

TOWN OF

Slaughter Beach

COMPREHENSIVE LAND USE PLAN



AUGUST 2018

TOWN OF SLAUGHTER BEACH

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● TOWN, COUNTY AND STATE OFFICIALS

Town of Slaughter Beach

Mayor	Harry Ward
Vice Mayor	Kenneth Lewis
Treasurer	Kathleen Lock
Secretary	Rebecca Craft
Councilperson	Robert Wood
Planning Commission	Kathleen Lock, Councilwoman and Chairman Rebecca Craft, Secretary William McSpadden, Planning and Zoning Commission Beth Yost, Planning and Zoning Commission William Wernick, Resident
Town Solicitor	D. Barrett Edwards IV, Esq., Hudson, Jones, Jaywork & Fisher, LLC

Sussex County Representatives

1st District	Michael H. Vincent
2nd District	Samuel R. Wilson, Jr.
3rd District	I.G. Burton
4th District	George Cole
5th District	Robert B. Arlett
County Administrator	Todd F. Lawson

State Officials

Governor	John Carney
Senate	Gary Simpson
House of Representatives	Harvey Kenton
Office of State Planning	Connie Holland, AICP

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• ACKNOWLEDGEMENTS

The Town of Slaughter Beach Comprehensive Land Use Planning Committee would like to thank the following for their help in drafting this Plan:

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Delaware Nature Society	Matthew Babbitt
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Slaughter Beach Memorial Fire Company	Terry Jester, Chief Robert Wechtenhiser, President
Town of Slaughter Beach	Harry Ward, Mayor Kenneth Lewis, Vice Mayor Robert Wood, Councilperson
U.S. Department of Interior Prime Hook National Wildlife Refuge	Al Rizzo

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COMPREHENSIVE LAND USE PLAN

Chapter I BACKGROUND

1.1. The Authority to Plan

Delaware law requires that municipalities engage in comprehensive planning activities to encourage "the most appropriate uses of the physical and fiscal resources of the municipality and the coordination of municipal growth, development, and infrastructure investment actions with those of other municipalities, counties and the State." This plan was written to comply with the requirements of a municipal development strategy as described in the Delaware Code (below) for towns with a population of 2000 or fewer people.

The municipal comprehensive plan for small communities (such as the Town Of Slaughter Beach) with fewer than 2000 people is to be "documented in text and maps, containing at a minimum, a municipal development strategy setting forth the jurisdiction's position on population and housing growth within the jurisdiction, expansion of its boundaries, development of adjacent areas, redevelopment potential, community character, and the general uses of land within the community, and critical community development and infrastructure issues". In addition, the town's comprehensive planning process must demonstrate coordination with other municipalities, the county, and the state during plan preparation. (22 Del. C1953 702; 49 Del. Laws, c.415, 1.)

Further, state law requires that planning be an ongoing process and that Municipalities identify future planning activities. This document is the Comprehensive Plan for the Town of Slaughter Beach as required by state law and is subject to review by the state and its supporting agencies. It is intended to cover a ten-year planning period and be reviewed every five years.

1.2. Public Participation

A. Resilient Community Partnership (RCP)

Communities throughout Delaware are threatened by inland flooding, coastal storms, sea level rise, and extreme weather. To help address these challenges, DNREC's Delaware Coastal Programs (DCP) awarded a \$75,000 Resilient Community Partnership (RCP) grant to the Town of Slaughter Beach through a competitive process using funding from the National Oceanic and Atmospheric Administration (NOAA). The purpose of the grant is to build the capacity of the community to plan,

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prepare for, and readily recover from coastal hazards, thereby enhancing its resilience in the long run. From the beginning, it was a priority of the project team to select a scope for the assessment that is meaningful and actionable for the Town. The scope is defined by the coastal hazards and timeframe selected for analysis. Since flooding is of real concern to property owners given the Town's proximity to marshes and the Bay, the team chose to examine how coastal storms, storm intensity, sea level rise, and extreme tides contribute to flood risk in Slaughter Beach. The team also considered wildfires and extreme heat, ultimately adding extreme heat based in part on public feedback and the fact that the town is already engaging with another agency on wildfire risk. A timeframe of 20 years was selected for the assessment after careful consideration of the town's demographics and capacity to act on recommendations. Twenty years is a reasonable window that avoids overburdening the planning process in small towns because it allows property owners and the public to visualize future impacts and next steps. A longer timeframe could have potentially discouraged action by appearing "too far off" and/or placed significant demands on the town's limited resources.

Public participation and outreach was another priority of the project team. Not only is public input critical to understanding local perceptions of risk and impacts, but it also builds awareness and momentum that can lead to meaningful change. However, like many coastal towns in Sussex County, the Town of Slaughter Beach has a mix of full-time and part-time property owners along with a steady stream of visitors during the warmer months. The seasonal swing in population can complicate public outreach efforts. Accordingly, the group designed a four-part public process that maximized participation during the high season (via public workshops) and used other forms of outreach and data collection during the off season (mailings, surveys, and small focus groups).

We first began with a mailing (paper and email) in April 2016 that announced the project and data collection methods. The mailing included a survey on town values which invited property owners and stakeholders to describe what makes the community a special place to live in. The values survey comprises part of the baseline data collected for the vulnerability assessment and the results were tabulated in time for public vetting at the first public workshop on June 3, 2016. This workshop, held at the local fire house on a Friday evening, was timed to take advantage of the seasonal influx of property owners and visitors. The workshop gave the team another opportunity to introduce the project and it also solicited local input on coastal hazards, including the impacts and locations of flooding in town. Following months of data collection and synthesis, a second public workshop was held on October 8, 2016 to engage the public before the shoulder season gave way to the winter

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months. This workshop presented preliminary findings of the vulnerability assessment and initiated brainstorming of adaptation and mitigation recommendations that would improve the community's resilience to future hazardous events.

Next, the team ran small focus groups throughout December 2016 to vet adaptation and mitigation recommendations with local property owners. Since this part of the process fell during the quieter winter months, the team selected participants that represented a diversity of views. The team also obtained Town Council input to round out the feedback.

Finally, the RCP project team consulted previous studies related to flood risk in the Town of Slaughter Beach, including the Bay Beach Coastal Drainage Engineering Evaluation from December 2014 and the Delaware Bayshore Communities Economic Analysis of Options for Shoreline Management from February 2014. To reduce redundancy and leverage prior research and analysis, this project adopts the recommendations of the previous studies, where applicable. This final report marks the culmination of the vulnerability assessment, public process, and adaptation plan, and will be briefed to participants at a third and final workshop during the high season on July 22, 2017. Additional details about the process are described below.

The project team also obtained a baseline of the Town's values or vision for the future. In the spring of 2016, the project team sent a three-page written survey to all properties in the Town of Slaughter Beach to gauge this information. More than 300 surveys were mailed, asking the head of the household to return the form by pre-stamped envelope. Community members were asked about their residency status (year-round or part-time resident, renter or property owner) as well as whether they commute to school or work. The survey then asked residents to rate how they felt about many of the town's features, amenities and public infrastructure. Residents additionally

were asked an open-ended question: What amenities, places, natural features, services, economic opportunities, and/or unique or cultural aspects make the community a special place to live in? This information provided valuable insight into the characteristics and aspects of the community that need to be maintained even if impacted by coastal hazards in the short

and long term. These characteristics and aspects are depicted in the “word cloud” shown herein.



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The information derived from the RCP public outreach meetings held in 2016 and 2017 formed the foundation for the Town's 2018 Comprehensive Land Use Plan and provided the tools for the Comprehensive Land Use Plan committee to prepare for additional community meetings that addressed the long-range planning goals for the Town.

B. Comprehensive Land Use Planning Committee

The Town of Slaughter Beach established a Comprehensive Land Use Planning committee in September 2017. Meetings were held on an ad hoc basis to solicit comments from committee members and the public. From September 2017 to November 24, 2017, the Town Council and the public were apprised of the ongoing planning progress in monthly council meetings. The Council meeting minutes were made public via the town website and residents were asked to submit comments via the Town email address.

The Committee used data gathered from surveys distributed to Town residents in 2016 as the foundation for many of the Comprehensive Land Use Plan findings and goals. The process of collecting survey data and then sharing those findings with residents was accomplished through DNREC's Delaware Coastal Programs, Resilient Community Partnership with the Town. This process is explained more fully in Section 1.2, Subsection A.

Since many of the residents/property owners make the Town their second home and are here on a limited basis, the CLUP Committee members, in addition to a public hearing, canvassed a cadre of friends/neighbors/ property owners to seek input. These "back porch" gatherings also helped direct the Committee's formulation of the Comprehensive Land Use Plan. On November 24, 2017, a draft was submitted to the Town Council for review. A public hearing was held on November 13, 2017 to further discuss the comprehensive plan for future certification.

1.3. Overview of the Community

A. Location

The Town of Slaughter Beach is located east of the town of Milford along the coast of the Delaware Bay. The Town developed over time within the confines of the marshes of the Mispillion River, Cedar Creek, and Slaughter Creek. In April 2017, the Town was officially designated as a destination and stop on the Delaware Bayshore Scenic and Historic Byway.

B. Community, History, and Characteristics

Slaughter Beach was founded in 1681 and Incorporated in 1931. How Slaughter Beach got its name has been debated over the years. Early maps show a small creek named Slaughter Creek, which

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flowed through the marsh from the Cedar Creek south and emptied into the Delaware Bay just north of Prime Hook Beach. To the southwest of the town is an area called "Slaughter Neck": Neck was/is a term used to describe upland areas between two key boundary areas. Another theory is the first postmaster for this locality had the last name of Slaughter.

The naming of Slaughter Beach has two more colorful stories. In the spring and early summer Horseshoe Crabs come on-shore to spawn. Wave action flips the crabs over where they are left to die in the hot sun, thus the "Slaughter of the Crabs". The most colorful story has to be of Indians attacking early settlers in the area. Upon hearing the news, the leader of the settlers arranged a meeting on the beach with the Chief, so the settlers "God" could "speak" to the Indians and make peace. The leader had the Indians gather around their "God"; a cannon, and fired the cannon killing all the Indians - thus the "Slaughter of the Indians".

Like the naming of Slaughter Beach, the town has gone through many changes. Slaughter Beach in the early years was primarily a resort for Milford area residents during the summer months. In its heyday, Slaughter Beach had a dance hall, hotels and a boardwalk. With the advance of the automobile and road systems, more and more people started traveling to the Rehoboth area and Slaughter Beach turned into a sleepy little seasonal fishing village. According to the 2010 Census, Slaughter Beach has a full-time population of 207 people with a much higher summer population. Slaughter Beach has also become much more of a year-round community for "part-time residents" looking to escape for brief periods from the "real world".

In 2005, the Town Council voted unanimously to be designated as a Horseshoe Crab Sanctuary with overwhelming support of residents. In May of 2015, the Town was designated as a Certified Wildlife Habitat Community through a National Wildlife Federation program. The town became the third community recognized as such in the State and one of 90 in the nation.

In 2017, Slaughter Beach became part of the Delaware Bayshore Byway. The Byway is an alternative transportation corridor which traverses Delaware's roadways. The Byway offers an eco-tourism package designed to bolster Delaware's history, outdoor scenery, small town charm, recreation, and various natural areas. The Town is also included in the Delaware Bayshore Initiative, a conservation program that focuses on three principal goals: 1) Improving habitat conservation and restoration; 2) Promoting conservation-compatible recreation; and 3) Supporting stronger Bayshore communities.

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C. Topography

Slaughter Beach, like most of the state of Delaware, falls within the nearly level Atlantic Coastal Plain. The elevation ranges from sea level (zero feet) to approximately 14 feet, with the majority of land lying below five feet in elevation. The terrain to the west of Slaughter Beach, although remaining relatively flat, does reach elevations approaching 30 feet near Route 1.

D. Soil Conditions

Slaughter Beach has five types of soil within its corporate limits. These soils are coastal beach (sand), tidal marsh, Fallsington loam, Woodstown loam, and Woodstown sandy loam, according to U.S. Dept. of Agriculture Soil Conservation Service 1974 soil survey for Sussex County.

Based on the survey update, five soil mapping units were identified within the municipal Town limits of Slaughter Beach. These soil mapping units are the following: Acquango Beaches complex, Udorthents, Woodstown, Sunken, and Transquaking-Mispillion complex. The Acquango-Beaches complex soils are excessively well-drained soils associated with coastal sand dunes. Udorthents are soils that have been extensively modified through anthropogenic filling and grading practices with variable site-specific drainage characteristics. Woodstown is moderately well-drained soil associated with low-lying uplands not influenced by tides. Sunken and Transquaking-Mispillion complex are very poorly-drained tidally-influenced soils indicative of tidal wetlands.

E. Wetlands

Much of the area immediately surrounding the Town of Slaughter Beach contains large acreages of mostly tidally-influenced wetlands with small acreages of nontidal wetlands also mapped. Based on the Statewide Wetland Mapping Project (SWMP), tidally-influenced estuarine emergent and nontidal palustrine emergent were the major wetland types mapped in or adjacent to the municipal Town limits of Slaughter Beach. Tidally-influenced wetlands are regulated under the State of Delaware's Tidal Wetlands Regulations (Chapter 66), while nontidal wetlands are regulated by the United States Army Corps of Engineers (USACE).

1.4. Existing Land Use

A. Residential

The Town of Slaughter Beach consists almost entirely of single-family residential properties. There are, however, some properties where garages have been improved to contain dwelling space. There are also a few houses that have been converted into two-family dwellings. Much of the current residential

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housing stock are traditional beach cottages from the 1970s. However, today many of these small cottages with large lots are being converted into larger, more traditional beach style homes.

Although encompassing the largest number of parcels in town, the residential aspect of the town makes up only 1.3% of the town land mass.

B. Commercial

There are only a handful of commercial entities in Slaughter Beach. The Cedar Creek Marina and the Delaware Bay Launch Service, both located at the northern end of Slaughter Beach, provide services to the boating community and shipping traffic on the Delaware Bay. The Slaughter Beach Water Company, a privately-owned utility, has four wells located through-out Town. There is also one property which is zoned as Residential/Commercial, which is now the vacated Slaughter Beach Mini Mart. The residential portion of the property remains.

The community has no plans to expand the number of commercial properties. However, the community recognizes the need to allow for future commercial uses that are in character with the existing uses and in 2016 revised its zoning ordinances to allow commercial use in a newly designated “wharf” section at the northern end of town.

C. Wharf

The purpose of the Wharf District is to ensure that the Town’s waterfront is reserved for residential, maritime commercial, and light industrial uses. The Wharf District was created to allow uses which were prohibited under the residential classification. In recent years, the wharf area was identified for residential use, but this area has historically been a working waterfront with charter boats and head boats, dock space leasing, and a variety of other marine related activities. In addition to residential use, the wharf area is appropriate for a combination of limited maritime commercial and light industrial uses in keeping with the historic use of this area.

D. Conservation/Agriculture

The purpose of this district is to permanently preserve the Town’s wetlands, wildlife areas and areas of special environmental quality, recreation potential, natural beauty, ecological importance, and areas needing special protection from erosion and pollution, to protect flood plains from inappropriate development, and where appropriate, to encourage the agricultural use of productive soils. Presently there are no lands being tilled. The Conservation/Agriculture district consists of approximately 12,800 acres, which encompasses 98% of the lands within the Towns borders.

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E. Residential/Commercial

The purpose of the Residential/Commercial District is to allow a portion of a single-family residence to be utilized for commercial purposes. Presently the Town has one property which has this zoning classification. No more than 1,000 square feet of the property can be used for commercial purposes and the living space must be larger than the commercial space. Presently this property is being used solely as a residential property. The last commercial use was in 2014 as a mini mart.

F. Non-Conforming Uses

Through the years, changes in zoning ordinances have resulted in older cottages becoming non-compliant with town codes that were in force at the time. Most of the non-conforming uses are related specifically to new requirements for yard setbacks, lot coverage and detached garages being used as livable space. While a significant number of these older homes are non-compliant, they were grandfathered under the codes that were in existence at the time they were built.

In addition, FEMA regulations must be adhered to for the property owner to be able to obtain flood insurance.

The Town modified its zoning map and ordinances in 2015 to address the issue of non-conforming uses and ensure that more properties comply with town codes.

G. Recreational

The community's focus is the beach itself which is a public resource and provides a mix of environmental and recreational benefits. The town provides 18 public access points to the Bay, located throughout the Town. The major “gathering” place is located at the pavilion area which has public restrooms. On any given summer day, you will see residents and the general public enjoying a whole host of recreational activities from sailing to kayaking, from surf fishing to beach combing. With the launch of the Delaware Bayshore Initiative the town has seen an increase in eco-tourism for those who enjoy outdoor activities and viewing our bountiful natural resources. The north end of the beach provides some of the best shorebird watching and horseshoe crab spawning areas in the world.

