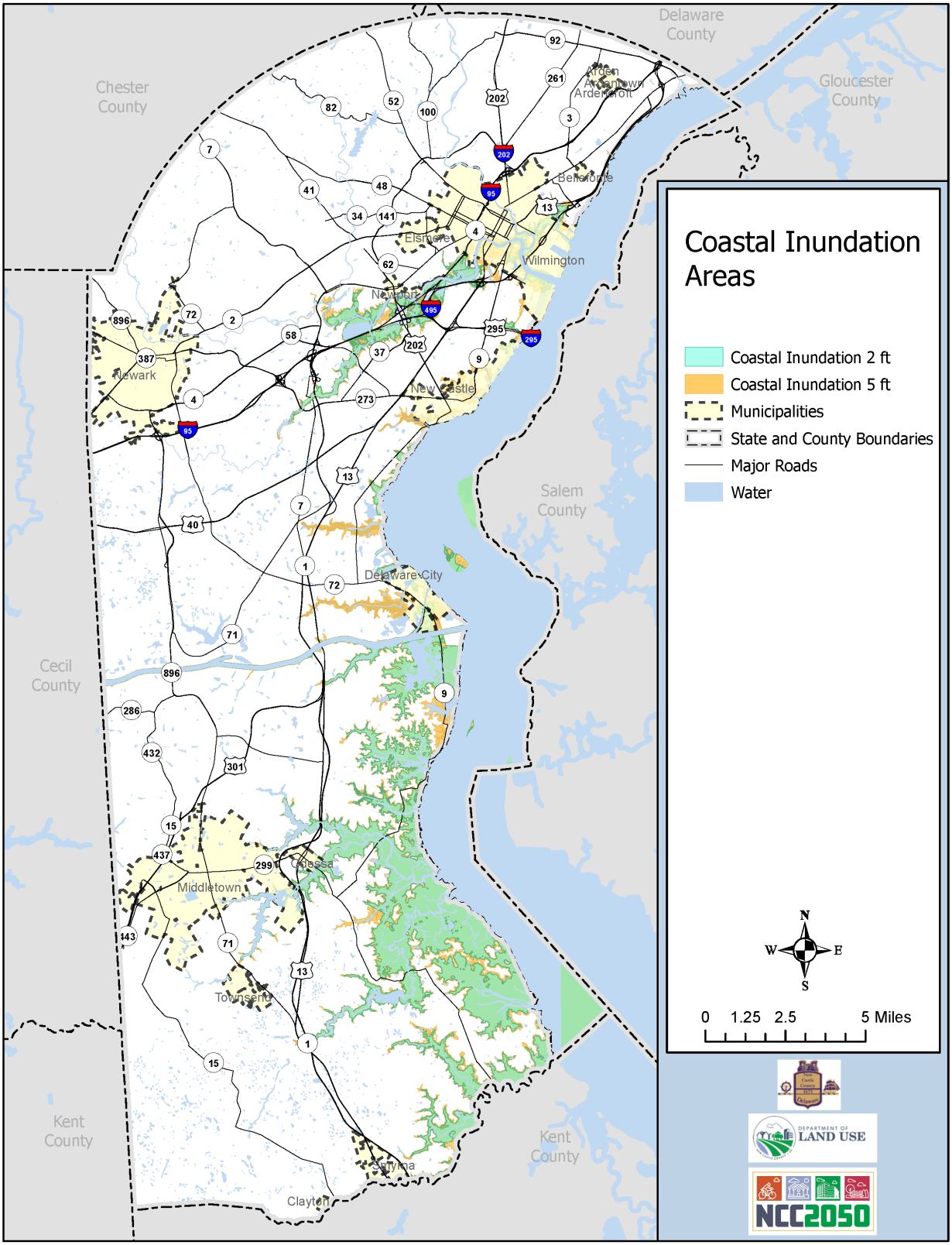
- 0.5 meters sea level rise—25,179 acres would be inundated.
- 1.0 meters of sea level rise—See ***Map D-5*** for Coastal Inundation Areas.[2] Particularly concerning is that a large portion of Delaware's heavy industry and railroad system can be found within New Castle County's coastal zones. Equally concerning, the report notes that many of the dikes in the County are protecting people and property so should they fail, the results will negatively affect New Castle County residents.[3] As effects of sea level rise will continue to worsen, coastal restoration and smart development is at the forefront of coastal planning in New Castle County and the State today.

In addition to rising sea levels along New Castle County's coastline, there is an observed increase in flooding events. ***Map D-6*** shows the existing floodplains within New Castle County. Floodplains are expected to be impacted more frequently along with an increase in storm events. New Castle County regulates development in these flood-prone areas to protect people from flooding. Many of the flood zones are located along the coast, however, there are significant flood zones in southern New Castle County. Also of note are the floodplains found in the northernmost region of New Castle County, where almost all of the County's erosion prone soils are found. Understanding the effects of climate change and increasing frequency of large storm events in relation to current and future development in New Castle County should be a prime focus to ensure safe and healthy communities and ecosystems.

