The 2009 Chesapeake City Comprehensive Plan:

A Plan for 2030

Acknowledgements

Mayor and Town Council

Frank Hill, Mayor

Lee Collins

Ronald Francis

Rebecca Mann

Robert Miller

Richard Taylor

Planning Commission

Bill Miners, Chair

Bob Hirschfeld

Lee Hutton

Harry Sampson

Rich Taylor

Frank Vari

Nick Visser

Town Staff

Sharon Weygand

Cover Photo by Ed Boas

Jakubiak & Associates, Inc. * Town and City Planners * Annapolis, Maryland
www.jakubiak.net

Table of Contents

Page

CHAPTER 1 — INTRODUCTION 1

A Vision for Chesapeake City 1
Comprehensive Plan Principles 3
Location 4

CHAPTER 2 — DEMOGRAPHICS 5

Population 5
Age 7
Households 7
Economic Structure 8
Workforce, Employment, and Income 8

CHAPTER 3 — MUNICIPAL GROWTH AND COMMUNITY FACILITIES 10

Municipal Growth and Community Facilities Goals 11
Background 11
A 2030 Forecast of Households 11
Infill Capacity 12
The Plan for Municipal Growth 13
Distribution of Forecast Household Growth 13
Annexation Areas 14
Impact to Community Facilities 16
Municipal Growth Objectives and Actions 20
Community Facilities Objectives and Actions 21

CHAPTER 4 — LAND USE 22

Land Use Goals 22
Background 22
Surrounding Area Land Use 22
Town Land Use 23
The Plan for Land Use 24
Land Use Objectives and Actions 26

CHAPTER 5 — ENVIRONMENTAL RESOURCES AND SENSITIVE AREAS 27

Environmental Resources and Sensitive Areas Goal 27
Background 27
Chesapeake Bay Critical Area 27
Streams and Stream Buffers 29
100-Year Floodplain 30

Wetlands 31
Soils/Geology 32
Mineral Resources 32
Woodlands 32
The Plan for Environmental Resources and Sensitive Areas 36
Environmental Resources and Sensitive Areas Objectives and Actions 37
CHAPTER 6 — WATER RESOURCES 38
Water Resources Goals 38
Background 39
Wastewater Treatment and Point Source Water Pollution 39
Drinking Water 40
The Plan for Water Resources 42
Future Drinking Water and Sanitary Sewer Demand 42
The Plan for Drinking Water 44
The Plan for Wastewater 44
Water Quality 45
Water Resources Objectives and Actions 46
CHAPTER 7 — TRANSPORTATION 47
Transportation Goals 47
Background 47
Functional Classification 48
Regional Circulation 48
Sidewalks/Trails 48
Transportation Issues 49
The Plan for Transportation 51
Transportation Objectives and Actions 54
CHAPTER 8 — COMMUNITY CHARACTER AND HISTORIC PRESERVATION 55
Community Character and Historic Preservation Goal 55
Background 55
The Plan for Community Character and Historic Preservation 57
Historic Preservation Objectives and Actions 58
CHAPTER 9 – IMPLEMENTATION 59

List of Tables

Page

2.1 Population Change by Decade—Chesapeake City and Cecil County 5
2.2 Population by Age Group (2000) 7
2.3 Households in Chesapeake City (2000) 8
2.4 Place of Work 9
2.5 Number of Employees 9
2.6 Median Household Income by Area (1999) 9

3.1 Forecast of Households 11
3.2 Approved Housing Units 12
3.3 Household Growth Potential by Category 13
3.4 Future Annexation Areas 14
3.5 School Enrollment Capacity (Fall 2008) 16
3.6 Projected School Enrollment and Capacity 17
3.7 Impact of Forecast Growth on Public Water & Sewer Services 18

4.1 Comprehensive Plan: Major Land Use Recommendations 23

5.1 Riparian Buffer Functions and Size 29
5.2 Optimal Forest Size by Function 32

6.1 Wastewater Treatment Demand and Supply 38
6.2 Current Nutrient Loads for the Back Creek Watershed 39
6.3 Public Drinking Water System Capacity 40
6.4 Forecast Impact of Growth on Public Water and Sewer Services 41
6.5 Nutrient Loads from the Chesapeake City WWTP 42