The Town, in partnership with Delaware Nature Society, DelDOT’s Transportation Assistance Program (“TAP”) grant, the Bayshore Byway, DNREC Parks and Recreation Outdoor Recreation Parks and Trails (“ORPT”) grant, and our state legislators among others, is in the process of building a boardwalk at the Marvel Saltmarsh Preserve. Once completed, the boardwalk and observation

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platform will provide both recreational and educational activities for residents and the general public.

The Town also has a basketball court and tennis/pickleball court and a small community playground with limited playground equipment, located across the street from the Firehall.

H. Preserved

There is a large preserved area called the Marvel Tract, which is on the landward side of Slaughter Beach in the northern part of the town. The Delaware Nature Society manages this property. On the landward side of the southern part of Slaughter Beach is the Prime Hook Wildlife Refuge, a federally managed 10,000-acre preserve stretching for miles. Another preserved area is the Milford Neck Wildlife Area, which is managed by the State of Delaware.

Table 1.1 Existing Land Use in and Surrounding Slaughter Beach, 2017

LAND USE	NUMBER PARCELS	PERCENT OF TOTAL	ACRES	TOTAL LAND %
Ag/NR/Open Space	13	3.0%	12,800	98.0
Residential	393	91.3%	204	1.3
Commercial	7	1.6%	20	0.3
Utilities	7	1.6%	2	*
Institutional	2	0.5%	1	*
R/C	1	0.25%	1	*
Wharf	14	3.3%	6	*
TOTAL	430	100.0%	13,032	100.0

Town of Slaughter Beach Source: Acreage numbers were culled from the Land Use Survey, 2006

*statistically insignificant

I. Adjacent Land Use

In accordance with the most recent Sussex County Comprehensive Plan, much of the land adjacent to the town is zoned AR-1 (Agricultural Residential) and comprises a mix of rural land, minor housing, farming, wetlands, and conservation areas. In addition, much of the land is classified by the State Strategies for Policy and Spending as either Out of Play or Level 4, which are areas in which the state plans to provide no investment to improve critical infrastructure to support new development.

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Finally, approximately 12,800 acres are in permanent preservation through the State's Open Space and Agricultural Preservation programs, which further enhance the community's environmental and cultural resources. Sussex County Existing Land Use Map, Map 10, shows the area adjacent to the town as rural farmland with low-density housing. Finally, the town is concerned with the increasing growth occurring within the largest local jurisdiction, the City of Milford.

1.5. Overall Community Vision and Goals

As described previously in *Section 1.2, Public Participation, Resilient Community Partnership (RCP)*, the Town held several community outreach meetings to determine the overall vision and goals for the future of the Town of Slaughter Beach. As part of the RCP study, town residents were asked to complete a survey with the open-ended question: "What amenities, places, natural features, services, economic opportunities, and/or unique or cultural aspects make the community a special place to live in?" The survey results were collected by the DCP and then presented to Town Council members who developed a draft Community Vision Statement. Residents and stakeholders were invited to comment on the statement at the first public engagement workshop on June 3, 2016. Based on the survey and the workshop feedback, the following Community Vision Statement was formalized in an effort to guide current and future Town Councils whenever they are faced with decisions that affect the character of the Town.

VISION STATEMENT

"SAFEGUARDING OUR HERITAGE THROUGH CONSERVATION, EDUCATION AND THE SHARING OF OUR ABUNDANT NATURAL RESOURCES"

From its heyday in the early 1930s, Slaughter Beach was the summer resort destination for Milford area residents. Through the years, the town has transformed into what it is today: a small, quaint, quiet town along the Delaware Bay where residents enjoy a peaceful and relaxing way of life, living in harmony with the natural surroundings. One often feels a sense of calm when crossing over the drawbridge on Cedar Creek Road or the "crabbing" bridge on Slaughter Beach Road. "Part-timers" come to escape the "real world" for the weekend, week, or summer. "Full-timers" know a breeze off the marsh brings flies and mosquitoes - which means a day spent indoors or the use of plenty of DEET- but a breeze off the bay means a glorious day to be outside. Where horseshoe crabs were once considered a nuisance, the town now has been enrolled as a Horseshoe Crab Sanctuary with the Ecological Research and Development Group (ERDG). Slaughter Beach is a way of life and needs to be protected and preserved along with its habitat. The town's Comprehensive Land Use Plan reflects this vision.

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A. Findings

The Town Council of the Town of Slaughter Beach has found and determined that the town exists on a narrow thread of habitable land which is of limited suitability and incapable of supporting dense residential development or large commercial, or industrial uses; and that the town's unique character is, and has always been, a largely seasonal. residential community. Specifically, the Town Council has found and determined that:

The town lies within, and/or is surrounded by, ecologically sensitive areas and bodies of water, including:

- The Delaware Bay, Cedar Creek, and Slaughter Creek
- The Delaware Coastal Zone (7 Del.C. Chapter 70)
- Delaware Wetlands (7 Del.C. Chapter 66)
- Delaware Subaqueous Lands (7 Del.C. Chapter 61)
- Delaware Beaches (7 Del.C. Chapter 68)
- The Coastal Flood Plain (42 U.S.C. 04001 et seq.)
- Prime Hook National Wildlife Refuge
- Marvel Saltmarsh Preserve
- The Coastal Barrier Resources System (16 U.S.C. §3501 et seq.)

The town is not suited for dense residential development or large commercial/industrial use because those areas of the town, which are capable of development, are limited by:

- The absence of a central sanitary sewage collection and treatment system
- Soil characteristics and a water table which impose severe limitations on development
- The limited capability of the town's existing central water supply system to produce and distribute potable water of adequate pressure throughout the town or to provide water for fire protection purposes
- The limited capability of State Route 36 and County Road 224 to accommodate traffic of large volume or size, further aggravated by the drawbridge on State Route 36 which has a weight limit of 15 tons

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- The existence of the town in the 100-year flood plain, which imposes significant restrictions on the type and nature of permissible construction
- The high-water table and marshy wetlands, which hampers necessary storm- and surface-water disposal.

The overall character of the town, by nature and history, is that of a primarily seasonal, residential community or fishing village. Over 98% of the existing structures consist of single-family residential dwellings. There are only two active commercial entities in the town.

By virtue of being a beach community with substantial water frontage on the Delaware Bay, in close proximity to marina and boat storage facilities on Cedar Creek, and supported by the extensive commercial facilities in the nearby city of Milford, the most appropriate use of the developable land within the town is for single-family residential uses, with limited supporting small commercial and institutional uses.

B. Declaration of Intent

Based upon the foregoing findings, the Town Council hereby declares it to be the intent of this Comprehensive Land Use Plan to preserve the unique character and quality of life in the Town of Slaughter Beach with a view to the conservation of both the ecologically sensitive lands in and adjacent to it and the specific value of the town as a residential community.

Chapter 2. MUNICIPAL DEVELOPMENT STRATEGY

2.1 Local Government

By Charter, Slaughter Beach is governed by a five-member Council, including a Mayor, Vice Mayor, Secretary, and Treasurer who are appointed from among their own number. To run for or serve on Council, an individual must meet the minimum qualifications of being 21 years of age or older and have been a resident of the town or a property owner for a period of at least six consecutive months prior to election. Council terms are for a two-year period. Town elections are held the first Saturday in July. Two members of the Town Council are elected in odd years, and three members are elected in even years.

Town meetings are held the second Monday of each month at the Memorial Fire Company located at 357 Bay Avenue. Slaughter Beach has no Town Hall, but utilizes a space within the Memorial Fire Hall for its Town Office. The Town employs on a part-time basis, a Town Clerk, two part-time maintenance employees, and one part-time Certified Floodplain Manager who also serves as Zoning Enforcement. The Town has an agreement with Sussex County to oversee the Federal Emergency Management Agency's Flood Insurance Program and to perform all building inspections to determine compliance with applicable building codes.

2.2 Land Use Planning and Regulation Process

The Town of Slaughter Beach primarily consists of residential, commercial, and agricultural/conservation lands. The Town intends to consider future updates to its Zoning Code to encourage limited commercial and light industrial uses correlated with the Town's maritime characteristics and heritage.

The Town of Slaughter Beach consists of five (5) zoning classifications, Residential (R-1, R-2), Residential/Commercial (R/C), Commercial (C), Agriculture/Conservation (A/C) and Wharf (W). The residential areas are split into two different classifications. R-1 requires 50 feet of road frontage and R-2 requires at least 75 feet of road frontage. The overwhelming majority of lands fall within the Agriculture/Conservation District, with approximately 98% of the land mass located within town boundaries categorized as Agriculture/Conservation.

The Town has its own zoning code - height limits, setbacks etc. – but also falls under several other regulatory jurisdictions. DNREC, through the Beach Preservation Act, regulates construction activity on beach front and marsh side properties. Properties can also fall under Federal and State regulated

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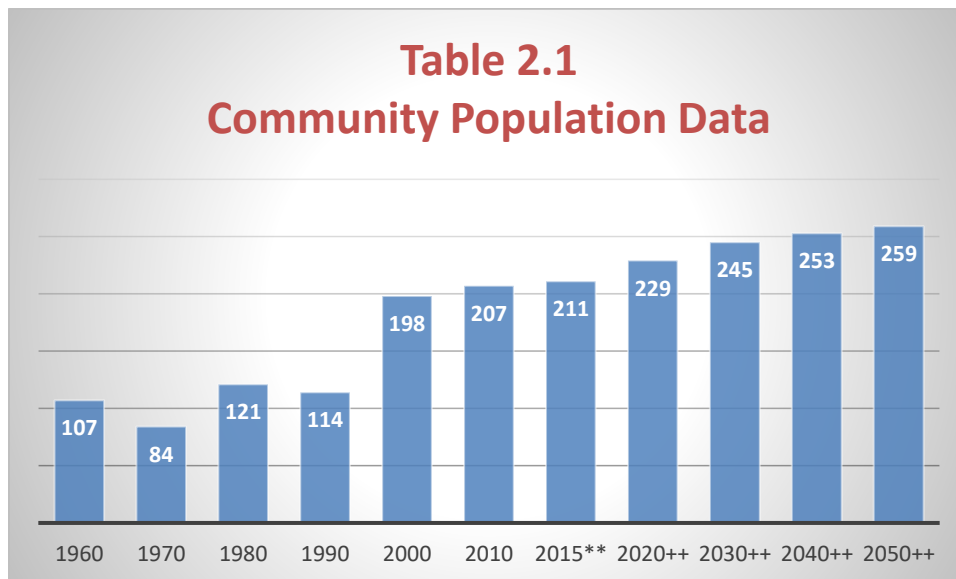
wetlands. The Town follows Sussex County building code and Sussex County also administers FEMA regulations.

A three-member Board of Adjustments hears and rules on variance claims. A five-member Planning and Zoning Commission plays an advisory role for the Town Council in matters of rezoning requests. The Town intends to consider future updates to its Zoning Code to encourage limited commercial and light industrial uses that are correlated to the Town's maritime characteristics and heritage.

2.3 Demographics, Future Population, and Housing Growth

Like any beach area, the population varies greatly with the calendar. Permanent, or full-time, housing structures number 103, and the 2010 U.S. Census records show a town population of 207. Thus, the year-round population occupies these residences at an average of about 2 persons per household. However, there are more than 260 residential structures within the town limits. Many of these "not-occupied year-round" structures are occupied during the spring, summer and fall seasons by part-time residents. Some of these part-time residents occupy their cottages for eight or nine months, while others spend some weekends during spring and fall and most of the summer. Other seasonal residents spend all, or part, of the three summer months at the beach. As of late, many of these seasonal homes are being converted into full-time year-round residences. Although the Census does not count the seasonal population, the Town estimates that the summer population swells to 400-700 people.

Table 2.1
Community Population Data



Source:

<https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

** 2015 5-year ACS data

++Projected from 2015 5-year ACS data

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The permanent, or full-time, population of Slaughter Beach showed no consistent increase or decrease prior to 1980. It decreased somewhat in the 1960s and early 1970s and increased again in the mid-1970s. The population hovered at around 100 people for most of these years. The population increased during the late 1970s to about 120 by 1980. By the end of the 1980s, the population was still in the 110 to 120 range (114 at the 1990 Census).

There are currently 132 undeveloped residential lots located within the Town. The building lots are located primarily within the Residential district, with a few located within the Wharf district (Wilkins subdivision). It is believed that approximately 90 of the undeveloped lots are located in marshlands and are therefore considered unbuildable due to either wetland restrictions and/or onsite septic regulations. Should central sewer become available, some of these lots would become buildable. However, unless and until a sewer line is constructed, there are only (plus or minus) 41 lots that would accommodate a residential structure. The Town does expect these lots to be developed as residential units in the future, but it is impossible to accurately predict when that might occur because of uncertain economic conditions and future modifications to the tax code that will not allow deductibility of interest payments for second homes.

The 2010 Census shows a population of 207 people. Since the last Comprehensive Land Use Plan was approved, a total of 18 houses have been built. Two (2) were existing houses that were demolished and rebuilt with the remaining being new construction. Two new houses are under construction now. The trend in the Town continues to be a part time community which is used year-round.

Table 2.2 Selected Data, 2010 Census

SUBJECT	NUMBER	PERCENT
Total population	207	100.0
DEMOGRAPHICS		
Male	105	50.72
Female	102	49.28
0 to 4 years	11	5.31
5 to 17 years	12	5.80
18 to 64 years	117	56.52
65 years and over	67	32.37

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SUBJECT	NUMBER	PERCENT
Median age (years)	57.7	(x)
21 years and over	178	86
62 years and over	83	40.1
67 years and over	57	27.5
White	194	93.72
Multi-Racial (American Indian or Alaska Native)	13	6.28
HOUSING OCCUPANCY		
Total housing units	253	100.0
Occupied housing units	108	42.7
Vacant housing units	145	57.3
For seasonal, recreational, or occasional use	126	49.8
HOUSING TENURE		
Occupied housing units	108	100.0
Owner-occupied units	93	86.1
Renter-occupied units	15	13.9
Total housing units	253	100.0
UNITS IN STRUCTURE		
1 unit, detached	236	94.0
1 unit, attached	2	0.8
2 units	9	3.6
Mobile home	4	1.6
Note: Numbers may not add to 100% due to rounding.		

Source: <http://www.census.gov/prod/cen2010/doc/dpsf.pdf>

Like most of Delaware, Slaughter Beach experienced a significant growth spurt during the decade 1990-2000, demonstrated by a comparison of the 1990 Census records showing a year-round population of 114, to the 2000 Census records showing a year-round population of 198 residents (a 74% increase). The growth rate during the end of the previous millennium was similar to other beach towns in Sussex County. However, a growth rate mirroring the 1990-2000 increase in the year-round population of Slaughter Beach would be practically impossible to repeat within the current town limits. As explained elsewhere in this plan, land to expand within the Slaughter Beach town limits is

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almost nonexistent, which could result in only slight increases in population numbers until the community build-out is reached.

Detailed 2010 Census data shows an aging group that has either lived in Slaughter Beach for many years or chose to retire here. The median age of permanent residents was 57.7 years, and 83 residents (40.1%) were over 62 years old. Of the total 253 housing units (both permanent and seasonal occupancy), 187 (75%) were built prior to 1970, and 218 (87%) were built prior to 1980. During the decade between 1990 and 2000, when the most significant permanent population growth occurred, only 33 units (13.2%) were built. Among the town's owner-occupied housing units, 33 units (44%) were reported as below \$150,000 in value, and another 24 units (for a total of 57, or 79% of total units) were reported as below \$200,000 in value. Because of the boom in housing prices in recent years, these reported home values may have been far surpassed as of this writing.

Two housing trends have been developing. Many part-time property owners are now using their property on a year-round part-time basis. Secondly, like other coast communities, the Town is recognizing an increase in properties being used as vacation rentals using such services as VRBO/Home Away or Airbnb. Presently there are 12 properties being advertised as such.

2.4 Provisions of Utilities, Community Facilities and Services, and Transportation

A. Utilities

Public Water

Until March 31, 2018, public water was provided to the Town by the Slaughter Beach Water Company, a locally owned provider exclusively serving the Town of Slaughter Beach. Public water is provided via four wells located within the community. There is sufficient capacity to provide services to existing residents.

The utility began operation in 1936 when the Town of Slaughter beach granted a water franchise to the Slaughter Beach Corporation. The Slaughter Beach Corporation ceased operation in 1942 with the remaining water system assets being purchased by George H. Draper, Jr. in 1944. Between 1944 and 1973 Mr. Draper operated the system as a sole proprietorship. In 1973, Mr. Draper sold the company to his son, Frank Draper, and the system was operated from that time until April 1, 2018 by Frank and Marilyn Draper, his wife. In March 2018, Mr. Draper entered into an agreement with Artesian Resources to purchase the Slaughter Beach Water Company. On April 1, 2018, Artesian began operating the utility. Artesian currently serves over 300,000 over the Delmarva peninsula.