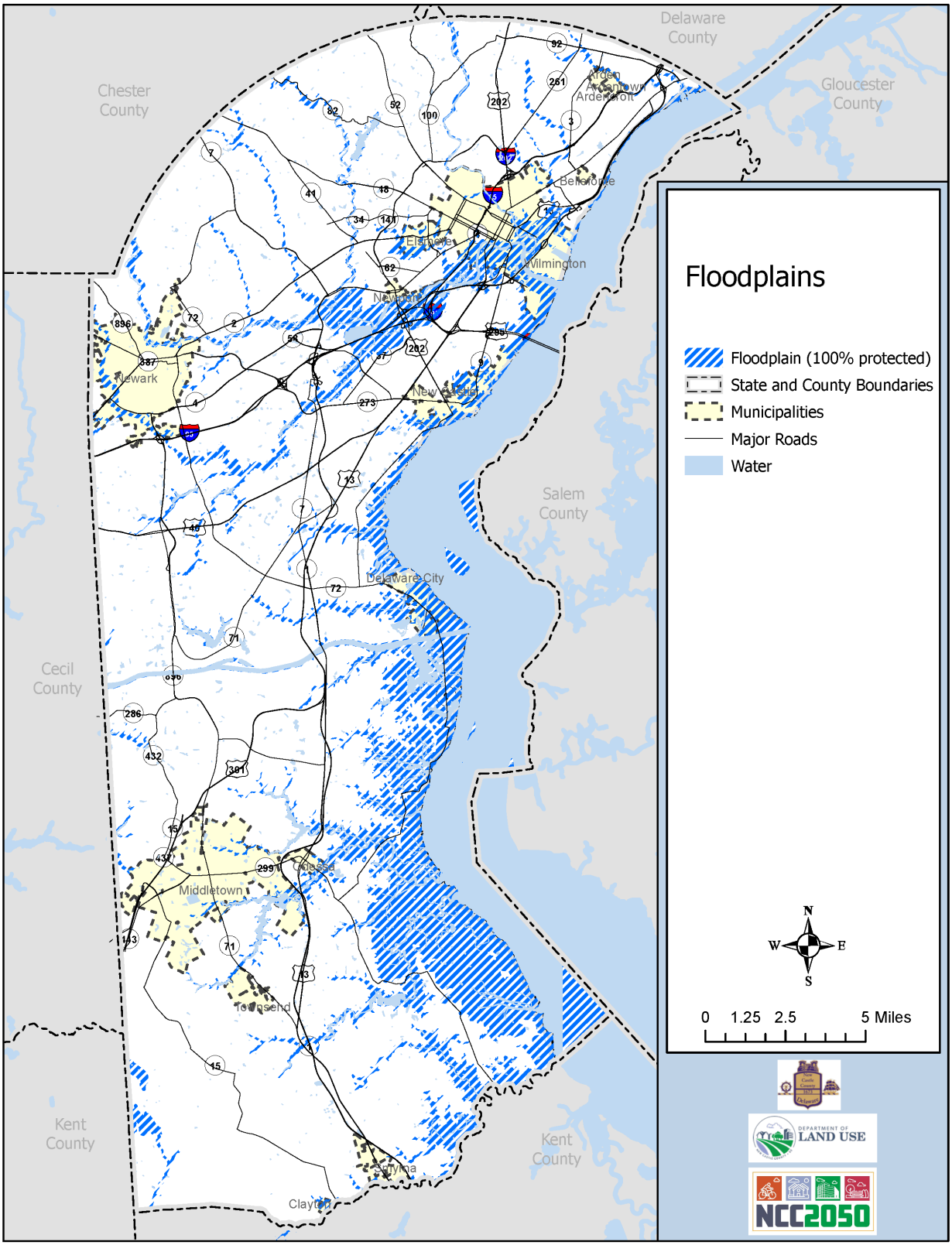
[2] The Coastal Inundation Areas Map (Map D-5) is presented in feet but represents the State's current SLR modeling.

[3] Preparing for Tomorrow's High Tide Sea Level Rise Vulnerability Assessment for the State of Delaware, Delaware Department of Natural Resources and Environmental Control, July 2012

Map D-5: Coastal Inundation Areas



Map D-6: Floodplains



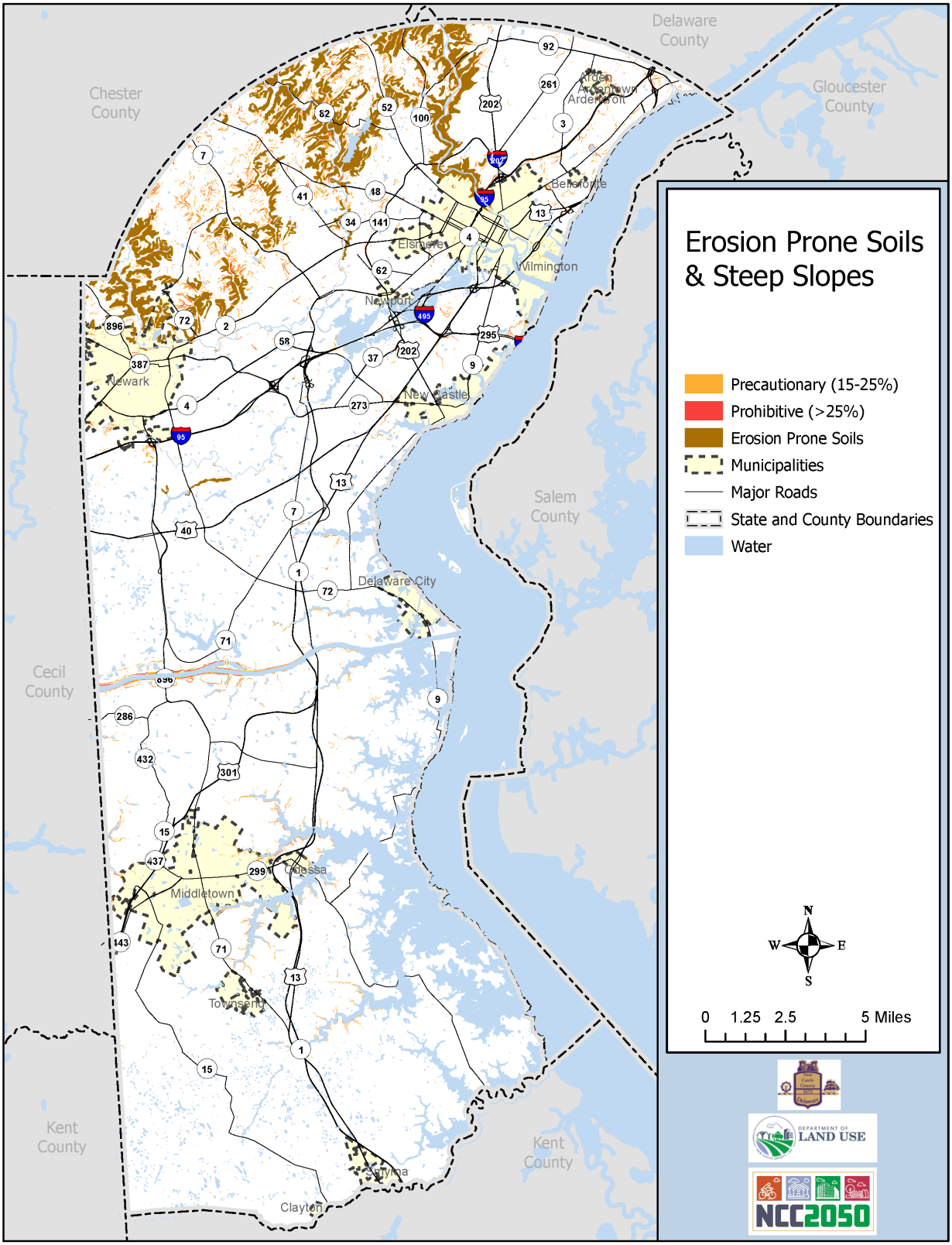
Erosion Prone Soils and Steep Slopes

Soil erosion can take place any time the ground is disturbed. In New Castle County, a majority of erosion prone soils[4] are found in the Piedmont Region. According to the National Resource Defense Council, when erosion prone soils are disturbed and washed away, nearly half of the time it ends up in a body of water.[5] Climate change has accelerated erosion with heavier storm events washing away more topsoil. This not only threatens the health of wetlands and watersheds, it can also interfere with drinking water and impact water quality. Understanding where the County's soil is most vulnerable to erosion is the first step in preventing it. Identifying the locations of erosion-prone soil, the County can take measures to slow erosion significantly in those areas, shown in *Map D-7*. One of those measures is preventing development in areas with high deposits of erosion-prone soil through which New Castle County is not only planning for the safety of residents but also avoiding disturbances that could increase the chance of erosion. The County's publication of *GreeNCC* points to the *Delaware Erosion and Sediment Control Handbook* as a guide for controlling erosion for various planting, grading, drainage conveyance, and other development activities. Maintaining rich and fertile soils is a major contribution to conservation within the County.

[4] Erosion-prone slopes: Slopes that consist of land with soils of United States Department of Agriculture Soil Conservation Service capability classifications IVe, VIe, VIs and VIIe as mapped by the soil survey of the County dated October 1970 or as later revised.