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The System consists of two (2) parts, production and distribution. There are currently four (4) production facilities that consist of a well connected to a well house with a hydropneumatic tank. The Table shown below provides the known details of the production facilities. The current production facilities are not capable of providing fire protection without upgrades to both the wells production and the available storage. The Town understands that all production facilities were renovated within the last 10 years.

Production Facility Inventory

Parameter	Slaughter Beach Road Pump House	North Pump House	Mid Marsh Pump House Well Flow	South Pump House
System Number	DE0001618	DE0003618	DE0002618	DE0004618
Well Number	10712	49476/235982	242119	217343
Well Flow	?	100 GPM/25 GPM	50 GPM	50 GPM
Well Depth	190 ft	253 ft / ?	250 ft	300 ft
Connections	40	75	115	27

The distribution system extends the entire length of the Town, north to south, with two (2) inch through four (4) inch galvanized steel and PVC watermain. It is assumed that the PVC watermain are in good condition. The galvanized steel watermain, however, tend to corrode, clog, and leak due to contact with water. As that occurs, the galvanized steel mains will need to be replaced.

[Source: Slaughter Beach Water Utility Study – Preliminary Engineering Report, Davis, Bowen & Friedel, Inc., March 2018].

Wastewater Treatment Systems

Presently, there is no central sewage system within the Town. Individual property owners are responsible for the care and maintenance of individual on-site septic systems. At the time the Town submitted its previous Comprehensive Land Use Plan (CLUP) in December 2007, Eastern Sussex County was undergoing a major building boom. Residents were concerned that a centralized sewer line would encourage the development of surrounding agricultural lands and that higher density would adversely impact the wetlands that protect the Town from flood events. If a “Greenbelt” was created around the Town, then a centralized sewer system would be viewed more favorably by our residents.

Since the time of the Town’s Comprehensive Land Use Plan adoption/certification in 2008, neither the State nor the County has created a “Greenbelt” on either of the two roads leading into the Town. However, two centralized sewage projects were undertaken in Kent County that created the same effect as a greenbelt and are a model for the Town of Slaughter Beach. The two projects were the Kitts Hummock and Pickering Beach Sewer expansion. (Both communities are located on the Delaware Bay, north of Slaughter Beach.) In both cases, a sewage line was engineered in such a way that it would meet the needs of each community and would not allow for expansion/development

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of surrounding areas. Kent County Public works, with help from Delaware's Congressional Delegations, secured grants and loans to pay for the expansion.

Source: <http://www.coons.senate.gov/newsroom/releases/release/carper-coons-carney-announce-600000-federal-loan-and-grant-for-kent-county-sewer-system->

With these two projects in mind, the Town Council decided that further study of a centralized sewer line, engineered for capacity for the Town only, would benefit the residents and the Town applied for matching grants from both DNREC's Coastal Programs and the Financial Assistance Branch to determine the feasibility of bringing central sewer to Slaughter Beach. The Town also applied to the U.S. Department of Agriculture for a SEARCH grant to complete a Preliminary Engineering Report (PER) and an Environmental Report (ER). Both a PER and an ER are required for the Town to be considered for funding opportunities to construct a sewer line. Presently the Engineering firm of Davis, Bowen & Friedel, Inc. is conducting the Feasibility study, with completion expected in spring 2018.

At this writing, the Town's concerns regarding increased density have not been entirely alleviated, nor have our residents had an opportunity to vote in a referendum for (or against) a centralized sewer line. However, if the results of the feasibility study indicate that a centralized sewer line can be constructed without permanent harm to the wetlands and at an affordable cost to our residents, the Town should work with Sussex and/or Kent County to develop a centralized wastewater management solution.

Solid Waste Disposal and Recycling

The Town of Slaughter Beach has contracted with Republic Services to provide solid waste disposal and to provide recycling collection services and is in compliance with Delaware's Universal Recycling Law, §6053. The town does not currently have dealers who provide on-premise sales. Republic Services provides the following recycling services to single family and multi-family residences, on a every-other-week frequency:

- Single stream curbside recycling collection services, including delivery of an adequately sized container for recycling purposes;
- Source separated recycling collection services to single family and multi-family customers.

B. Community Facilities and Services

Fire and Emergency Medical Services

The Memorial Fire Department provides fire and ambulance services to Slaughter Beach and the surrounding area. Their mission is to provide fire protection, prevention services, emergency

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medical, and emergency disaster protection services to the citizens and visitors of Slaughter Beach, and the surrounding area of Sussex County. These services are accomplished through the use of emergency preparedness plans, fire prevention codes, public education, fire education, community partnerships and other specialized fire-fighting, medical and prevention mitigation response programming.

The Memorial Fire Company has operated on an all-volunteer basis for over 60 years. With two stations, including three buildings, the company has a fleet of six vehicles including two tankers, two fire trucks and two ambulances. In addition, the company has four support vehicles, two all-terrain vehicles, a 5-ton military truck, and two fire boats that provide assistance in area water rescue operations and a mobile command unit. The company department is a designated HAZMAT responder. The volunteers have responded to an average of 210 calls a year for the last two years. In order to meet the needs of the community, all members participate in regular training opportunities.

The fire company is primarily supported through contributions and limited governmental grants. Renting facilities to the community raises additional income for the company. Donations are used to support member training and education, insurance, equipment and building maintenance and the purchase of new equipment.

Police Protection

Due to the size of the community, and the lack of sufficient funds to support its own police agency, Slaughter Beach relies on Delaware State Police Troop 7 to provide police protection to the community. With the support of grant funds from Sussex County, the Town does contract with Delaware State Police to provide speed control services with the community throughout the year on a limited basis.

Hospitals and Emergency Services

Slaughter Beach is fortunate to be geographically located near three major medical centers located in Kent and Sussex County. Milford Memorial Hospital, an entity of Bayhealth Medical Center, is located 10 miles from Slaughter Beach. Milford Memorial Hospital offers a comprehensive array of services to the residents of Southern and Central Delaware, including diagnostic imaging, family-centered birth services, cancer care, rehabilitation services, inpatient and outpatient medical and surgical care, and a 24-hour emergency department. In 2019, Bayhealth Milford will open an innovative new health campus in southern Delaware to serve the growing needs of the community. The new hospital and outpatient center is designed with the vision of comprehensive healthcare.

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Beebe Medical Center is located only 22 miles from the Town and offers an array of inpatient, outpatient, emergency, and diagnostic services. The medical center located in Lewes is a 210-licensed-bed hospital and includes specialized service areas including cardiovascular, oncology, women's health, and orthopedics.

Kent General Hospital, a part of the Bay Health Medical Centers, is located in Dover, DE. Kent General's Emergency Department (ED) is a Level III Trauma Center with a 24-hour trauma team and emergency room. Kent's ED serves 40,000 patients per year. It has 21 beds, with four fast track beds, a four-bed trauma/resuscitation bay and five other monitored beds.

All three Medical Centers provide emergency services 24 hours a day. Their board-certified emergency physicians and specially trained nurses are prepared to handle the most serious medical crises. Helicopters and ambulances bring trauma cases to the hospitals from throughout the region. Specialists may be called at any time for emergency surgery, to evaluate complicated cases, or to admit patients requiring inpatient care.

Education

The Town of Slaughter Beach is located within the Milford Public School District. The district consists of Morris Early Childhood Center, Benjamin Banneker Elementary School, Lulu M. Ross Elementary School, Mispillion Elementary School, Milford Central Academy and Milford High School.

Recreation

Slaughter Beach is a public beach. There is a park for local residents with a tennis court and children's recreation equipment that is often used by the general public. There is a public pavilion which can be used from dawn to dusk. There are public rest rooms that are currently maintained by the Town from March through November that are in need of improvement.

Slaughter Beach is widely known as a Horseshoe Crab Sanctuary. People come from around the world to observe, tag, and count the horseshoe crab population. This information is given to the U.S. Fish and Wildlife service and the U.S. Geological Survey and is used to develop laws and set limits on the amount of horseshoe crabs that can be harvested for commercial purposes. The beach is used as a place to go kayaking, sailing, and fishing. Surf fishing is popular as various species of fish migrate past the beach.

Open Spaces

Within the town boundaries lies a wonderful nature preserve called The Marvel Saltmarsh Preserve, a large natural area with streams and wildlife of many kinds. The Delaware Nature Society administers the Marvel Tract. There is also the Prime Hook Nature Preserve and the State of

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Delaware Fish and Wildlife Milford Neck Preserve. In total, there are over 12,800 acres of preserved lands in or adjoining the Town of Slaughter Beach.

Public Access and Public Beaches

Approximately three miles of Delaware Bay beachfront is unguarded but is open to the public. Use of the beach is at the user's discretion and risk. The primary public access point to the beach is located at the Fire House located centrally within the town. A free public parking lot is provided for visitor use. Maintained by the Fire Company, no overnight parking is permitted. In addition to this location several public streets also provide access to the beach to the general public.

The beach itself stretches for several miles. Given the nature of the above-and-below-water topography, it has been used safely by the limited number of people that currently use it.

C. Transportation

Roads

There are two roads that provide access to the town of Slaughter Beach. One is Route 36 (Cedar Beach Road), which connects Milford to the north end of Bay Avenue. The other access route is Slaughter Beach Road, which connects to the midpoint of Bay Avenue near the firehouse. Both of these roads have dirt shoulders or no shoulders at all, with blind curves when crops are planted. The main road through town is Bay Avenue, a narrow street running from north to south. Bay Avenue handles significant pedestrian traffic, as well as bicycles, roller blades, and other modes of traffic. Bay Avenue is maintained by the state. Bay Avenue was recently striped by DelDOT, and DelDOT also striped two to three-foot shoulders on the road.

There are a number of unpaved roads that connect Bay Avenue to beach access points and roads that serve the direct access. The Town provides minor repairs and improvements, as necessary, to the connecting beach roads on a contract basis. The Town has also assumed responsibility for the roads in the Passwater subdivision, located at the far northern section of town. Finally, there are several additional roads that are privately maintained.

Increased Traffic Impacting Roads

Slaughter Beach is enjoying increased popularity as a tourist destination as evidenced in the rise of short-term and long-term summer vacation rental business. This is further supported by the uptick in automobile, bicycle, and pedestrian traffic.

Although there are few roads, the Town wishes to make a concerted effort to establish itself as a destination stop on the Delaware Bayshore Byway. There are many offerings that will attract travelers to the Bayshore Byway (Bay Avenue) in Slaughter Beach. Tourists can stop and visit area

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attractions that include: The DuPont Nature Center: The Slaughter Beach Osprey Nesting Platform; Horseshoe Crab spawning; Migratory bird visits; Local birds in their natural habitat; pristine beaches; Dolphin watching, sea glass gathering; sailing; kayaking; crabbing and fishing. Any one of these offers a compelling reason to stop for an extended visit rather than just passing through.

The principal mode of transportation within the town remains the automobile. As vehicular traffic increases, pedestrian and bicycle traffic also increases. The increased use of the Delaware Bayshore Byway exacerbates the safety hazard created by lack of consistent usable shoulders. The absence of shoulders creates a potential safety hazard putting pedestrians, bicyclists, and vehicles at greater risk.

Commercial fishing and recreational boaters use Cedar Creek to gain access the Delaware Bay. This water traffic bisects Route 36 and requires a drawbridge to part the road so that boaters might cross and enter the bay. Commercial fishing is done outside of town limits in the bay. Recreational surf fishing is within town limits. Other Slaughter Beach property owners keep their power boats at the dry stack marina and use the public launch for the most part. Sailboat owners launch from the shore. No data has been collected to determine if an improved navigation channel would encourage more recreational boaters to use motor boats on the bay. The current state of our jetty will be discussed in a section of this document dedicated to the jetty and its implications.

DeIDOT continues to spray on the roadway right of way to eradicate phragmites, an invasive reed that is a primary cause of concern about wildfires. The Town is working with the State Agriculture Department to limit the growth of phragmites. This effort is discussed in greater detail in the subsection entitled “Wildfires”.

Pedestrians and Bicycles

Although pedestrian and bicycle traffic has been light in previous years, we now see a clear increase in bicycle traffic and more and more residents have taken up some form of walking as part of their fitness regimen. There is serious concern about people exceeding the posted speed limit in an area where there are small children who live on unfenced properties abutting the road. The town currently has one solar powered speed limit feedback sign. The placement of this traffic calming device changes on a regular basis. National data indicates these traffic calming devices are particularly effective in slowing down super speeders (20 mph over posted speed limit). The town may benefit from additional traffic feedback signs. This should be considered as resources and funding become available.

The planned Marvel Saltmarsh Preserve Boardwalk construction will have signage directing visitors to it. The town can expect increased pedestrian traffic after construction is completed in 2018. The planned pedestrian and safety crossings will help manage pedestrian traffic at this site.

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Slaughter Beach is a very pleasant place to ride a bicycle given its flat terrain and scenic views. It is a quiet place where one can observe the birds, foxes, and the flora while getting healthy exercise. The town offers a public bathroom and pavilion. These are accessible via an ADA compliant ramp.

Traffic is often heavy on weekends during the summer and during fishing and hunting seasons, further increasing safety concerns on the narrow roads within the community. This raises the need for dedicated bicycle and walking paths. The challenge is the current placement of utility lines relative to the edge of the road. Filed measurements of a sampling 57 utility poles revealed that placement ranges from within 14.5 inches to 165 inches from utility pole to the edge of the asphalt road. One alternative to dedicated bike and pedestrian lanes might be a sharrow, which is a marking on the road indicating it is being shared with bicyclists. While these sharrows may increase awareness of bicyclists, they offer bicyclists no real protection. Further, homeowners in the oldest section of town constructed garages and fences before setbacks and right of ways were institutionalized. The roadway is considerably narrower in this section.

Drawbridge

Route 36 (Cedar Beach Road) crosses a drawbridge as it enters the town. The creek that it passes over is an active commercial waterway. Fishing boats, trawlers, and other vessels request opening of the bridge with a horn signal. Occasionally, maintenance work must be done. At these times, the bridge may be open (not usable by highway traffic) for hours or days making emergency access and evacuation difficult to local residents and responders.

Flooding of Roadways

Bay Avenue is elevated a minimum of six inches above some of the bayside properties. On the north side of town, that elevation can be as much as 18" above adjoining properties. This can cause flooding to front yards and driveway egress after heavy rains. At times, Bay Avenue itself is flooded, leading to hazardous driving conditions. The two approach roads leading to Slaughter Beach also flood if there is a combination of high tides and heavy rain. While this does not happen often, one must be prepared to be either "marooned" at the beach or cut-off from one's residence for several hours or even several days. This is an especially worrisome issue for younger and elderly residents. School busses are unable to make their scheduled rounds to deliver children to/from schools and parents must make arrangements to either have their children stay with responsible adults who live off the beach or allow their children to miss critical school days. The elderly may not have had an opportunity to shop for groceries and/or medicines and caregivers do not have access to the town to check on their charges.

2.5 Community Character, Design and Redevelopment

A. Community Character and Design

Slaughter Beach is a tiny beach town with almost exclusively residential properties. The community character should not change in the future, primarily because of the limited availability of land for

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development. We plan to maintain the Town's long-standing character as a small residential community and a summer retreat. Many of the houses are small, old beach cottages. The more recently built or renovated houses are larger and crowd the limits of the small-sized lots. With the shopping and support services available in surrounding towns, the community feels there is neither a need nor a desire to expand the town outside the existing boundaries. Further, the Town has natural borders that limit expansion. The Town is bordered to the east by the Delaware Bay, to the South by the Prime Hook National Wildlife Refuge (PHNWR), to the west by PHNWR, Milford Neck Conservation area and the Marvel Saltmarsh Preserve, and to the north by the Mispillion River.

B. Critical Community Development / Redevelopment Issues

At present there are no critical community development issues. The Town is at approximately a 90% build-out stage. The vast majority of vacant lots are located on the marsh side of town, north of Slaughter Beach Road, and in the Passwater subdivision located at the extreme north end. Many of the marsh-side lots are potentially unbuildable due to wetland regulations. There has been limited building activity on these lands. Large tracts of land located within the town are in the A/C zoning district and include regulated wetlands.

Slaughter Beach does not have traditional development opportunities. The potential for redevelopment within the existing town limits is severely restricted due to the lack of buildable land. There are very few existing lots on which new structures could be built. The opportunity for redevelopment, therefore, is primarily limited to the replacement of existing houses with new structures. If the recent real estate market trends continue, most, if not all, new structures will be substantially larger residences. The Town has set a series of restrictions to limit the size of new homes through height, size, set-back, and floor area ratio standards and these standards were reviewed when zoning regulations were revised in 2015.