[5] https://www.nrdc.org/stories/soil-erosion-101

Map D-7: Erosion Prone Soils and Steep Slopes

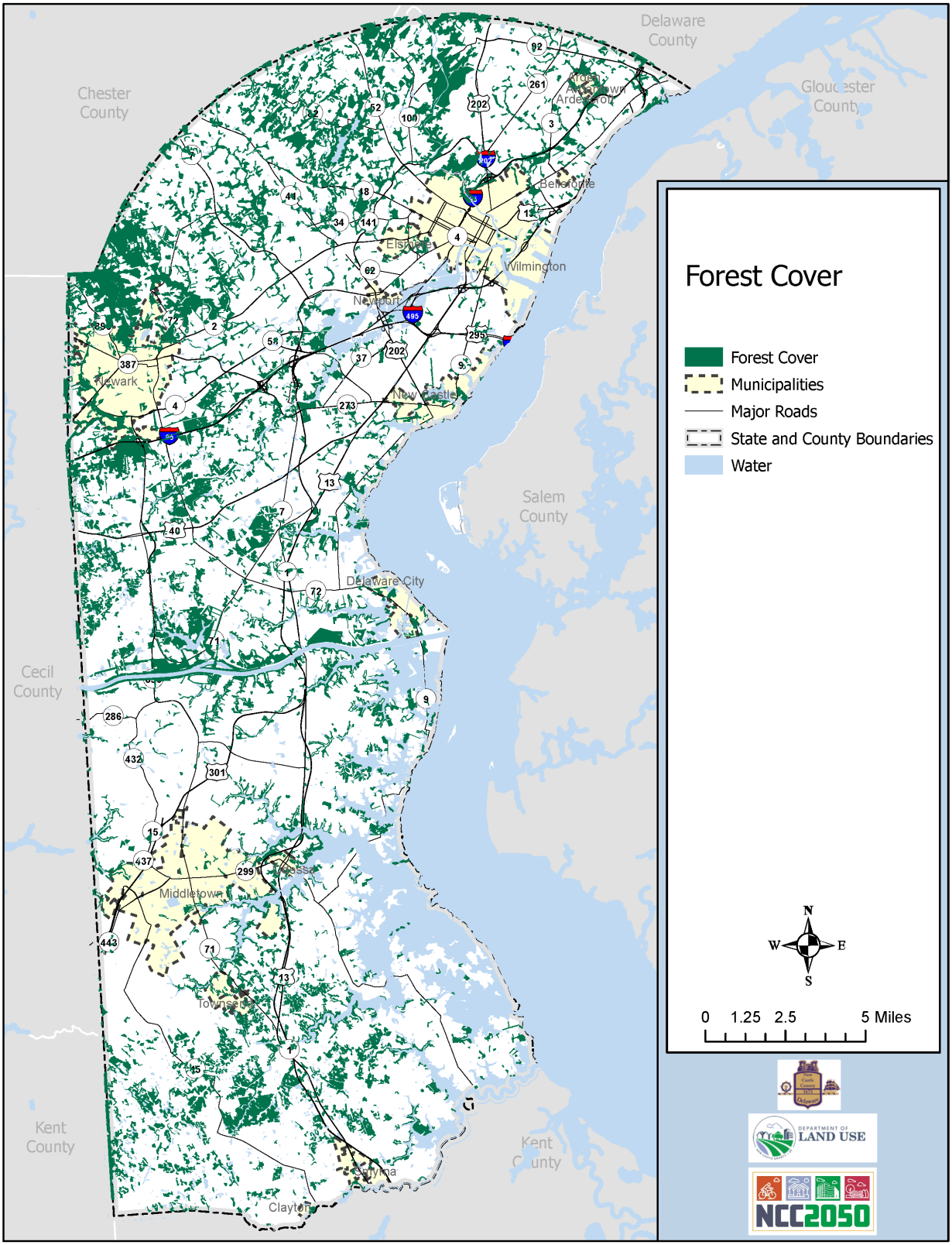


Tree Canopy and Forest Cover

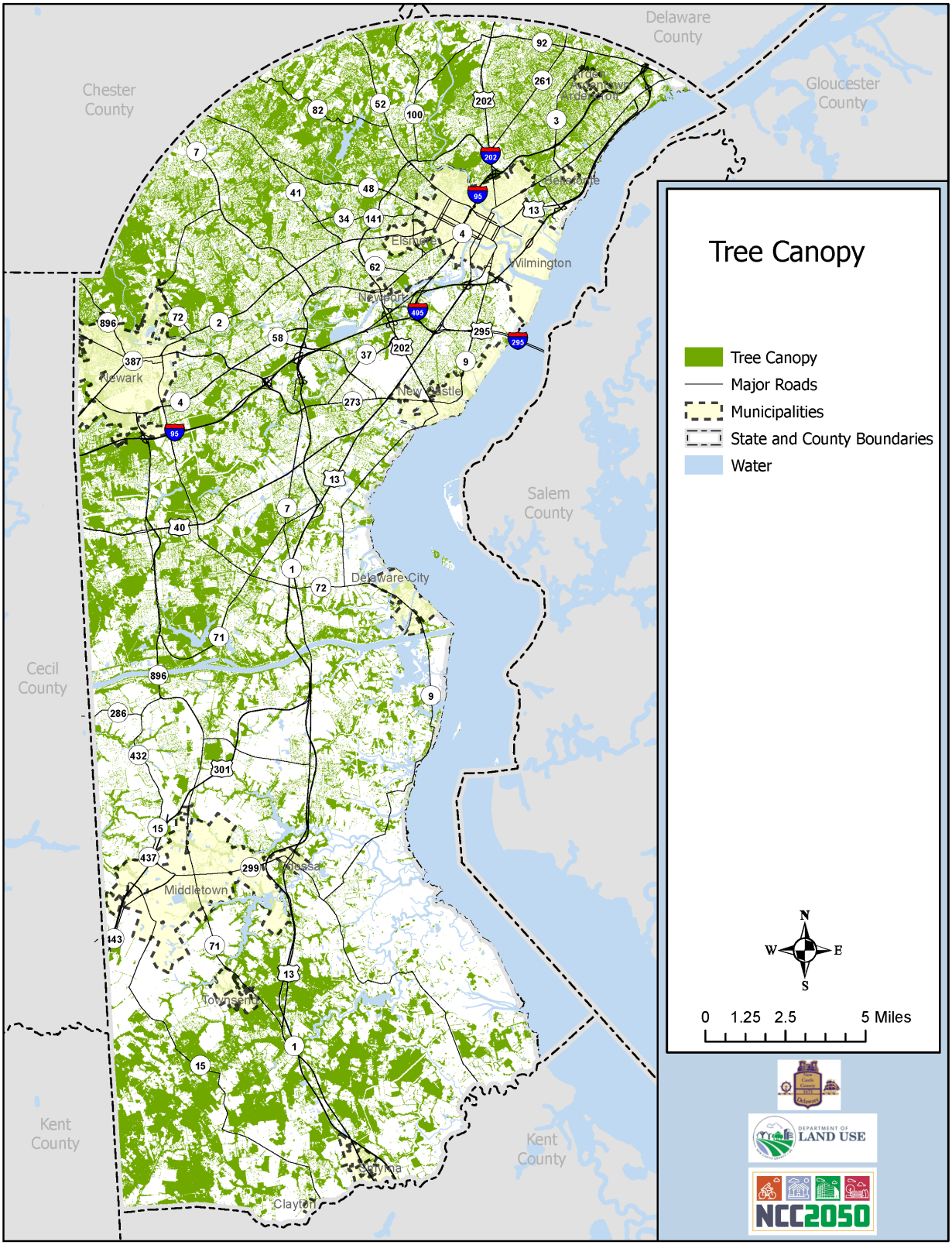
Forest cover is found throughout the New Castle County though most notably in preserved areas, such as local, state, and federally owned lands or land that has been preserved through development-based protections. Tree canopy covers 33.96% of New Castle County's total land area. This percentage was calculated by the Delaware Department of Agriculture using the Chesapeake Conservancy Innovation Center's 2013/2014 data with a 1-meter resolution. Forest Cover is mapped by the State of Delaware where the predominate land use is forest in *Map D-8*. Tree canopy includes trees that are within forested areas and developed land uses.

Tree coverage provides much needed cooling effects, creates riparian buffers along water bodies, and prevents potential erosion. Forests provide habitat for a wide variety of native species and are generally areas of recreation for residents and visitors. The disparity of coverage throughout the county today is the result of development and other land uses. It is important for the County to prioritize the protection and conservation of forests to promote native species habitats and improve groundwater infiltration with a focus in areas of environmental justice (See *Map D-9*).

Map D-8: Forest Cover



Map D-9: Tree Canopy



Forest Habitat Preservation and Integration

Forest fragmentation is a critical issue for forest habitats. Promoting and reforesting areas to create contiguous forest cover not only provides a better habitat for wildlife but better opportunities for greenway access and trails for recreation. Forest preservation and integration is a piece of DNREC's Landscape-Scale Green Infrastructure efforts, linking large ecologically significant natural areas with natural corridors that protect water quality, provide habitat for resident and migratory species, and increase landscape resilience to storms and flooding.

Areas protected for forest cover and other natural habitats can also help provide alternative transportation and recreational activities through trail connectivity. In January 2021, County Ordinance 21-009 was introduced, which updated standards for increased forest resource preservation, conservation design standards, subdivision standards, site design, and resource protection definitions.

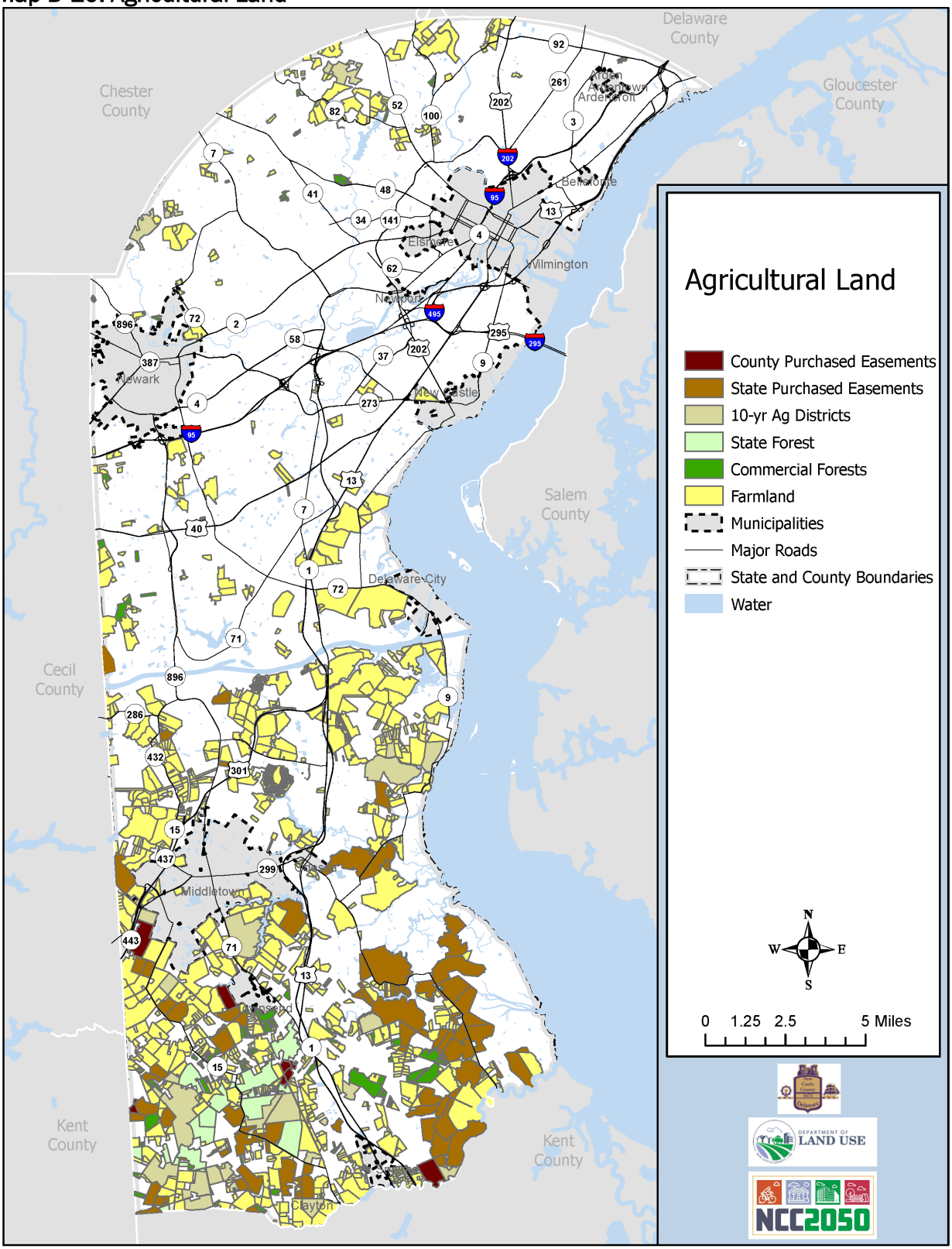
Farmland and Agriculture

Agriculture in New Castle County provides economic benefits, fresh food and food security, historic connections, and a current way of life for many New Castle County residents, especially in southern New Castle County. In 1991, the Delaware State Department of Agriculture began the Agricultural Lands Preservation Program (Aglands). This program allowed property to be placed in two types agreements: an *agricultural preservation district* where landowners agree to use the land for agricultural purposes only or an *agricultural conservation easement* where the owner sells the land development rights and preserves the property permanently.[6] New Castle County established a volunteer farmland preservation program in 2003 to purchase easements that restrict subdivision of the land, and in 2006 began a partnership with Aglands by donating County funds for farmland preservation on a one-to-one matching basis. All interested landowners apply to the Aglands program, and if not chosen, are then eligible for the County/State match program. Today, New Castle County has approximately 14,100 acres of land in agricultural easements in unincorporated New Castle County, which includes State and County easements.

There are approximately 97,000 acres of prime agricultural soils in unincorporated New Castle County. Per the 2017 United States Agricultural Census, there are 361 farms in New Castle County, which represent about 16% of all farms found in the State. In the same Census, 67,455 acres of land were used for farming, which is about 13% of all farmland in the state of Delaware. Farmland distribution in New Castle County is shown in ***Map D-10***. Notably, the majority is located in the southern part of the county. However, numerous sizeable farms also continue to operate in the northern part of the county, including some smaller scale urban farms and gardens. The farms in the northern part of the county tend to be smaller and oriented toward local produce and value-added food products. Many also include community-oriented activities.

[6] Additional information regarding the Delaware Agricultural Land Preservation Program and Foundation can be found at: https://agriculture.delaware.gov/agland-preservation-planning/the-preservation-program/