2.6 Natural Resources, Features, and Habitat

Like other Coastal towns, the Town of Slaughter Beach readies itself for the onslaught of "tourist" season. Unlike other "tourists" in the resort region, they don't cause traffic jams, they don't drive the town economy, and they don't come looking for shopping outlets or a boardwalk. These visitors are from the animal world.

The horseshoe crabs come for spawning areas, diamondback terrapins come for nesting areas, and migratory shore birds stop by to "fatten" up on their way further north. As Fall approaches, once

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again a new set of tourists flock to our area. This time, it's Canada and Snow Geese and other migratory birds plus a variety of other species that come to the marshes to winter over.

In 2005, the Town Council voted unanimously to be designated as a Horseshoe Crab Sanctuary with overwhelming support from the residents.

In May of 2015, the Town was designated as a Certified Wildlife Habitat Community through a National Wildlife Federation program. The town became the 3rd community recognized as such in the State and one of 90 in the nation.

A. Shore Birds

During May and early June, the shores of Delaware Bay resonate with the cheerful chattering of more than 20 species of migratory shorebirds. The Delaware Bay provides an ecologically important stepping-stone for the birds' spring pilgrimage to Arctic nesting grounds. The Delaware Bay is the largest spring staging area for shorebirds in eastern North America. A staging site is an area with plentiful food where migrating birds gather to replenish themselves before continuing their journey. Staging sites serve as a link in a chain connecting wintering areas with breeding grounds, sites for which there are no alternatives.

Shorebirds begin to arrive in early May. The numbers of birds soar upward during mid-month and usually peak between May 18th and 24th (and in some years as late as May 28th). They have traveled from the coasts of Brazil, Patagonia, and Tierra del Fuego, from desert beaches of Chile and Peru, and from mud flats in Suriname, Venezuela, and the Guianas. After several days of non-stop flight, and having come as far as 10,000 miles, they reach the bay beaches depleted of their energy reserves. Luckily, nature provides an abundant food supply in this area at just this time of year; the eggs of hundreds of thousands of horseshoe crabs that have migrated to Delaware Bay beaches to spawn.

The shorebirds spend two to three weeks gorging primarily on fresh horseshoe crab eggs, although worms and small bivalves are also plentiful. High in protein and fat, the eggs are an energy-rich source of food. This high-calorie diet enables the birds to nearly double or triple their body weight before continuing to Arctic nesting areas.



Each spring, scientists from the Delaware and New Jersey Divisions of Fish and Wildlife conduct weekly aerial surveys of migratory shorebirds on Delaware Bay beaches. In May 2001, scientists

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observed more than 775,000 shorebirds along beach habitat. Ninety-five percent of these birds were represented by four species: red knots, ruddy turnstones, semipalmated sandpipers, and dunlins. Migratory shorebirds are also known to utilize marshes and back-bay habitats. Thus, throughout their spring migration, the actual number of shorebirds using Delaware Bay as a staging ground may surpass one million. The recent decline in the horseshoe crab population appears to correlate with a decline in migrating shorebird populations.

B. Horseshoe Crabs

General Information

Horseshoe crabs (Limulidae) are currently represented by four extant species including *Limulus polyphemus*, which is found along the eastern coast of North and Central America, and three Indo-Pacific species, *Tachypleus tridentatus*, *T. gigas*, and *Carcinoscorpius rotundicauda*. Horseshoe crabs in their present form have persisted for more than 200 million years. All four species are similar in terms of ecology, morphology, and serology. While adult horseshoe crabs have been found as far as 35 miles offshore, 74 percent of the horseshoe crabs live in water shallower than 20 meters.

Horseshoe Crab Spawning Habitat

The range of the Atlantic Horseshoe Crab is from northern Maine to the Yucatan Peninsula but are most abundant between Virginia and New Jersey. However, the Delaware Bay hosts the densest concentration of spawning activity anywhere in the world. Not only is this significant to the survival of the horseshoe crab, but it is equally important to the other species that have come to depend on the eggs of the horseshoe crab for their survival, most notably the migration of shorebirds. Horseshoe crab spawning season varies according to latitude, but it generally peaks in May and June, with peak spawning occurring on evening high tides during the full and new moons.



The mechanism by which horseshoe crabs locate preferred spawning habitat is not completely understood. While horseshoe crabs spawn in greater numbers and with greater fecundity along sandy beaches, horseshoe crabs tolerate a wide range of physical and chemical environmental conditions, and they will spawn in less suitable habitats if ideal conditions are not encountered. Therefore, the presence of large numbers of horseshoe crabs on a beach is not necessarily an indicator of habitat suitability.

Essential habitat is defined as those waters and substrates necessary for horseshoe crab spawning, breeding, feeding, and growth to maturity. Horseshoe crabs use different habitats at different life stages. For example, protected beaches provide essential habitat for horseshoe crab spawning

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efforts, while near shore shallow waters are essential nursery habitat. Spawning adults prefer sandy beach areas within bays and coves that are protected from wave energy with an abundance of food for juveniles. Beach habitat also must include porous, well-oxygenated sediments to provide a suitable environment for egg survival and development.

Beach slope is thought to play an important role in determining the suitability of beaches for horseshoe crab spawning. Horseshoe crabs generally travel down slope after spawning and appear to become disoriented on flat areas. Erosion is also an important component in spawning success. Erosion of the substrate in which eggs are deposited would increase egg and larval mortality. Research has shown beach replenishment can play a significant role in creating improved spawning areas for horseshoe crabs.

Mortality

Human activity probably accounts for the greatest proportion of adult horseshoe crab mortality. Between the 1850s and the 1950s millions of horseshoe crabs were harvested annually for fertilizer and livestock feed. More recently, horseshoe crabs have been taken in substantial numbers to provide bait for other fisheries, including (primarily) the American eel and conch (*Busycon carica* and *B. canaliculatum*) fisheries. Horseshoe crabs are also collected by the biomedical industry to support production of *Limulus* Amebocyte Lysate (LAL); an extract of the horseshoe crab's blood is used by the pharmaceutical and medical device industries to ensure that their products, e.g., intravenous drugs, vaccines, and medical devices, are free of bacterial contamination.

Community-based Conservation Measures

Although Delaware's State and Federal lands are protected horseshoe crab spawning areas, the vast majority of the world's most productive horseshoe crab spawning habitat span the beaches of communities such as Slaughter Beach. Therefore, to insure the continued success of the annual horseshoe crab spawning ritual that occurs along the shores of Slaughter Beach, the community has enacted numerous conservation measures, most notably:

- The declaration that the community of Slaughter Beach is a Horseshoe Crab Sanctuary.
- Community efforts to minimize disruptive human disturbance during peak spawning cycles.
- An active dune grass planting program, that includes designated pathways to prevent and/ or mitigate dune destruction.
- Maintaining suitable spawning habitat i.e., define areas in need of beach restoration in partnership with DNREC.

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- In partnership with the Army Corp of Engineers and DNREC, work to develop and implement the restoration of the Mispillion River jetty, to insure a safe flow of marine traffic as well as mitigate the destructive accumulation of detritus along the south side of the Jetty, which results in the mortality of large numbers of horseshoe crabs annually.
- Participation in the annual Atlantic States Marine Fisheries Commission (ASMFC) and U.S. Geological Service horseshoe crab spawning survey.
- Participation in ERDG's "Just flip 'em!" program to mitigate horseshoe crab spawning mortality due to stranding.
- Maintaining an active education program geared towards informing new residents, as well as visitors, on the importance of this remarkable animal and its importance to the bay's ecology.

C. Diamondback Terrapins

Each spring another natural phenomenon occurs at Slaughter Beach. Diamondback Terrapin hatchlings emerge from the sand, after wintering over, on their long journey to the safety of the marsh. In the summer, a reverse journey occurs when female Diamondbacks emerge from the marsh looking for sandy nesting spots on the beach side of the road.

The Northern Diamond-backed Terrapin (*Malaclemys terrapin terrapin*) is a highly aquatic turtle that is common along the beaches and salt marshes in the vicinity of Slaughter Beach. Its overall range extends from Cape Cod to Cape Hatteras, and in Delaware it is found all along the coast of the Delaware Bay and River south of Delaware City.

This medium-sized turtle is highly variable in coloration. It is usually characterized by concentric markings and prominent grooves on the scutes (large, platelike scales) of the carapace (upper shell), although the grooves may be worn smooth in older individuals. The skin of the head, neck, and limbs is typically light gray with black markings of irregular blotches, wavy lines, spots, or flecks, and the upper and lower "lips" are light yellowish. Adult females are much larger than the adult males, averaging 6 to 9 inches in carapace length compared to just 4 to 5 ½ inches for the males.

The Northern Diamond-backed Terrapin is unusual because it is one of the few kinds of turtles in the world that dwells exclusively in brackish water habitats, such as salt marshes, tidal creeks and rivers, bays, and sounds. Except for sea turtles, it is the only kind of turtle in the eastern United States to possess a nasal salt gland, used for the excretion of excess salts.

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This turtle is almost entirely carnivorous, feeding on a variety of estuarine invertebrates, including fiddler and hermit crabs and also mud snails, periwinkles, mussels, clams, and other small mollusks. It also eats horseshoe crab eggs that are washed off the beach by the tide. Like other turtles, the Northern Diamond-backed Terrapin does not have teeth but instead has a sharp, horny beak used for cutting and crushing.

Northern Diamond-backed Terrapins are active from early spring to late fall. During the colder months of the year, they hibernate either on the bottom under water or buried in the mud of estuaries.

Large groups of Northern Diamond-backed Terrapins can be observed in May and June swimming just off the sandy beaches of the Delaware Bay (including Slaughter Beach). They are also often seen basking on the mud flats at low tide, sometimes on the backs of the horseshoe crabs that are abundant along bay beaches every spring.

Like all other turtles, the eggs are laid on land. From early June to mid-July, females make their way up onto sandy beaches, artificial dikes, and sand dunes in search of nesting sites, often using the



same sites year after year. Favored egg-laying sites along the Delaware coast are often sandy beaches along estuaries that are isolated from uplands by salt marshes. The sides of raised roadbeds through salt marshes are also commonly used. Slaughter Beach offers the Diamond-backed Terrapin an ample supply of suitable nesting sites within the town limits.

After finding a suitable nesting site, the female turtle uses her hind legs to dig a cavity in the sand just beyond the reach of high tide. She then lays between 4 and 18 pinkish white, leathery eggs in the cavity, covering them with sand when finished. The eggs hatch between August and October, although some hatchlings spend the winter in the nest and emerge the following spring. The turtles reach sexual maturity in about 3 to 6 years. Their lifespan is unknown, although it is estimated to be 20 to 40 years.

Terrapin eggs and hatchlings are eaten by both terrestrial and marine predators, including raccoons, foxes, gulls, crows, and ghost crabs. Many nests are raided by raccoons, usually resulting in total destruction of the nest.

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From the late 1800s to the 1930s, the Northern Diamond-backed Terrapin was highly sought after as the main ingredient in terrapin stew, a once popular gourmet dish. The demand for fresh turtle meat led to overharvesting, thereby severely reducing populations all along the mid-Atlantic coast. Luckily, this food fad disappeared, and the species made a dramatic comeback. Populations now appear to be stable in Delaware, although recent increases in the demand for terrapins as a food item may again threaten populations. Other threats to this turtle by humans include destruction of nesting habitat, drowning of terrapins inadvertently caught in crab traps, and killing of females and juveniles on roadways. Large numbers of females are killed each year as they move across roads to reach favored nesting sites, especially along barrier beaches.

D. Other Vital Flora and Fauna

The community of Slaughter Beach recognizes the importance of the natural environment of the beach and surrounding areas as habitat for other vital species, such as Diamondback Terrapins, migratory waterfowl, and native plants. The Town wishes to preserve and improve this habitat and protect these species by partnering with a variety of state, county, local and nonprofit entities to achieve a sustainable local ecosystem.

Geology

The Slaughter Beach CLUP (Comprehensive Land Use Plan) study area is situated in the Coastal Plain province and is comprised of Shoreline Deposits, Marsh and Swamp Deposits, Carolina Bay Deposits, the Scotts Corners Formation, and the Lynch Heights Formation. The land surface topography and morphology of the Slaughter Beach CLUP study area reflect both processes active during deposition of the surficial geologic units and those that have occurred since deposition.

The Columbia Formation covers most of northern and central Delaware and represents deposition following early Pleistocene glaciations in the northeastern Appalachians. Following the deposition of the Columbia Formation, sea level fell with renewed glaciations, and streams such as the Delaware River and its tributaries became deeply incised. During successive rises of sea level, erosion of the Columbia Formation occurred marginal to the valley of the Delaware River and its tributaries. The sediments of the Columbia Formation were reworked into bays, beach, marsh, and swamp deposits marginal to and within an ancestral Delaware Bay.

The historical shoreline of the Delaware Bay is marked by a change in slope (scarp) between 15 and 30 feet above sea level and four to six miles inland and roughly parallel to the present Delaware Bay. The scarp was produced by erosion of the land along the shoreline of the ancient bay that resulted in a subdued wave-cut feature. An example of a prehistoric shoreline is located along Route 36 from

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Milford towards Slaughter Beach, in a fairly flat, straight stretch of road that abruptly drops approximately 10 feet in elevation.

The cycle of erosion and deposition related to sea level fluctuations has occurred several times since the deposition of the Columbia Formation. The oldest deposits of this type occurred approximately 250,000 years ago and are preserved in the Lynch Heights Formation. The Scotts Corners Formation represents a more recent time of sedimentation, occurring approximately 90,000 to 120,000 years ago. At some point after the deposition of the Scotts Corners Formation, the Carolina Bays were formed and their associated sediments laid down. The most recent deposition began in the Slaughter Beach CLUP study area about 12,000 years ago and is continuing at present with modern swamp, marsh, beach, and bay deposits.

Floodplains

Located on the Delaware Bay, it comes as no surprise that the entire town is located in a flood zone. Bayfront properties are in the VE zone; a flood insurance rate zone that corresponds to areas within the 1-percent annual chance coastal floodplain that have additional hazards associated with storm waves. Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply. The remainder of the town is located in an AE zone; defined as Zone AE and AI-A30. These flood insurance rate zones correspond to a 1-percent annual chance of a flood. In most instances, Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply. The Federal Emergency Management Agency (FEMA) is the government agency responsible for regulating flood-prone areas. The Town adopted a flood plain ordinance that was approved by FEMA so that property owners could participate in its Flood Insurance Program. In 2004, the Town adopted a new floodplain ordinance that is now administered by Sussex County. The floodplain ordinances were updated again on January 19, 2015, and one foot of freeboard above base flood elevation was added.

Wetlands

Wetlands in their natural state provide a wealth of value to society. These benefits can be divided into three basic categories: (1) fish and wildlife values, (2) environmental quality values, and (3) socio-economic values.

Fish and Wildlife Values

Both inland and coastal wetlands are essential to maintaining important fish populations. Estuarine wetlands are important producers of shrimp, crabs, oysters and clams for human consumption.

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Estuarine aquatic beds, in general, also provide important cover for juvenile fishes and other estuarine organisms.



According to state fisheries biologists, about 98% of Delaware's commercially important fishes are wetland-dependent. Nearly all freshwater fishes can be considered wetland-dependent because: (1) many species feed in wetlands or upon wetlands-produced food, (2) many fishes use wetlands as nursery grounds and (3) almost all important recreational fishes spawn in the aquatic portions of wetlands. Important freshwater fishes in Delaware include large-mouth bass, white and black crappies, yellow perch, bluegill, pumpkinseed, brown bullhead and chain bluegill.

In addition to providing year-round habitats for resident birds, wetlands are especially important as breeding grounds, overwintering areas and feeding grounds for Atlantic Flyway migratory waterfowl and numerous other birds. Both coastal and inland wetlands serve these valuable functions.

Delaware's wetlands also provide essential habitats for other types of wildlife such as muskrats, beaver, otter, mink, raccoons, skunks, weasels, marsh and swamp rabbits, turtles, and many reptiles and amphibians.

Environmental Quality Values

Wetlands help maintain good water quality and improve degraded waters in several ways: (1) nutrient removal or retention, (2) processing chemical and organic wastes, and (3) reducing the sediment load of water. Wetlands are particularly good water filters because of their location between land and water. Thus, they can both intercept runoff from land before it reaches the water and help filter nutrients, wastes, and sediment from flooding waters. Clean waters are important to people as well as to fish and wildlife.