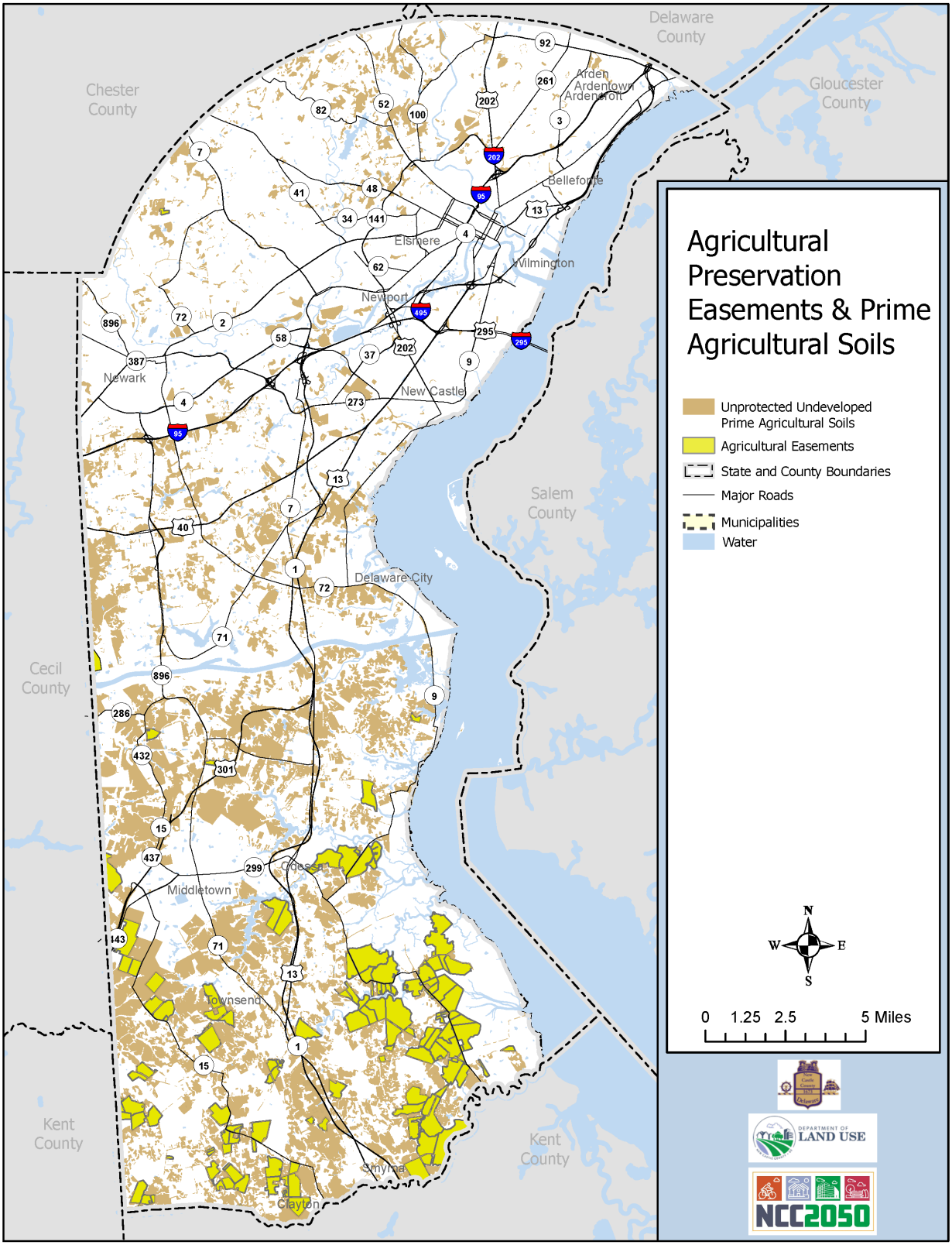
Map D-10: Agricultural Land



The average farm size is 187 acres and median farm size is 22 acres, meaning most are small, likely family-owned farms, rather than large-scale corporate crop productions. The total income from farm-related sources in New Castle County was $2,677,000, making farming a valuable part of the economy.

The number of acres in farmland has decreased since 1987, though there was a small increase between 2010 and 2017. *Map D-11* shows the current easements and prime agricultural soils within New Castle County. Of the total acreage of prime agricultural soils, eight percent of prime agricultural soils are protected by Agricultural Easements, 19% fall under Other Protected Land, 30% of prime agricultural soils have been developed, and 43% of prime agricultural soils remain undeveloped and unprotected. The remaining undeveloped and unprotected prime agricultural soil areas should be a core focus for future protections.

Map D-11: Agricultural Easements and Prime Agricultural Soils



As New Castle County moves into the future, our agricultural land will face challenges such as development pressure and sea level rise, among others, and efforts are being made to mitigate those challenges. The land development process should continue to encourage development that does not further diminish agricultural lands, especially in the southern part of the county. Continuing to evaluate and place highly valuable farmland into agricultural easements, protecting it from development in the future, should be a tool the County uses continuously. A second tool to achieve agricultural land preservation is to continue to incentivize growth and higher-density development to areas north of the canal, which may slow demand for housing south of the canal.