Socio-Economic Values



The more tangible benefits of wetlands to mankind may be considered socio-economic values. They include: flood and storm damage protection, erosion control, water supply and ground-water recharge, harvest of natural products, livestock grazing and recreation. Because these values provide either dollar savings or financial profit, they are more easily understood and appreciated by most people. The University of Delaware, Water

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Resources Center, completed a study of the Socioeconomic Value of Delaware Wetlands, April 2018, which quantified the economic value of wetlands in Delaware. The report's findings indicate that wetlands, marshes and bogs provide significant economic value, ranging from \$1 billion to \$3 billion annually, and support 25,000 jobs with \$568 million in wages in the state of Delaware and surrounding regions. This report can be located at <http://www.wrc.udel.edu/research/socioeconomic-value-of-delaware-wetlands-draft-report-2018>.

The wetlands information for Slaughter Beach is part of the statewide wetlands mapping effort conducted jointly by the Delaware Department of Natural Resources & Environmental Control and the Delaware Department of Transportation.

The wetlands are classified according to the nationally recognized Cowardin et.al., Classification of Wetlands and Deepwater Habitats of the United States.

Slaughter Beach, like most of the state of Delaware, falls within the nearly level Atlantic Coastal Plain. The upland portion of Slaughter Beach consists of a narrow strip of land between the Delaware Bay and a large wetland ecosystem to the east. Ocean-driven tides are the dominant hydrologic feature of the wetlands of Slaughter Beach. The majority of wetlands, therefore, are classified as estuarine. The estuarine system consists of tidal brackish waters and contiguous wetlands where the bay water is at least occasionally diluted by freshwater runoff from the land. Emergent vegetation (grasses) is the dominant plant life within the wetlands of Slaughter Beach, with smooth cordgrass (*Spartina alterniflora*), salt hay grass (*Spartina pacens*), and common reed (*Phragmites australis*) dominating.

The wetlands to the west of Slaughter Beach continue to be dominated by the tidal influences from the Delaware Bay via Cedar Creek and the Mispillion River. The upper reaches of these two tidal streams and their tributaries contain freshwater forested, shrub, and emergent wetlands.

Riparian Wetlands

The Town of Slaughter Beach boundaries contain two riparian areas: Slaughter Creek to the west and Cedar Creek to the north. Conservation areas flank the vast majority of the riparian areas within the town boundaries. Within the town limits, a small portion of the Cedar Creek is not protected by conservation areas and has both existing commercial and residential uses. These areas have "No Wake" zones.

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Forested Wetland Areas



Although there are no forested areas within the town limits, the forested areas surrounding Slaughter Beach are very important to our habitat. They provide nesting areas for the Delmarva fox squirrel, eagles, herons, and more. They also provide cover and resting areas for migratory shorebirds and eagles.

Ground Water Recharge

According to DNREC mapping projects, there are no excellent ground-water recharge areas within the municipal boundaries of Slaughter Beach. There are several, however, in the general "study area" in the vicinity of Slaughter Beach that have been outlined on Map# 4.

2.7 Historic Adjacent Areas, Natural Features and Resources

A. Bayshore Initiative

The Delaware Bayshore Initiative is a landscape-scale conservation program that focuses on three principal goals: 1) Improving habitat conservation and restoration; 2) Promoting conservation-compatible recreation; and 3) Supporting stronger Bayshore communities. The Bayshore Initiative region includes an area of nearly 220,000 acres along the Delaware River and Bay from the City of New Castle to the City of Lewes, and west to Routes 13 and 1. More than 50% of the Bayshore area is protected by state or federal agencies, conservation partners, or other land conservation programs. The vision of the Initiative is to leave for future generations a healthy, rural Bayshore landscape that supports a variety of habitats and an abundance of wild plants and animals – even in the face of climate change and sea level rise.

Coordinated by the Delaware Division of Fish and Wildlife, the Bayshore Initiative is focusing on opportunities for voluntary land protection, habitat restoration, recreation enhancements, and tourism promotion while working with Bayshore towns, communities and residents to identify ideas, issues and concerns. The Bayshore Initiative operates under the fundamental consideration of current and future risks of flooding and sea level rise, and ways to increase the resiliency of habitat and communities, and protect recreational opportunities for the benefit of all. The Bayshore Initiative is helping to develop a network of public lands where people today and in the future can visit and have excellent quality outdoor experiences through hunting, fishing, boating, birding, kayaking, hiking or simply enjoying a peaceful scenic view. The Initiative is working with Bayshore communities to foster and spread support for conservation actions that will provide a better quality

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of life for residents and communities statewide and an improved economy boosted by the addition of jobs and income associated with a healthy environment and outdoor recreation opportunities.

The Delaware Bayshore Initiative has been engaged with the Town of Slaughter Beach from the beginning when the Initiative was launched in Slaughter Beach in 2012. North of town at the mouth of the Mispillion Inlet, the Division of Fish and Wildlife owns and operates the Cedar Creek Public Boat Launch and the DuPont Nature Center. These facilities, amenities and public access areas draw regional (and even international) public visitation to the town. Within town lies the Delaware Nature Society's Marvel Conservation Tract. The Bayshore Initiative is working with the Nature Society and the town to conceive of ways to increase and improve access for education programs that will build upon the town's appeal as a community that embraces nature and Bayshore education efforts. Enhanced access to marsh habitat, for example, offers myriad opportunities for interactive learning for the public and especially for school children. The Initiative is also working with the town to highlight the Slaughter Beach area as one of the premier places to visit to observe the world-renowned spectacle of spawning horseshoe crabs and migrating shorebirds, including the Red Knot. In addition, the Initiative is coordinating with the town to design and install an interpretive sign that highlights migratory shorebirds and other information about the town's habitat and wildlife.

The Town looks forward to continuing its support of the Bayshore Initiative. The Town recognizes the importance's of preserving and protecting the Bayshore region, including Slaughter Beach and the surrounding area. At the same time, through a partnership with DNREC, the Town will continue to support efforts to educate the public about the educational opportunities, recreational opportunities, and the environmental significances of the area including its habitat, wetlands, etc.

B. Mispillion Lighthouse

First established in 1831 the construction of the Mispillion Lighthouse was authorized to Winslow



Lewis for a sum of \$1,500. In 1859 the light was discontinued, taken down and sold to a local resident who moved it and reconstructed the building as a private home in nearby Lewes.

Complaints by Mariners led Congress to authorize construction of a new lighthouse on Slaughter Beach, and on June 15, 1873, Mispillion Light was a beacon to mariners. Two years later, an expansion raised the tower to 65-feet and a Sixth Order Fresnel Lens was installed.

By 1911, the light was automated and a full-time keeper was deemed unnecessary. A local man was paid \$60 a year to live in the

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house rent-free to ward off vandals, but in 1929, the sentinel was deactivated and the watchman was moved out. A skeletal tower, built in 1924, was moved from Cape Henlopen to serve as the Slaughter Beach beacon. Once the house's resident was removed, Mispillion Light began falling into disrepair, and in 1932, the lighthouse was sold at public auction.

The history of the Mispillion Lighthouse is sketchy over the next 50 years; and it received only brief attention in 1984 when the skeletal tower was deactivated. Thus, more than 70 years of neglect and erosion took its toll until a small group of concerned citizens decided to retake Mispillion Light in 2001. This was the beginning of Keepers of the Mispillion Light. Their goal was to raise the money needed to restore the structure under a lease agreement, but less than a year into their plan, lightning cut short their efforts. In May 2002, tragedy struck the endangered old Mispillion Lighthouse with a bolt of lightning. The wood frame structure didn't stand a chance, as fire quickly spread down the walls of the dilapidated building, virtually ending all hope of the once-proud little sentinel being restored to its beautiful "stick-gothic" elegance.

The fire was even more tragic because it came on the eve of a grass roots effort to restore and preserve the sentinel. As broken-hearted lighthouse lovers watched, a private buyer loaded the remaining timbers onto a house moving truck after discarding the light room in a dumpster. Thus, another beloved piece of lighthouse heritage had passed on.

Saddened by the fire and loss of the sentinel that Lighthouse Digest called "the most endangered lighthouse in America," the damaged building had more visitors in a few days than it had in many years. Mispillion Light was lost just before it could be saved, and the beloved lighthouse was moved to the "Lost Lighthouses" list.

Out of the ashes arose a new beginning for the Lighthouse property. In the spring of 2007, The DuPont Nature Center at the Mispillion Harbor Reserve was opened on this property.

C. Mispillion Harbor Restoration Project

The Division of Fish and Wildlife (DFW) obtained Hurricane Relief Funding from the National Fish and Wildlife Foundation to restore important beach habitat for Red Knot and Horseshoe Crabs within the Mispillion Harbor. Following a detailed design and coordination effort with various state/federal agencies and other stakeholders, the DFW contracted with a local contractor to implement the restoration project. The project involves restoring an existing stone dike (approximately 2700' long), installing new groins to prevent erosion, and the restoration of beach habitat on the west side of the stone dike. This project's primary objective was to restore beach habitat for Horseshoe Crabs and Red Knots. Secondary benefits of the project include protecting the Mispillion Harbor and the

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Mispillion Inlet from storm surges and waves. This area also supports ecotourism as this area is a premier destination to view Red Knots and other shorebirds while they forage on Horseshoe Crab eggs. The project will be completed by April 2018.

As a discovery point on the Bayshore Initiative/Bayshore Byway, the Town supports restoration projects in and surrounding Slaughter Beach and views this project as a resounding success. The Mispillion Harbor Restoration project, which provides habitat for Horseshoe Crabs and Red Knots, also has lessened marsh flooding on the north end of the beach during coastal weather events, and the Town did not encounter a single flood event during the 2016/2017 Nor'easter season (September through April).

D. The Dupont Nature Center

The DuPont Nature Center at the Mispillion Harbor Reserve, owned and operated by the Delaware Division of Fish and Wildlife, is located on a 1.7-acre property at the mouth of the Mispillion River on the Delaware Bay. This harbor represents one of the most important horseshoe crab spawning beaches and shorebird feeding areas in the world. Each year, thousands of horseshoe crabs mate and lay millions of eggs on beaches visible from the DuPont Nature Center's observation deck. The eggs are a critical food source for migratory shore-birds, including the red knot, which stops at the Delaware Bay each spring on its 9,000-mile flight from Tierra del Fuego (South America's southernmost tip) to its summer nesting grounds in the Arctic.

The property where the Dupont Nature Center now sits was purchased by the State of Delaware in 2004 with funding from the PSEG Estuary Enhancement Program. The Delaware Division of Fish and Wildlife began renovations on the building in May 2005. The DuPont Company joined the initiative in December 2005 and provided funding and technical assistance for the educational exhibits and observation decking. The Center officially opened on May 23, 2007. The property overlooks approximately 70 acres of marsh and dunes purchased by the Department of Natural Resources and Environmental Control from the Conservation Fund in July 2006. These adjacent lands are prime horseshoe crab spawning and shorebird feeding areas. Other state holdings on the west side of Town include the marshes of the Milford Neck Wildlife area.

The DuPont Nature Center serves as a science-based education and interpretive facility for schools, families, and other organized groups. It is designed to connect people with nature and will instill an appreciation for the ecological significance of the region. The center with its distinctive red roof, includes an observation deck with spotting scopes to view the harbor, bay, and shoreline. More than 130 species of birds, fish, shellfish, and other animals populate the area. Inside the center, visitors

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can view shorebirds and horseshoe crabs along the shoreline more than 100 yards away, courtesy of a remote camera and a 42-inch plasma-viewing screen.

The center is filled with exhibits devoted to the Delaware Bay's natural history and ecology:

- Bird identification panels are designed to help visitors spot many of the species that may be seen in and around the harbor.
- "Fly the Delaware Bay". an interactive exhibit sponsored by the Partnership for the Delaware Estuary, provides an aerial tour of the estuary.
- Beautiful murals illustrate the anatomy of the horseshoe crab, trace the migration of a red knot, and provide information about the biology and ecology of both species illuminating the connection between them.
- Computerized touch-screens take visitors beyond the exhibits with lively closed-captioned video.
- Historical displays recollect early colonial time when shipyards; sawmills, tanneries and flour mills thrived on the Mispillion River.
- Additional exhibits describe research efforts to protect crucial shorebird feeding areas and nesting habitats, horseshoe crab spawning areas, bait use, and the importance of the horseshoe crab in modern medicine.
- An internet access station is available as an additional resource for educational information on wildlife and their habitat.

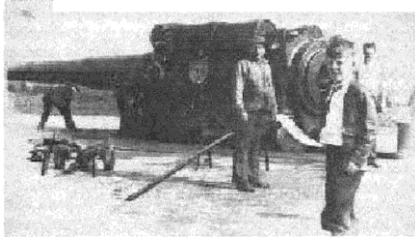
E. Fort Saulsbury

Fort Saulsbury is definitely Delaware's most overlooked or forgotten fort. It stands shrouded in the memories of those still living among the thousands of men who served or were housed there from 1918 through 1945. Fort Saulsbury is located in the very northeast corner of Sussex County, Delaware, six miles east of Milford, adjoining the town of Slaughter Beach. It is the only known fort to be privately owned in the United States. The fort was originally purchased, by the Kendzierski family in 1948, and remains in private ownership.



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In 1917, the U.S. Army approached David W. Shockley and Mark H. Shockley about purchasing their land for use as a fort. The Army decided that this particular location was the best available to insure protection of the mouth of the Delaware Bay and River from any possible enemy threats during World War I.



Since the fort was completed so close to the end of World War I, it was never fully manned. After the armistice was signed in November 1918, the fort was manned by six to eight soldiers, with the ranking soldier being a sergeant. It contained four 12-inch guns capable of firing 2,000 pound shells 20 miles and two dirt and grass-covered concrete casements. The casements were constructed of 14-foot-thick, steel-reinforced concrete with six feet of earth on top for camouflage. The fort was named for Delaware's U.S. Senator Willard Saulsbury, Sr., who served in the U.S. Senate from 1859 through 1871 and as Delaware's Attorney General from 1850 through 1855.

When the threat of World War II surfaced, changes were made to the fort. First, two of the four 12-inch guns were moved to the newly constructed Fort Miles in Lewes, Delaware. Eight new wooden buildings were erected at Fort Saulsbury to include one as a barracks for officers and three as barracks for enlisted personnel. Also constructed were an infirmary, recreation building, company storehouse and an administrative building in 1940.

In May 1941, the men of the 261st Coast Artillery Battery B, which was originally organized in Georgetown, Delaware, were assigned to Fort Saulsbury for the purpose of coastal defense. They watched the coast line from three steel towers that were built as part of the 1941 restoration. These towers were located at Big Stone Beach, Mispillion Light and Fowler Beach.

The 261st continued their duty until the completion of Fort Miles at Cape Henlopen in 1942. Two of the 12-inch guns were sent to Fort Miles and the other two were sent to destinations unknown. However, the story of Fort Saulsbury did not end with the dismantling of the guns. The fort's new mission was that of a POW camp for German and Italian soldiers.

On January 11, 1946, Fort Saulsbury was deactivated with the departure of its last POW and sold. Today, Fort Saulsbury remains unused. Experts on American fortifications consider the fort to be the only surviving World War I-era fort which is virtually un-altered and in its primitive state. Many people feel that it is a site which is well worth preserving as a state (or perhaps a national) historic landmark. Emanuel R. Lewis, Librarian of the U.S. House of Representatives, in his book *"Seacoast Fortifications of the United States"* describes Fort Saulsbury as a classic example of the East Coast

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fort of the period and worthy of preservation. He wrote, "The only good surviving specimens within the continental limits are two 12-inch gun batteries near Slaughter Beach, Delaware".

Maybe someday this forgotten and overlooked fort will finally get some attention and preservation actions will take place.

F. Conservation Areas

Very large tracts of land within the town boundaries are permanently preserved as open space. The federal government, the State of Delaware, and the Delaware Nature Society own three large tracts of land. The Town of Slaughter Beach consists of approximately 1,000 acres, of which 800 acres are preserved as open space. This includes the lands owned by the above-mentioned three public entities, the Slaughter Beach Fire Company and the Town of Slaughter Beach.

Marvel Saltmarsh Preserve

The Marvel Saltmarsh Preserve is an approximately 110-acre tract of saltmarsh in the Town of Slaughter Beach. It is owned and managed by one of Delaware's premier environmental organizations, the



Delaware Nature Society. The site was graciously donated to the Society by the Marvel family of Milford, Delaware in 1989. An excellent example of the large expanses of saltmarshes that form much of Delaware's eastern bay shore, the marsh is home to a large diversity of animals including fiddler crabs, blue crabs, grass shrimp, and many species of mollusks and insects. Nesting Willet, Clapper Rails, Red-wing Blackbirds, Marsh Wrens,

and Swamp and Seaside Sparrows can be heard singing and calling from the marsh grasses each spring and summer. In the winter, Northern Harriers and Short-eared Owls can be observed hunting low over the marsh.

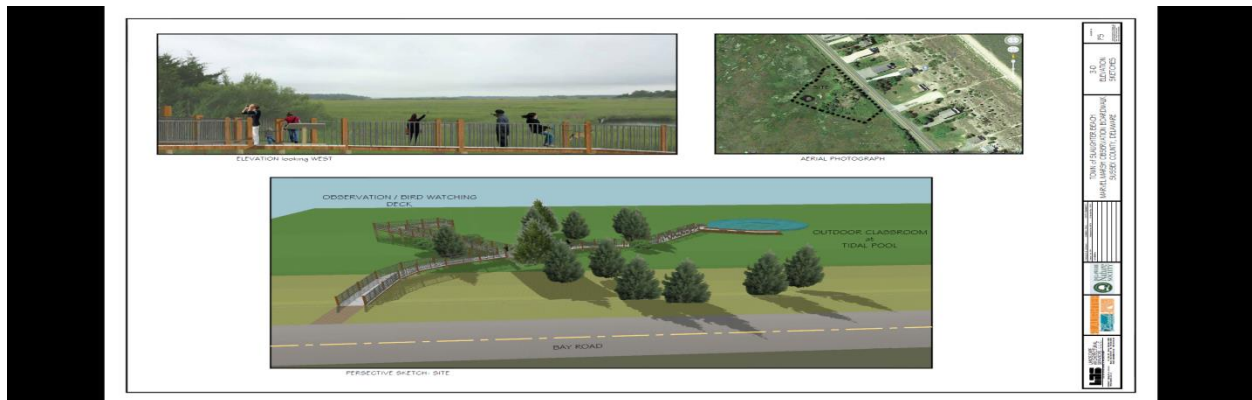
The highly productive marsh is a key component in the food chain of the Delaware Bay estuary, providing nutrients in the form of decomposing vegetation, called detritus, for countless estuarine organisms. These minute, decaying grass particles feed small fish, plankton, oysters, shrimp, clams, and crabs that live in the bay. Larger animals, some of which are consumed by humans, in turn eat these smaller organisms. The marsh also serves as an important nursery ground for young fish, shellfish, and crustaceans.

The site is used as an outdoor classroom for students participating in environmental education programs through the Society's Abbotts Mill and Ashland Nature Centers. Programs stress the

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important role that the marsh plays in the Delaware Bay ecosystem and in the lives of people that live around it.

The Marvel Saltmarsh Preserve's beautiful open landscape adds to the scenic nature of the town of Slaughter Beach and serves as a natural green buffer for the community. The site is used as an outdoor classroom for students participating in environmental education programs through the Society's Abbotts Mill and Ashland Nature Centers. Over 1,000 school kids get hands-on environmental experiences at this site. These programs stress the important role that the marsh plays in the Delaware Bay ecosystem and in the lives of people that live around it. The Town, in partnership with DNS, through local funding and State and Federal Grants, are building an educational / recreational boardwalk into the Marsh, as depicted in the artist's rendition shown below.



Prime Hook National Wildlife Refuge

Prime Hook National Wildlife Refuge falls within the Broadkill Hundred and Cedar Creek Hundred of Sussex County, formerly referred to as Hoorenkill or Whorekill County. Translated from the Dutch word Priume Hoek meaning Plum Point, Prime Hook was named by European settlers in the 17th



century for the land's abundance of purple beach plums. Many farms and residences were once present on what is now the refuge. In 1963, Prime Hook National Wildlife Refuge was established under the authority of the Migratory Bird Conservation Act for use as an "inviolable sanctuary, or any other management purpose, expressly for migratory birds". The refuge began as a satellite of its sister refuge to the north, Bombay Hook. With a small and dedicated staff, the refuge began management of the land especially for wildlife. In 1986,

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the endangered Delmarva Fox Squirrel was reintroduced to the refuge. With the help of volunteers and community support, a Refuge Headquarters building was completed in 1997. That year also marked the creation of the Friends of Prime Hook, who have been assisting the refuge in its endeavors ever since. In 2000, Prime Hook became an independent refuge.

The refuge has expanded to 10,000 acres with one of the largest freshwater impoundments on the East Coast. Due to a series of coastal storms and land subsidence, the impoundments were breached starting in 2006 with Super Storm Sandy delivering the final blow to the impoundments. The Sandy Relief Act provided \$38 million for developing and implementing a restoration strategy. A detailed engineering and biological assessment was conducted to determine the most sustainable strategy. The result was a plan to re-establish 25 miles of tidal channels, and two miles of beach/dune/back barrier with 1.4 million cubic yards of sand. The final stages of the restoration will be completed this November. DelDOT will be replacing the undersized culverts under Prime Hook road which will enhance the ability of the marsh to circulate water.

The refuge is located in a key position in the Atlantic flyway and each year, hosts hundreds of thousands of migratory birds. Today, the Refuge's primary objectives continue to focus on providing habitat and protection for waterfowl, waterbirds and other migratory birds, and endangered species and to insure the availability of these resources to the American people for their enjoyment now and in the future.

As a discovery point on the Bayshore Initiative / Bayshore Byway, the Town supports restoration projects in and surrounding Slaughter Beach and views the Prime Hook National Wildlife Refuge Restoration project as a resounding success. The Refuge not only provides habitat for a variety of species, but the restoration project has lessened marsh flooding on the south end of the beach during coastal weather events, and the Town did not encounter a single flood event during the 2016 / 2017 Nor'easter season (September through April).

Milford Neck Wildlife Area

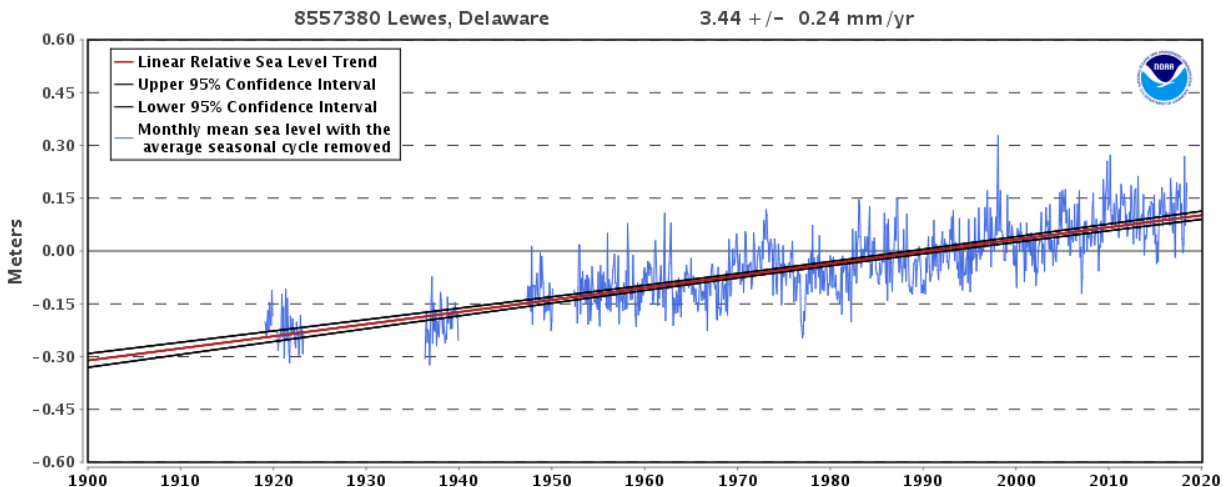
Milford Neck Wildlife Area is a mix of parcels located in both Kent and Sussex Counties. The community of Slaughter Beach is most impacted by two specific parcel complexes of the Wildlife Area: the Cedar Creek Tract and the Rawley Island Tract. The Cedar Creek area is comprised of 6 tracts totaling 664 acres south and west of the community within Sussex County. The Rawley Island Tract is located to the north of the community in Kent County and is 561 acres. Both tracks provide a mix of habitat management programs to support wildlife while providing a variety of recreational opportunities to the community.

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2.8 Environmental Concerns

A. Sea Level Rise

Sea level rise is an emerging challenge for the state of Delaware and for the Town of Slaughter Beach. Sea level rise can be defined as an increase in average tide levels over time and is caused by a combination of subsidence of land and global climate change. The sea level trend as measured by the tide gauge in Lewes operated by the National Oceanic and Atmospheric Administration is 3.39 millimeters/year, which is equivalent to a change of 1.11 feet over 100 years (see chart below). The existing rate of sea level rise is expected to increase in the coming decades as a result of climate change. The state of Delaware is planning for an increase in average tide heights of 1.5 to 4.9 feet by the year 2100. The tide gauge at Lewes Beach has recorded a steady increase in sea levels as more clearly evidenced by the following chart.



Source: https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=8557380

Increases in average tide levels result in a number of impacts that could be of concern for the Town of Slaughter Beach. Sea level rise can cause permanent inundation of wetlands and uplands; and the increased likelihood of tidal flooding and infrastructure damage during coastal storms cause saltwater intrusion into groundwater and decreased depth to water tables. Other possible negative consequences are: recurring property damage, higher insurance rates, potential loss of flood insurance, an inability to mortgage properties, lower property values and the mental stress associated with any one of these impacts.

Saltwater intrusion into groundwater could compromise the Town's freshwater water supply which is provided by 4 wells located throughout the Town. The Town of Slaughter Beach is also served by on-site septic systems. Rising water tables could compromise the efficiency of these systems, causing

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public health and water quality issues. Rising water levels could result in more frequent need for beach replenishment projects and/or dune repairs, and loss of wetlands could decrease the Town's natural defenses against storm flooding.

In recognition that sea level rise could have significant consequences for the state and for coastal towns, the State of Delaware completed a three-year study to assess the state's vulnerability to sea level rise and to develop recommendations that will help state agencies and communities proactively respond to the potential for rising waters. The statewide sea level rise plan outlines several strategies to address sea level rise in a way to best maintain our current way of life for the longest period of time and can be found at the following website:

<http://www.dnrec.delaware.gov/coastal/Pages/SLR/DelawareSLRAdaptation.aspx>

The Town of Slaughter Beach is concerned about the impacts that sea level rise could have on our community, residents, property values, and way of life and town officials and residents alike will continue to work with the state and other partners to proactively assess flooding issues and implement solutions that will make the town more resilient to sea level rise and coastal storms. A few of our more recent initiatives are discussed below.

- In 2014, the Town secured grant funding from the State to study the feasibility of participating in FEMA's Hazard Mitigation program and submitted 3 separate proposals in an effort to elevate 8 homes. Although not initially successful, the Town will continue to participate in Hazard Mitigation projects, as town resources become available.
- In 2015, the Town successfully applied for a SEARCH grant from the US Department of Agriculture to study the feasibility of constructing a sewer line to connect the Town to the closest wastewater treatment facility in recognition of the hazards presented by sea level rise.
- In 2015 and 2016, the Town successfully applied for separate grants from the USDA and from the Clean Water State Revolving Fund to study the viability of purchasing the privately-owned Slaughter Beach Water Company to ensure a stable and continuous supply of potable water.
- The town applied for and was selected by the Delaware Coastal Programs ("DCP") division as their 2016 Resilient Community Partner. We are in the process of implementing many of the recommendations identified through the partnership with DCP, as identified in the Slaughter Beach Vulnerability Assessment and Adaptation Options report.

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- Finally, on January 19th, 2015, the Town adopted a new Flood Damage Reduction Ordinance which requires one (1) foot of Freeboard for new construction and substantial improvements.

B. Marine Catastrophes

Approximately 3,000 vessels travel the Delaware Estuary each year, with a large percentage carrying some form of petroleum product or other hazardous material. Large-scale transportation of crude oil helps conserve energy and reduce costs over long distances, but many large tankers can't access U.S. ports when fully loaded because their draft - the distance from the water line to the bottom of the boat - is too deep. Lightering - transferring crude oil from supertankers to smaller tankers capable of navigating our waterways - is an effective solution to the problem. Many of the larger, fully loaded, Suezmax tankers enter the Delaware Bay with a draft of 55 feet and are lightered to less than 40 feet in order to travel to port.

The anchorage for lightering operations is located directly off the shores of the Town of Slaughter Beach, at Big Stone Beach Anchorage. In 2016, 249 Vessels utilized this anchorage, with only 29 of those vessels not requiring lightering operations. Crude is offloaded through flexible pipelines from the larger ("mother") ship to the smaller ("daughter") tanker or barge. The daughter ships can then offload their oil cargo at the nearest port or at more distant locations, as markets demand. In some cases, the mother tanker can also proceed to port once sufficient crude has been off-loaded to reduce the ship's draft.

Although oil spills have been few, they can occur at any time and have a devastating effect on the environment, habitat and ecosystems. There could be catastrophic health effects on humans as these events affect water quality due to toxic materials. One major oil spill occurred on November 26, 2004, when the Athos I struck a submerged object near Paulsboro, New Jersey, releasing 260,000 gallons of oil. If an oil spill of this magnitude had occurred in late May or early June at the anchorage, the effects could have been devastating to shorebirds, horseshoe crabs, and other aquatic life and to the marsh and wetlands surrounding Slaughter Beach.



On April 25, 2006, an undetermined amount of bunker fuel oil was released from the container ship M/V Bermuda Islander while traveling through Delaware Bay. Approximately 40 miles of shoreline in Delaware and 1 mile of shoreline in New Jersey were fouled by the oil spill. This catastrophe occurred just prior to the shorebird migration and horseshoe crab spawning. Luckily the

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response team arrived, and the beach was cleaned prior to the migration/spawning season.

However, not all catastrophes are caused by marine accidents. On December 17, 2012, a train derailed in Paulsboro, NJ, releasing 23,000 gallons of toxic vinyl chloride into the Delaware Bay. Fortunately, the US Coast Guard (USCG) and the National Oceanographic and Atmospheric Administration (NOAA) were able to contain the hazardous spill before any chemicals reached the Slaughter Beach shore.

The following chart provides a snapshot of the marine traffic that travels through the Delaware Bay each year.

VESSEL ARRIVAL STATISTICS - 2016

Imports					
Fruit	560	Containers	431	Crude	377
Steel	97	Autos	96	Chemicals	87
Paper	51	Naphtha	45	Steel Coils	34
Steel Slabs	30	Salt	30	Sugar	21
Oil	21	Layberth	19	Wood Pulp	19
Juice	18	General	17	Clementines	17
Project	17	Pipe	16	Cocoa	14
Food	14	Fuel Oil	13	Gypsum	12
Plywood	12	Gasoline	10	Cement	10
Minerals	9	Slag	9	Wax	8
Urea	7	Propane	6	Perlite	6
Lumber	5	Alkylate	5	Sand	5
Fertilizers	4	Gasoil	4	Iron	3
Nitrates	3	Gas	3	Diesel	2
Asphalt	2	Bulk	2	Pumice	2
VGO	2	Vegetables	1	Yachts	1
Pyrites	1	Steel Beams	1	Uan	1
Butane	1	Coal	1	Chrome Ore	1
Cumene	1	Petcoke	1	Ore	1
Machinery	1	Magnesite	1		
TOTAL: 2,188 Vessels					
Exports					
Containers	729	Autos	52	Ethane	34
Propane	34	Scrap	34	Petcoke	23
Diesel	19	Chemicals	16	Oil	10
Coal	8	Lubes	6	Fuel Oil	6
Gasoil	5	Project	5	Gasoline	1
Kerosene	1	LPG	1	Butane	1
Asphalt	1	Crude	1	Scrap Metal	1
Urea	1				
TOTAL: 989 Vessels					
<i>Source: Maritime Exchange for the Delaware River and Bay</i>					

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The U.S. Coast Guard's Philadelphia Area Contingency Plan describes the strategy for a coordinated federal, state and local response to any vessel, offshore facility, submerged pipeline or waterfront facility within Sector Delaware Bay, Area of Responsibility, that experience:

- A discharge or substantial threat of discharge of oil
- A release or threat of release of a hazardous substance
- An exposure to or threat of an exposure to harmful biological substances
- An exposure to or threat of an exposure to a radiological substance
- One of the above incidents combined with a threat of an act of terrorism

Discharges, releases or exposure incidents can occur for various reasons and the causes can include human error, mechanical failure, fire, and explosion and/or hostile or terrorist activity. In the writing of this plan, a number of factors were considered such as:

- Spill histories
- Vessel traffic flow through the area
- Hazard and risk assessments
- Seasonal considerations
- The maximum product capacities and the operating records of facilities and vessels within the area

The Mispillion Harbor is the only functioning harbor on the Delaware Bay between Lewes, Delaware and Wilmington. The Delaware Bay Launch Service, located in Town, and the Slaughter Beach Memorial Fire Company are both designated first responders for all marine incidents. It is of critical importance to the Town, and indeed to the entire Delaware Bay coastline, that the Mispillion Harbor remain open and is not allowed to silt in. At present, the Delaware Bay Launch Service undertakes anti-silting operations each day to keep their docks open.