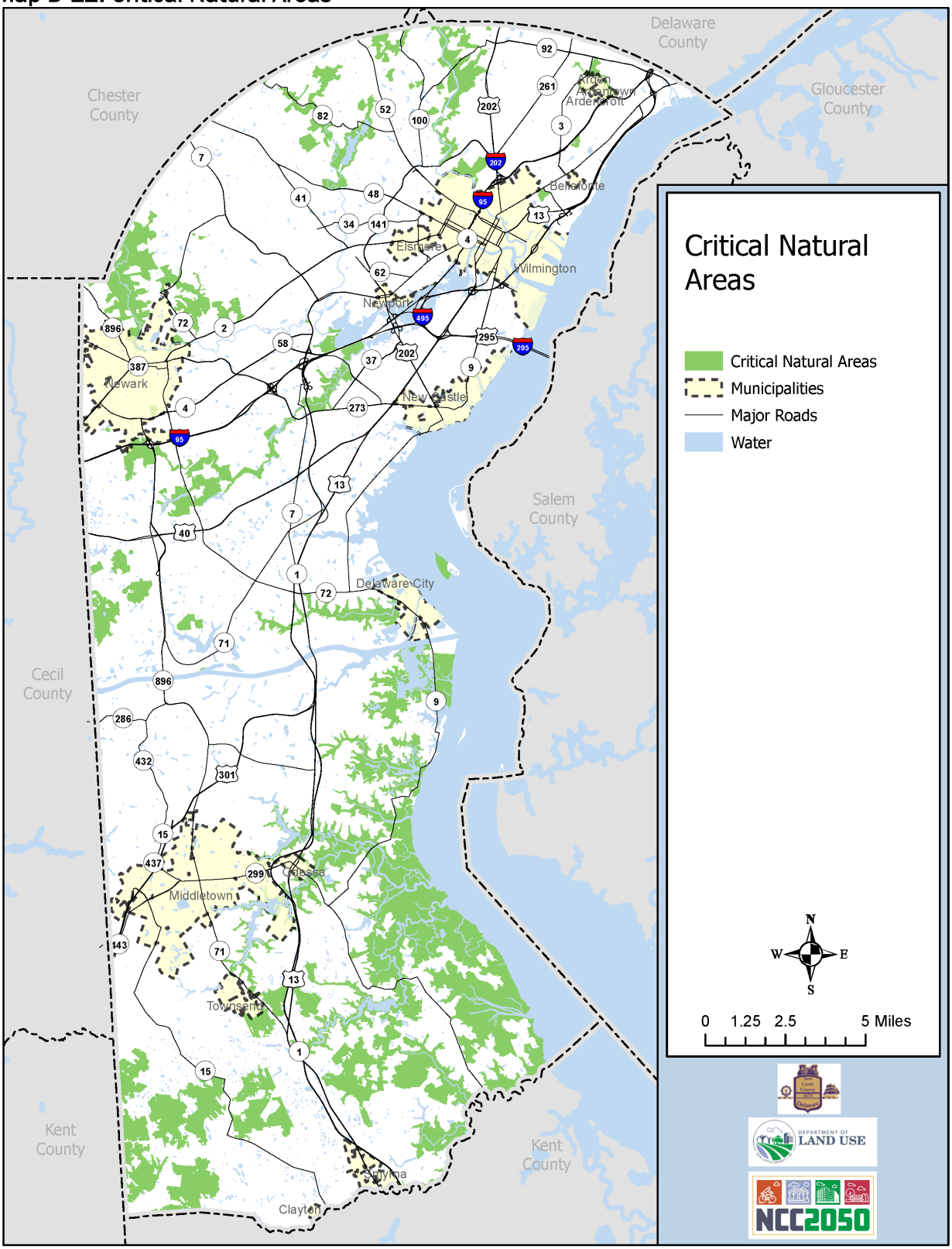
Protected/Non-developable Land

The UDC sets guidelines regarding where and what kind of development is permitted in New Castle County. This includes where development is not permitted and cannot occur. Article 5 of the UDC requires developers to conduct various analyses to determine the maximum intensity of development that a site can maintain, based on existing infrastructure and natural resources within the property. These analyses are designed to ensure that the public health, safety, welfare, and quality of life are protected. One calculation that must be conducted is related to "site resource capacity," which requires measuring the important natural resources on the site. These include floodplains, wetlands, steep slopes, rare species, forests, etc., which have varying levels of protections. The results of the site resource capacity calculations determine how much of a property is developable. While a site capacity may allow for a certain amount of development, the development must still comply with the protection standards for each type of protected resource. Any disturbance beyond the protection levels of a certain resource must be approved through various County, State, or Federal level processes.

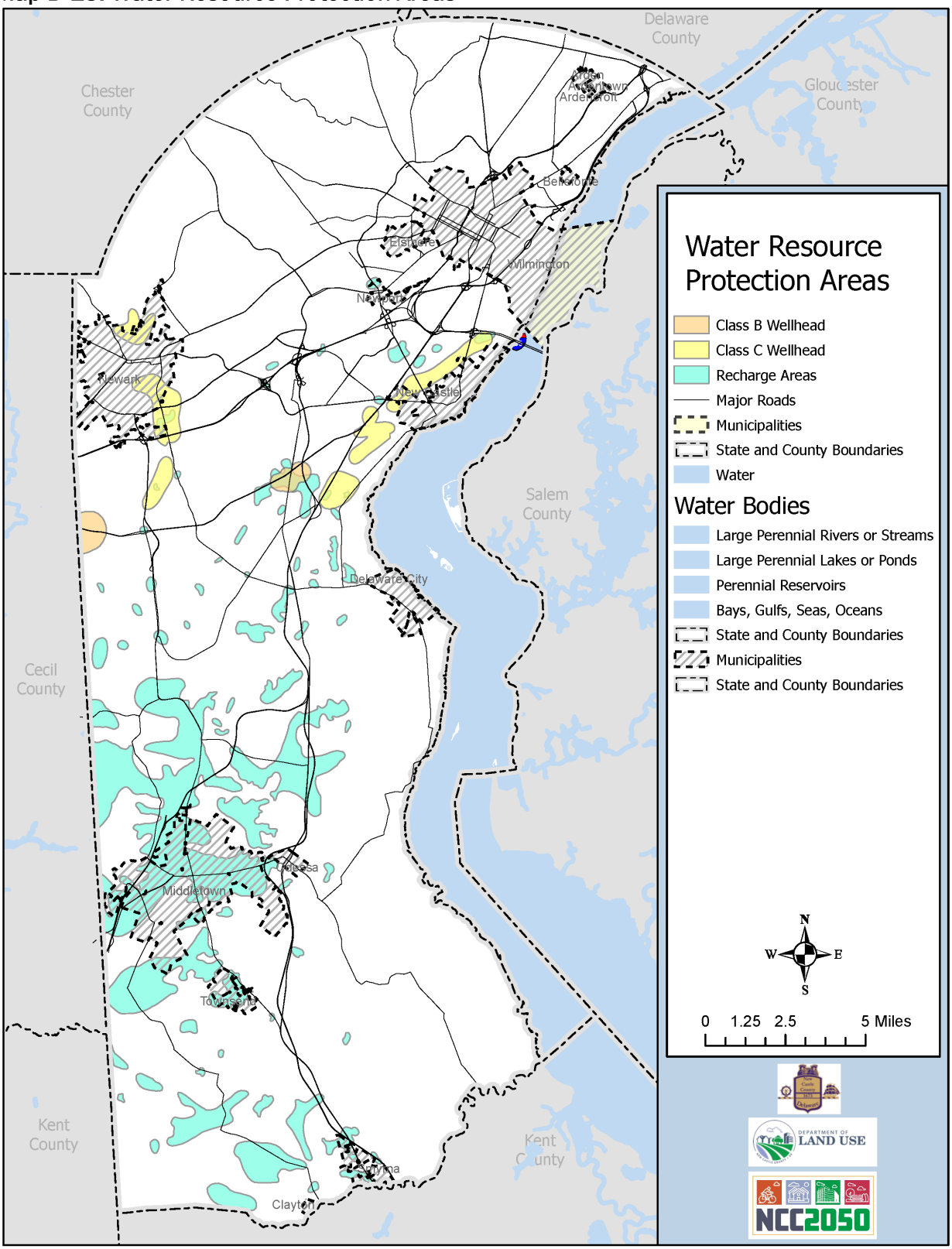
New Castle County established a Land Preservation Task Force in August 2019, to study open space conservation strategies and make planning recommendations to the county. The Land Preservation Task Force report vision specifically cites critical natural areas as a piece of the unique combination of natural resources found in our region that require conservation and preservation. New Castle County contains several types of natural resources that contribute to the County's environmental health, sustainability, and biodiversity. The protection of these resources is vital to the health and wellbeing of the environment and wellbeing of New Castle County[7] residents. The UDC offers protections of natural resources such as wetlands, floodplain, Water Resource Protection areas, forests, and critical natural areas. ***Map D-12*** shows critical natural areas identified in New Castle County and ***Map D-13*** shows Water Resource Protection areas in New Castle County.

[7] Critical Natural Areas are any site listed in the State natural areas inventory, as administered by the State Office of Nature Preserves, Division of Parks and Recreation, of DNREC.

Map D-12: Critical Natural Areas



Map D-13: Water Resource Protection Areas



Conserving and preserving our natural environment is a key theme for NCC@2050. Strategies in this plan will help us to ensure that our environment continues to be a distinguishing feature of our county. It is imperative that we protect our natural resources and ensure that all New Castle County residents have access to clean air and water by coordinating with environmental agencies and other partners to protect water sources and maintain and extend effective sanitary sewer service. Efforts to conserve and protect our natural environment should include consideration of climate change mitigation, resiliency, and adaptation to protect both the natural and built environment from impacts of climate change.

Related Goals, Objectives, and Strategies

2. **Goal: The natural environment of the county continues to be a distinguishing characteristic of our community, and the quality of our natural resources—air, water, land, ecosystems (plants and animals)—are continually improving and meeting the needs of present and future generations. Development/redevelopment patterns that consume less unbuilt "greenfields" and resource lands support conservation of our important natural resources.**

2.1. Objective: The County shall set an example and evaluate ways to address the impact of development on micro- (e.g. local air quality) and macro-climate conditions (e.g. greenhouse gases) and achievement of State/Federal air quality standards.

2.1.1. Strategy: Engage the full breadth of sectors and communities across the county in a sustainability action agenda/working group. (Refer to Environmental Justice, Climate Change, and Emergency Preparedness/Hazard Mitigation/Resiliency goals and objectives)

2.2. Objective: Improve surface water quality and reduce stormwater runoff from developed lands, with recognition that community revitalization and stream/ecosystem restoration are linked.

2.2.1. Strategy: Eliminate parking minimums for certain smaller buildings and in town centers; establish parking caps.

2.2.2. Strategy: Discourage development in areas that lack water and/or sewer service

2.2.3. Strategy: Conduct watershed-based planning with associated policies and programs, including incentives that focus on improved stormwater management facilities on existing sites, application of ecosystem services, and retrofitting with green stormwater infrastructure.

2.2.4. Strategy: Establish a stormwater utility to fund and optimize stormwater BMP implementation and ongoing maintenance.

2.3. Objective: Improve ecosystem health by reducing sprawl and fragmentation, reconnecting open space, enhancing ecosystems, and applying green stormwater infrastructure strategies (while our economy and population continues to grow).

2.3.1. Strategy: Encourage more compact growth patterns, focusing development in areas that are already served by infrastructure (water, sewer service, road network, etc.)

2.3.2. Strategy: Continue to review and update development and property management code requirements to ensure flexibility in landscaping materials (e.g. native vegetation, pollinator gardens, and ecologically friendly landscaping).

2.3.3. Strategy: Encourage/incentivize use of native species and habitat-oriented landscapes through innovative conservation strategies, including homeowner education and incentive programs (e.g. cost-share program to convert lawn or non-natives to native pollinator gardens and meadows).

2.3.4. Strategy: Collaborate with DNREC and other organization to further protect Critical Natural Areas and State Resource Areas

2.3.5. Strategy: Promote farming practices that protect the natural environment

2.3.6. Strategy: Continue to partner with the State, Federal government, and other nonprofit agencies on agricultural preservation with a targeted approach to select land to be preserved

2.3.7. Strategy: Support youth agriculture education programs

2.4. Objective: Increase tree-canopy to 40%, prioritizing areas with the lowest canopy cover and greatest potential benefits (e.g. urban heat island, flooding, etc.)

2.4.1. Strategy: Establish an incentive-based program with private and non-profit partners to support property owners planting and maintaining healthy tree cover (e.g. subsidize cost of trees for property owners, Pennsylvania Horticultural Society's TreeTender program)

2.4.2 Strategy: Implement effective reforestation regulations that ensure trees are planted with new development and redevelopment and are sustained over the long term. Evaluate effectiveness and opportunities to increase effectiveness, such as through incentives. Consider including a tree-bank/fee-in-lieu of program.

2.4.3. Strategy: Evaluate and incentivize forest protection standards to maximize tree canopies for heat abatement and ensure that high-quality forest habitat is preserved, particularly mature forests and "heritage" trees.

3. Goal: Clean water is available to all residents now and in the future.

3.1. Objective: Continue to ensure water services and drinkable water supply is sufficient to meet demand.

3.1.1. Strategy: Continue to work with the Water Supply Coordinating Council, DNREC and the Water Resources Center at the University of Delaware to monitor the water supply, evaluate changing demands and influences, and ensure availability now and for future generations.

3.1.2. Strategy: Consider additional safeguards for Water Resource Protection Areas (WRPAs) and the public water supply.

3.1.3. Strategy: New Castle County government leads by example and through community partnerships, implementing water-saving techniques and best practices. For example, low-water landscaping, water-saving technology in buildings, rain barrel program, etc.

3.1.4 Strategy: Work with water purveyors, utilities, and public service commission to look for opportunities to connect to public water supply as part of a strategy to prevent water supply disruptions in those communities of 25+ units that were developed on private well system prior to the code requirement being added.

3.2. Objective: Continue to maintain efficient and effective sanitary sewer service in existing areas served by sewer and extend service to new areas to meet growth demands in a sustainable manner.

3.2.1. Strategy: Encourage new development within Sewer Service Areas and regulate septic use for low-density development consistent with County Septic Policy.

3.2.2. Strategy: Delineate a Growth Area Boundary and amend the Sewer Service Area Map to include areas planned and not planned for sewer service (including definitions that provide clarity and predictability). Update Chapter 38 (which covers sewers and sewage disposal) and Public Works policies to achieve consistency with the UDC and the NCC@2050 Comprehensive Plan.

3.2.3. Strategy: Designate areas for growth and areas for preservation, working collaboratively with the Office of State Planning Coordination

3.2.4. Strategy: NCC and incorporated towns should continue coordination and collaboration on development, infrastructure, and policies to support efficient/effective provision of sewer and water, including using joint planning areas

See Also:

Recreation and Open Space Element, Goal 1

Climate Change and Hazard Mitigation Element, Goal 13