C. Wildfires

Slaughter Beach was identified by the Delaware State Forester and included in the nation-wide list of Highest Risk Communities in the vicinity of federal lands, published in the August 2002 Federal Register. Town officials believe the most significant wildfire threat to the Town is due to the proliferation of phragmites, sometimes known as "common reed". Phragmites are an invasive species and are extremely flammable when the reeds are dormant during the autumn, winter and

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early spring (<https://www.fs.fed.us/database/feis/plants/graminoid/phraus/all.html>). During this period, phragmites provide fuel and can “explode” rather than simply burn.

Town officials recognize that wildfires have a deleterious effect on human health. There are increased risks to vulnerable populations such as the elderly as air quality decreases. Residents with asthma or other chronic illnesses are especially at risk.



On March 10, 2002, a human-caused wildfire of undetermined origin burned 1,250 acres in the Prime Hook National Wildlife Refuge, immediately adjacent to and within Slaughter Beach town limits. On that date the Refuge weather station recorded relative humidity readings of 30% or less and wind speed readings exceeding 20 mph for 8 hours, with peaks of nearly 30 mph. The fire in the marsh spread at rates over 100 feet per minute and with some flame heights exceeding 20 feet. More than thirty fire apparatus responded from as far away as

Denton, Maryland, in order to protect structures in the Slaughter Beach and Prime Hook Beach communities.

Beginning in 2008 and continuing each year that funding is available, the Town has partnered with the Delaware Department of Agriculture Forest Service and with DNREC to control phragmites through spraying Glyphosate-based aquatic herbicide during late summer or early fall as the plants are beginning to go dormant. This effort is funded through a shared federal grant administered by the Delaware Department of Agriculture Forest Service.

D. Climate Change

The Town of Slaughter Beach lies on a barrier island and is the first line of defense against coastal storms.

On November 3, 2017, the federal government released its National Climate Assessment. The report affirms that climate change is driven almost entirely by human action, and also affirms that the U.S. is experiencing more flooding, more extreme heat and rainfall events, and more frequent and larger wildfires.

MAJOR TIDAL FLOODING EVENTS (RECORDED BY LEWES TIDE GAUGE)

January 1, 1919 to February 24, 2016

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MAJOR TIDAL FLOODING EVENTS (RECORDED BY LEWES TIDE GAUGE)

HEIGHT*	DATE	HEIGHT*	DATE	HEIGHT*	DATE
7.4	9/18/1936	7.5	10/31/1991	7.4	10/7/2006
7	11/1/1947	8.8	1/4/1992	7.7	5/12/2008
7.6	10/22/1961	7.2	9/25/1992	7.3	10/17/2009
9.2	3/6/1962	7.8	12/12/1992	7.8	11/1/2009
7.4	11/3/1962	8	3/3/1994	7.1	12/19/2009
7.2	1/13/1964	7.8	1/7/1996	8	8/27/2011
7.1	11/10/1969	7.3	10/8/1996	7.7	10/29/2011
7.4	12/22/1972	7.4	11/14/1997	7.3	6/4/2012
7.3	12/9/1973	8.6	1/28/1998	8.7	10/29/2012
7.6	10/14/1977	8.5	2/5/1998	7.3	3/6/2013
7.9	10/25/1980	7.4	1/25/2000	7.1	12/9/2014
7.9	3/29/1984	7.6	2/17/2003	9.3	1/23/2016
8	9/27/1985	7.2	5/25/2005	7.3	2/9/2016
7.4	1/2/1987	7.1	1/31/2006		

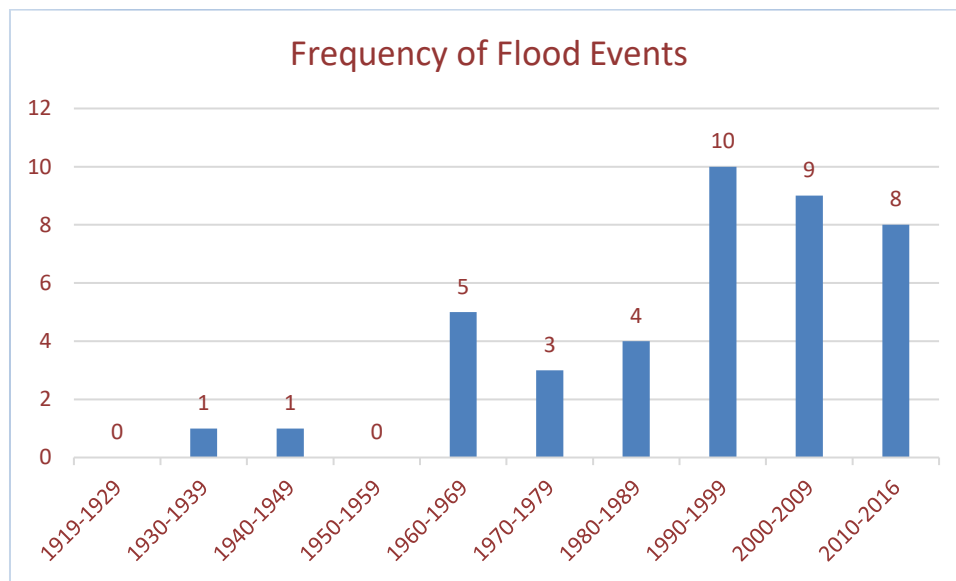
*All heights are in Mean Low Low Water

The table above and the chart below indicate the frequency of flood events as measured by the tidal gauge in Lewes, when NOAA began record keeping. The information is provided only for those years when the tides exceeded a height of 6.4 feet, the height when flooding begins at the Mispillion Light and in Slaughter Beach.

It's clear that since 1990, a period of 26 years, there have been 27 flooding events that affected Slaughter Beach. This averages to 1.04 flooding events every year. This far exceeds the 14 flooding events that occurred in the previous 70 years, which average 1 every 5 years for an increase of 500%. Historically, the dune system protected the town through many of the flood events identified above

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and generally, flooding has occurred when the marshlands are inundated. The dunes were breached or "washed over" during the storm of 1962, Hurricane Sandy, and Nor'easter Jonas. During major flood events, the roads leading into or out of town are underwater, and residents may be required to shelter-in-place for three to five days. In cases of extreme emergency, the Delaware National Guard and the Slaughter Beach Memorial Fire Company have assisted with evacuations.



The Delaware Division of Energy and Climate released a report in August 2014 that detailed the best available science on the potential impacts of climate change to people, places and resources in Delaware. This report, entitled, "Climate Change in Delaware" addressed the impacts that are already occurring. The report also addressed expected future impacts on ecosystems, water resources, wildlife and their habitats, temperature extremes, increases in serious illnesses, increased energy demand, tidal flooding and erosion, among countless other possibilities. Potential impacts on agriculture include reduced yields, crop losses, higher energy costs, impaired pollination and seed development and accelerated growth of weeds. The report also addresses sea level rise and more frequent extreme rainfall events.



The Town of Slaughter Beach recognizes the gravity of climate change and has taken steps outlined in other sections of this document to begin the process of adaptation and ensure the resiliency of the Town should the dire climate change predictions come to fruition. Town officials are especially concerned with how human health could be affected by climate change and recognize the possibility

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of a corresponding increase in heat-related illness, vector-borne illness and respiratory illness as temperatures increase.

E. Loss of Habitat

A decade ago the shores of Slaughter Beach were thick with horseshoe crabs and shorebirds. Where you once could not walk to the water, large stretches of beach now remain open. Instead of a beach-wide spawning area, the majority of spawning now occurs on the north end of the town and in the Mispillion harbor. After years of heavy declines in the horseshoe crab population (beginning in 1999), research indicates that the population is starting to stabilize, thanks to conservation measures, Delaware Bay beaches becoming Horseshoe Crab Sanctuaries, and residents support of E.R.D.G.'s "Just Flip 'em" program, but the population is not increasing.

Migratory shorebirds once covered the beach, but today stretches of the beach are now left empty, with the exception of a few shorebirds and seagulls. Research shows that there is a direct correlation between the population of horseshoe crabs and shorebirds. Shorebirds rely on horseshoe crab eggs as their primary food source, so the majority of them congregate in the few high-spawning areas for horseshoe crabs, leaving the bird flocks more exposed to natural predators. Unfortunately, unlike the trend of the horseshoe crab, the red knot (shorebird) population seems to be in a steady decline.



Wave action/erosion has caused scarping of the dunes on the south end of the Town. This leaves Diamondback hatchlings vulnerable to heat and predators. It is also one of the primary reasons that horseshoe crab spawning has migrated to the north end of Town. A gentle slope to the beach causes less wave action and allows easier access for spawning horseshoe crabs.

Unfortunately, due to the deterioration of the Mispillion jetty on the north side of town, detritus often builds on the beach, sometimes reaching a height of 2 to 3 feet. A horseshoe crab covered with detritus cannot move back to the sea after spawning perishes on the shore. The detritus also covers up the horseshoe crab eggs which the shorebirds feed on, leaving one of the highest spawning areas at Slaughter Beach less productive for the birds.

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Detritus washed ashore after Winter Storm Jonas, 2016

F. Dune/Beach Erosion

What Mother Nature made, she also takes away. What Mother Nature takes away, man tries to put back. Dune/beach erosion is a continuous problem. Like other coastal towns, rising tides and dune erosion pose a major threat to property owners. As the beach continues to erode, structures become increasingly vulnerable to the threat of hurricanes, Nor'easters, and even small coastal storms. In 1970 DNREC was granted easements from Slaughter Beach property owners to take primary responsibility for the control, maintenance and preservation of the beach and dune areas. DNREC has Regulations Governing Beach Protection and the Use of Beaches which require property owners to obtain approval



prior to any construction activities on their lots. DNREC has established a building line, and construction to the east of that line is prohibited without a permit from the Department. They also sponsor the spring beach grass planting. Cape American beach grass helps stabilize the dunes and also helps to trap wind-blown sand and increase the size of the dunes. The Town of Slaughter Beach, with the help of volunteers, participates in this

program on an as needed basis. Another means of beach/dune protection is through beach nourishment or replenishment. This process is done by pumping sand from a selected offshore site back onto the beach to extend or enhance the dunes and beach.

Since records have been kept, Slaughter Beach has undergone the following replenishment/nourishment projects:

- 1940 -1957 - approximately 20 timber (and one timber and stone) groins installed
- 1958 - beach fill via truck haul (49,000 cubic yards)
- 1961- beach fill via hydraulic dredge (165,000 cubic yards)
- 1962 - beach fill via truck and heavy equipment (56,600 cubic yards)

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- 1975 - beach fill via hydraulic dredge (179,500 cubic yards)
- 1976 - beach fill via hydraulic dredge (277,700 cubic yards)
- 1979 - beach fill via hydraulic dredge (20,000 cubic yards)
- 1985 - beach fill via hydraulic dredge (10,300 cubic yards)
- 2005 - beach fill via hydraulic dredge (114,970 cubic yards)

Dune/beach erosion not only has an effect on property owners but can also have an adverse effect on local habitat. Erosion of the dunes and beach can create loss of spawning, nesting, and feeding areas for horseshoe crabs, migratory birds, and diamondback terrapins. Loss of dunes can also allow "wash over" of sea water from the bay into the marsh areas during coastal storms. This can have an adverse effect on the delicate ecosystem in the marsh/ wetlands.

In March of 2010, a report was prepared for DNREC's Division of Soil and Water Conservation (now Division of Watershed Stewardship). The report outlines a Management Plan for the Delaware Bay Beaches including Slaughter Beach. The report includes replenishment projects for the various beaches.

The Delaware Bay Work Group was formed by DNREC Secretary Collin O'Mara for the purpose of examining issues such as beach erosion, marsh drainage and other related issues in the Delaware Bay Beach communities, resulting in recommendations, both short and long term, for how the State of Delaware and other levels of government might address these problems. The group originated after Sec. O'Mara and DNREC staff met with State Legislators who represent the bay beach areas. All the aforementioned issues have been developing for some time and in certain cases are reaching a crisis level. Templates for nourishment plans are complete; the only thing lacking is an adequate dedicated funding source for work to begin. Presently the only funding for capital projects like this come from 1% of the States Hospitality Tax and/or the State Bond Bill.

<http://www.dnrec.delaware.gov/swc/shoreline/pages/delawarebaybeachworkgroup.aspx>

In January of 2017 the United States Army Corp of Engineers filed an application with DNREC's Delaware Coastal Programs seeking a Federal Consistency Determination for beneficial use of dredge materials for the Delaware River Feasibility Study. The application was approved. The dredge material from maintaining the channel on the southern reach would be used to renourish bay beaches, including Slaughter Beach. The Town sent a letter of support to DNREC's Delaware Coastal Programs office. The Town feels that the dredge material would not only be beneficial to property owners, but also for habitat restoration much like the Mispillion Harbor project and the Prime Hook National Wildlife Refuge restoration project.

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The Town's beach front is a natural buffer between adjacent marsh lands to the within and bordering and town and productive farmland further inland. USACE are presently finishing the final report. The time line for the start of the project is 2019/2020 depending on funding. This program would be a cost share between the USACE and the State.



Since the nourishment project in 2005, the beach has been in a continuous state of erosion, especially on the south end of town. In January 2016 nor'easter Jonas caused extensive erosion along the southern end of the beach, in some cases eroding 20 to 30 feet of dune line, while leaving scarps 2 to 6 feet high. On the very southern end of town the dune line was completely breached during Jonas and the bay flowed freely into the marsh.

G. Jetty Deterioration

Another erosion problem Slaughter Beach is encountering is the erosion and deterioration of the Mispillion Harbor Jetty. The Jetty was built in the early 1970s, and the U.S. Army Corps of Engineers is responsible for its maintenance and repair. Over the years, the west wall of the jetty has started to erode and fall into a state of disrepair. The break in the jetty may be leading to the "silting in" of the north end of Slaughter Beach. Detritus is building up on the north end, which leads to reduced spawning areas for horseshoe crabs, feeding areas for migratory shorebirds and nesting areas for diamondback terrapins. In the spring of 2006, at the request of the Town of Slaughter Beach, the Delaware Coastal Programs (DCP) office within the Department of Natural Resources and Environmental Control (DNREC), agreed to fund and oversee a study of the inlet jetty and Mispillion harbor area. Town officials were concerned about navigational hazards posed by shoaling and submerged pilings and by loss of valuable shorebird and horseshoe crab habitat. The DCP agreed with those concerns and began seeking solutions.

In July 2006, a contract was signed with the consulting firm Moffatt & Nichol to gather existing environmental data and create a series of computer models depicting water and sediment flow. This work is necessary to fully understand the natural processes at work before devising potential solutions; otherwise, we run the risk of unexpected outcomes that may do more harm than good. With highly sophisticated models, we can essentially "play out" jetty improvement scenarios to see what will be effective and what will not prior to beginning expensive construction. Three models, a

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wave model, a hydrodynamic model and a sediment transport model, have been developed. These models imitated water and sediment flow within the harbor area and incorporate influences from the Delaware Bay, thereby providing a comprehensive picture of processes within the harbor.

In order to collect more accurate information about the effect of waves on the Slaughter Beach area, DCP deployed a wave buoy approximately 4 miles offshore. The DCP also installed a tide gauge and conducted current studies within the harbor to more accurately predict water flow.

H. External Development

With the exception of coastal storms, the biggest threat to Slaughter Beach comes from external development. Lands within a five-mile radius of the town are primarily wetlands and farmland. Skyrocketing prices for farmland (purchased for development) is leaving area farmers in a dilemma: work long hard hours with uncertainty about future market conditions or sell out to developers. Although large sections of lands within the study area are in Level 4 (under "State Strategies") where development is discouraged, one needs to only look along the Route 1 corridor to see development approaching north from the Rehoboth/Lewes area and west of Route 1. Since January 2008, when the Town's Comprehensive Land Use Plan was last certified, 683 projects were reviewed by the Office of State Planning Coordination's PLUS system. Of those projects, 66 or approximately 10%, were in Level 4 areas in Sussex County. Within a five-mile radius of Slaughter Beach (in Kent or Sussex County) there have been 34 PLUS projects reviewed with 13 of those projects in Level 4.

The Town of Slaughter Beach has very limited infrastructure. Public access roads to the Bay are unpaved, the public bathhouse needs to be updated, and police protection, provided by State Police Barracks #7 located in Lewes is 20 miles away. Large-scale developments within close proximity of the town would lead to additional traffic and demand on these limited facilities.

It is duly noted that Slaughter Beach is a public beach and at present is capable of handling the small volume of visitors who come to our shores for bird watching, walking, shell/rock collecting, surf fishing, and/ or to enjoy a quiet, relaxing day at the beach away from the crowds. What it can't handle is a large influx of people coming to the beach or passing through the town. A large influx of people would have a significant, adverse effect on the town, its roads, its residents' quaint and peaceful lives, and its infrastructure. It would also have an adverse effect on the town's habitat. Additional traffic in and through the town would cause more mortality of the Diamondback Terrapins that cross the streets from the marsh seeking nesting areas along the beach. It would also put the hatchlings even further at risk as they cross from the beach over to the marsh. Additional foot traffic along the beach could lead to disruption of feeding migratory shorebirds and destruction of dune grass.

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I. TMDLS

Under Section 303(d) of the 1972 Federal Clean Water Act (CWA), states are required to identify all impaired waters and establish Total Maximum Daily Loads (“9999999999999999”) to restore their beneficial uses. A TMDL defines the amount of non-point and point source pollutants a water body can absorb on a daily basis without violating State water quality standards. A Pollution Control Strategy (PCS) identifies the specific strategies and actions necessary for reducing pollutants in a given water body or basin/watershed, thus realizing the water quality criteria or standards set forth in the State of Delaware’s Water Quality Standards. Ultimately, the goal of the PCS is the restoration of a given waterbody’s designated beneficial uses. A PCS is a combination of best management practices (e.g., wetland buffers, green technology stormwater treatment, pervious paving materials, rain gardens, etc.) that will reduce nutrient and bacterial pollutant runoff loading by optimizing their beneficial effects. Information about the PCS can be obtained from the following weblink: http://www.dnrec.state.de.us/water2000/Sections/Watershed/ws/ib_pcs.htm.

The Town of Slaughter Beach is located within the Cedar Creek and Mispillion watersheds. The TMDL nutrient reduction for the Cedar Creek watershed requires a 45% reduction in total nitrogen and total phosphorus from baseline conditions. The Cedar Creek watershed TMDL also requires a 96% reduction in bacteria from baseline conditions. The TMDL nutrient reduction for the Mispillion watershed requires a 57% reduction in total nitrogen and total phosphorus from baseline conditions. The Mispillion watershed also requires an 87% reduction of bacteria from baseline conditions. The Cedar Creek and Mispillion Total Maximum Daily Load's (TMDLs) were approved in December 2006. DNREC recommends best management practices (BMPs) for all land uses.

Chapter 3: 🌿 CONCLUSIONS AND FINDINGS

3.1 Accomplishments

Over the past 10 years, since the Slaughter Beach Comprehensive Land Use Plan was certified by the State, the Town has been proactive on many fronts. We have revised zoning codes, floodplain ordinances, and have addressed environmental issues, educational issues, eco-tourism and most importantly, we have taken pre-emptive measures toward our goal of ensuring the Town is a sustainable and more resilient community. The Town understands the importance of protecting and defending the coastline against encroaching seas and the potential for significant loss of habitat. We also recognize that our location as a barrier island protects thousands of acres of wetlands and productive farmland located just outside our borders and that it is critical that we are responsible stewards of the land. To this end, the Town has made substantial gains in achieving our objectives:

- Rewrote town floodplain ordinance to require one foot of freeboard
- Updated zoning code to support the new floodplain ordinance
- Revised zoning maps to bring more properties into conforming use
- Took Sea level rise/climate change into consideration when revising ordinances
- Sought and received grants for becoming a more resilient community
- Sought and received grants for a feasibility study for a centralized sewage system
- Sought and received grants for a feasibility study to purchase the now privatized water company
- Developed an Emergency Operations Plan in conjunction with the Slaughter Beach Memorial Fire Company, Station 89
- Sought and received a grant to elevate a few homes above the base flood elevation
- Attended various seminars on different topics related to the town
- Participated in the development of Sussex County's Hazard Mitigation Plan
- Commented on Sussex County Land Use Plan
- Embraced the Delaware Bayshore Initiative
- Became a discovery point on the Delaware Bayshore Byway

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- Became a Certified Wildlife Habitat Community through the National Wildlife Federation
- Supported educational programs through the Delaware Nature Society and DuPont Nature Center
- Supported habitat restoration project in adjacent areas
- Installed an educational/informational kiosk at the pavilion in conjunction with the Delaware Bayshore Initiative
- Received funding to install an educational/recreational boardwalk at the Marvel Saltmarsh Preserve
- Became an active member of the Alliance of Bay Communities

With very limited resources, the Town is proud of its many accomplishments and will continue to be a proactive and involved community. The Town looks forward to continuing to build on existing relationships/partnerships with various Federal, State, Local Agencies and other non-profit groups to become a more resilient and sustainable community.

3.2 Implementation

A. Future Land Use

The future land use of the Town of Slaughter Beach should remain a primarily residential community with limited commercial usage as appropriate. Residential areas should primarily consist of single-family homes. Future commercial uses should either directly benefit the residents of the Town of Slaughter Beach and/or be directly correlated with the maritime or environmentally focused nature of Slaughter Beach. Certain areas are identified as being appropriate for mixed Residential/Commercial uses where a single-family home could be partially utilized for commercial purposes. The Town has designated certain areas for conservation and agricultural activities to encourage the conservation of environmentally sensitive areas and allow for agricultural activities and other activities that are well suited for larger tracts of undeveloped land. The Town has also identified certain areas to be designated as wharf areas. In recent years, these wharf areas have been identified for residential uses, but these areas have historically been a working waterfront with charter boats and head boats, dock space leasing, and a variety of other marine related activities. In addition to residential uses, these wharf areas are appropriate for a combination of limited maritime commercial and light industrial uses in keeping with the historic use of this area.

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B. Annexation

With limited infrastructure, limited resources, and the desire to keep the present quaint and quiet nature of Slaughter Beach, the Town does not foresee the need to increase its size by annexation in the near future. At present, there is no apparent rush by adjacent property owners to be annexed. Therefore, at this time, the Town has not identified any properties or areas that it is considering for annexation. With that being said, the Town's only reason in the foreseeable future to consider annexation would be to control the growth and development of surrounding properties.

C. Adjacent Areas

The areas adjacent to Slaughter Beach are primarily farmland, with a scattering of houses or strip developments. There is limited concern about growth within the town borders because the town is close to the built-out stage. The source of concern is the possible development of land and property in the area surrounding the town. With the rapid development of Eastern Sussex County, the possible development of these lands could have a significant adverse effect on the town's habitat, limited infrastructure, and quality of life. Sussex County is in the process of studying the feasibility of providing central sewer to the town of Slaughter Beach. Although this process would take some time to develop, it would be a mixed blessing. With a fragile ecosystem surrounding the town, a central sewer system would eliminate the possibility of failing septic systems and/or the possible flooding of holding tanks. The problem a central sewer system creates is that all the adjacent farmlands on Sussex County Road 224, Slaughter Beach Road, have the potential to be rezoned for high-density housing. It is primarily the reason why the Town supports sizing a central sewage line that meets only the current and future needs of the Town.

3.3 Environmental Issues that Impact Land Use Planning

The community recognizes the many natural resource issues within and surrounding the community. The town hopes to continue and expand upon its existing partnerships with the state, county and local jurisdictions to expand its environmental management programs and policies. Some key issues to the community are:

- Dune Restoration
- Marine Catastrophe's
- Habitat protection and restoration
- Flooding

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- Recreational Activities
- Storm Water and Drainage Concerns
- Clean Marinas
- Clear / Stable Navigational Channels
- Jetty deterioration
- Mosquito Control
- Phragmites eradication

3.4 Summary of Recommendations and Action Items

A. Local Items

- Continuously review and update as required, local zoning codes to address residential concerns regarding a variety of land use activities such as future annexation, building standards, etc.;
- Partner with Department of Transportation to implement local road standards and develop a short- and long-term maintenance program for these resources;
- Partner with DelDOT's Capital Transportation Program to improve road shoulders and promote bicycle and pedestrian traffic safety;
- Partner with DelDOT to identify potential funding sources to elevate Slaughter Beach Road for improved ingress and egress during minor flood events;
- Continue to improve the local recreational resources. This includes, but is not limited to: continued beach replenishment, and on an as-needed basis, the continuous repair and improvement of rest room facilities, beach access roads and town pavilion in order to attract eco-tourism;
- Partner with the Delaware Nature Society, DelDOT, DNREC Department of Parks and Recreation, Delaware Fish and Wildlife, and the Delaware Bayshore Byway Initiative to construct a boardwalk and observation deck at the Marvel Saltmarsh Preserve;
- Continuously maintain and update the information kiosk located at the Pavilion;
- Improve signage at all access points to the beach and update and install environmental education interpretative signs;

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- Partner with DelDOT to identify potential funding opportunities to elevate Slaughter Beach Road
- Explore coordination between Memorial Volunteer Fire Company of Slaughter beach and DelDOT so that the Slaughter Beach Memorial Fire Company is made aware whenever the drawbridge will be closed to roadway traffic;
- Partner with the University of Delaware, DNREC, and SeaGrant to study the hydrology of the marsh, and identify potential floodwater mitigation projects;
- Coordinate with DelDOT for inclusion in DelDOT's mobile app, a function to alert users to flooding on Route 36 and/or Slaughter Beach Road, as well as send out alerts via the local A.M. radio stations;
- Coordinate with DelDOT to provide electronic signs on Cedar Creek Road and on Slaughter Beach Road just to the east of Route 1, when either the drawbridge is closed for an extended period or either road is flooded; and
- Secure Bayshore Byway signage.

B. Regional Items

- Partner with the Department of Agriculture, Sussex County and the City of Milford to address future expansion of Milford east of State Route One;
- Continue to explore the feasibility of funding infrastructure improvements in Town, such as the construction of a central sewer line;
- Partner with the Department of Agriculture, Sussex County and the City of Milford to identify those lands west of Slaughter Beach as a Transfer of Development Rights Sending Area to further expand the Protected Green Belt of Conservation Areas within and surrounding the community;
- Partner with DNREC to evaluate the long-term impacts of the bay to community and coastal resources;
- Partner with DNREC to continue to implement environmental programs to expand and protect important flora and fauna;
- Develop a better working relationship with DNREC's Shoreline and Waterway Management;

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- Continue Partnership with DNREC Coastal Programs to ensure the community is both sustainable and resilient;
- Work with DNREC to possibly create an ordinance/overlay for water company well head protection;
- Study need for additional traffic calming signage; and
- Study need for increased traffic enforcement

3.5 Position on General Use of Land

A. Agricultural Preservation



The Town supports the continuation of agricultural land uses in the area surrounding the town where farming has been practiced for centuries. Farming preserves open space for the benefit of residents and visitors and provides a buffer between the town and encroaching development. Keeping this land in farming restricts the amount of impervious surface cover in the watershed and provides habitat for a variety of species. Agricultural preservation programs should continue

to be used to preserve the farmland adjacent to and surrounding the Town of Slaughter Beach. The Town encourages the farming community to practice conservation measures, such as the use of adequate stream buffers to protect riparian zones and absorb runoff and pollutants; no-till and contour plowing to reduce soil erosion and runoff; and organic and sustainable farming practices that reduce the impact that farming has on the critical environmental resources in the Slaughter Beach area.

B. TDR

Transfer of Development Rights, ("TDR"), is a program that provides a mechanism for governments



to concentrate residential and other development in desired areas (such as those already served by sewer, water, roads, and other public facilities) while protecting rural landscapes and environmentally sensitive areas. Under a TDR program, the development rights vested in a zoned property (the "sending area") can be sold to a TDR bank or to a specific developer. Those rights are transferred to another location

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(the "receiving area"), where they can be applied to increase the density of a development above the maximum specified by that property's zoning district.

If Sussex County adopts a TDR program or participates in a statewide TDR program in the future, the Town of Slaughter Beach strongly intends for the town and its surrounding area to become a sending area for the TDR program, with the result of directing development elsewhere while protecting the town's character and natural habitat. This is consistent with the preceding finding that the town is incapable of supporting dense residential development and supports the town's goal of preserving its unique character and environmental attributes.

3.6 Delaware Bayshore Byway Corridor Management Plan

The Delaware Bayshore Byway links multiple Delaware coastal towns and natural areas by means of a physical route as well as shared vision, mission, and goals to protect and environmentally promote the region's rich maritime heritage and natural resources. In April 2017, eastern sections of Kent and Sussex Counties became formally recognized and identified into the Delaware Bayshore Byway corridor. The community and Town of Slaughter Beach is part of the recent byway extension. The Delaware Bayshore Byway as a program exists and is operating under a Byway Corridor Management Plan (CMP). At this time, the sectional CMP component for Slaughter Beach is still being written and developed by the Department of Transportation and University of Delaware. However, Slaughter Beach will be no different than what has already been identified and written in the CMP. The CMP states that, "each of the (costal) communities has different histories and visions of the future. Although the natural areas have many similarities, they are also very different when it comes to ecological and cultural features and activity levels that can be supported. It is because of these similarities and differences that the concept of Discovery Zones emerged." Discovery Zones, including that of Slaughter Beach, are "destinations that embody activity areas where travelers can learn about the byway, engage in outdoor recreational activities and other byway pursuits and events, and are directed toward visitor amenities. The CMP sets forth the State's Bayshore Initiative and tells the story and the aspirations of each Discovery Zone. The CMP also sets forth tools to preserve and enhance the Byway, and how various agencies and stakeholders can work together to implement the recommendations. Slaughter Beach will embrace its role as a Discovery Zone and this Comprehensive Plan seeks to augment and build upon the strategies and recommendations provided in the CMP.

3.7 Intergovernmental Cooperation

The Town of Slaughter Beach wishes to work in partnership with Sussex County and the City of Milford to better address land use issues in this rapidly developing area. The City of Milford (and its immediately

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adjacent areas) is the best place for high-density development because it is an historic population center that is already served by public services, amenities and institutions. Slaughter Beach strongly discourages the current trend of aggressive, high-density development featuring very large homes that is occurring in a piecemeal fashion in the unincorporated areas in our region, particularly those that are classified as Levels 3, 4, and "Out of Play" by the Strategies for State Policies and Spending document. This growth is largely uncoordinated, occurs outside of those areas serviced by public amenities, and threatens the historic, cultural, and environmental landscapes of our area. Simply put, we do not believe that this kind of growth is desirable or sustainable. The Town of Slaughter Beach opposes any rezoning of land within the area of concern to higher densities. Instead, where development does occur outside of targeted growth zones, we support single-home construction on large lots that maintains more of the natural landscape, does not require extension or development of significant public infrastructure, and places less stress on environmental resources.

3.8 Evaluation of Relevant Planning Documents

The Town of Slaughter Beach when considering the future growth and development of the community consider several local, county and state planning documents to direct its future. These documents include and are not limited to the following:

- ***Delaware State Strategies for Policy and Spending*** - Upon review of this document the Town determined that only lands within the town boundary were defined as Level 1 and Level 2 or areas suitable for develop and eligible for state investment. All other lands surrounding the community are defined as Level 4 or areas that are better suited for conservation and or preservation activities. Because of this classification, the Town chose to recommend and support activities such as Transfer of Development Rights to promote and preserve the rural character surrounding the community.
- ***Town of Slaughter Beach Coastal Vulnerability Assessment and Adaptation Options*** – a report prepared by the Delaware Department of Natural Resources and Environmental Control, Delaware Coastal Programs Office
- ***Various DNREC Resource Reports*** - The Town of Slaughter Beach reviewed and utilized many DRNEC reports on studies on wildlife, habitat, green infrastructure and state resource areas to develop much of this document to allow for further preservation and conservation of many natural resources within and surrounding the community.

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- ***DeIDOT's Sussex County Transportation Plan*** - The community reviewed this document to determine the future road improvements planned for the area within and around Slaughter Beach.
- ***The Sussex County Comprehensive Land Use Plan*** - The County's Comprehensive Land Use Plan provided valuable insight and direction for the community as it considered the future for Slaughter Beach. Upon evaluation of the County's Comprehensive Plan, it was determined that all of the land surrounding the town is zoned AR-1 and subject to two building units to the acre. Also, an amendment was recently passed allowing for up to six units to the acre under the County's current cluster ordinance. Based upon these concerns and others, it is the opinion of the Town that the area around Slaughter Beach is ripe for sprawl development by the county given its location to the beach. As such, the Town has determined to preserve its character and way of life as stated, and that the areas surrounding the community should be preserved through a variety of County and State Programs.
- ***City of Milford Comprehensive Land Use Plan*** - The town has an abundant knowledge regarding the City's Comp Plan and its ongoing annexation of lands east of Route 1. The Town has formally opposed Milford's plan to annex lands east of Rt. 1. More specifically the Town strongly opposes annexations where density is proposed higher than that which is currently allowed. The Town of Slaughter Beach wishes to partner and participate with Milford as it considers its future growth and development. It is the Town's hope that lands to the east of State Route 1 would be preserved through either agriculture easements or TDR's.

Town officials met with Sussex County and City of Milford planning officials to discuss their individual comprehensive plans for future growth and development. Town officials provided a copy of the Town's Comprehensive Land Use Plan to both entities for their review and comments and plan to work closely with Sussex County planning officials as they continue to develop their plan.