9.1 Historic Places in Chesapeake City Recognized by the Maryland Historical Trust 54

List of Exhibits

Page

2.1 Population: Cecil County and Chesapeake City (1960-2000) 65

5.1 The Stream and its Floodplain Before and After Development 30
5.2 Forest Core and Edges 32
5.3 The GI Concept 33

6.1 Chesapeake City Water Source Locations 39

8.1 Road Improvements 50

List of Maps

Following Page

Chesapeake City Comprehensive Plan 2
Chesapeake City Area Wide Location 4
Chesapeake City Municipal Growth 14
Chesapeake City Existing Land Use 22
Chesapeake City Environmental Features 26
Chesapeake City Proposed Trails 51

Chapter 1 — Introduction

The Comprehensive Plan is the official statement of the Town of Chesapeake City setting forth policies concerning future growth, development, and land conservation. Once adopted, it becomes the basis for specific actions, programs, and legislation. Future development, land conservation, Town and County land use decisions, and investments in infrastructure should all be consistent with this Plan.

The Plan is comprised of several major elements that form an integrated, unified policy for guiding future growth and development. As a policy document, it is general, comprehensive, and long-range in nature. It is general in that it summarizes policies and proposals but does not establish detailed regulations or indicate specific locations. It is comprehensive in that it encompasses the entire geographic area of the Town and includes all functional elements that bear upon physical development, such as transportation, land use, and community facilities. It is long-range in that it looks beyond current issues to problems and opportunities related to future growth over the next twenty years and beyond.

This Comprehensive Plan expresses basic goals and acts as a guide for the future of Chesapeake City through 2030. As a guide, it allows Chesapeake City to make day-to-day development decisions on the basis of reasoned and adopted policies rather than on the merits of individual proposals. This document—its text, maps, and illustrations—provides the basis for making changes to zoning, subdivision, and other regulations that govern land use and infrastructure development in Chesapeake City.

A Vision for Chesapeake City

As Chesapeake City plans its growth, it is essential that the characteristics that make this Town such a desirable location for tourists and residents be preserved. The Town has a distinguishing “sense of place” in terms of its heritage, layout, architecture, and picturesque setting.

New homes must maintain Chesapeake City’s architectural standards, diversity of design, size, and neighborhood layout that has defined this Town since its founding. The final result of development will appear and feel like a larger version of Chesapeake City. This will be achieved through adherence to the principles of Traditional Neighborhood Development, or TND. This means a range of types of medium and smaller sized homes close to the street with garages and connecting alley ways in the rear, sidewalks, parks, and some shops. The density of housing will be greatest adjacent to adjoining neighborhoods, followed by several TND zones of decreasing density and finally surrounded by an undeveloped “green belt” to preserve a rural and scenic entry way into Town. Another aspect of TND is that construction is slowly phased-in over a long period of time, as much as 20 years, to prevent a “shock to the system” that can result from growth that is too rapid for a small town.

Upholding these standards will ensure that Chesapeake City does not lose its unique qualities. The Town will need developers who adhere to this vision and will work with the Town to achieve it. This precludes “cookie-cutter” tract homes in a standard subdivision layout, overly large luxury homes, and other types of standardized, formulaic development that creates a generic appearance of “Anywhere, USA”.

Commercial development must be compatible with the characteristics of the Town as well. Chesapeake City is one of the few municipalities in the country that has a “formula business ordinance” for its historic, village center, and village commercial zones. This requires large, national franchises to make substantial changes to their standard formula, including building structure and appearance, décor, uniforms, menus, etc., in order to operate in the Town.

Since the Town is largely located in the Chesapeake Bay Critical Area, protecting natural resources and existing topographic conditions is essential so as not to harm the environment or cause unnatural water flow and flooding. This requires "low impact development" and land conservation, which is explained in further detail in this Comprehensive Plan.

It also must be ensured that the Town has adequate and cost-effective municipal facilities, such as drinking water facilities and wastewater collection and treatment stations, to handle any proposed development. Any necessary additional capacity should be funded by the developer and the Town should retain a reserve capacity for future and/or unanticipated needs.

There's good reason Chesapeake City is considered a "Jewel of the Upper Shore". Such an unspoiled town with a rich history, divided by the third busiest canal in the world, requires extra care in its planning and execution of development.

This Comprehensive Plan includes individual chapters for Municipal Growth, Land Use, Transportation, Water Resources, Environmental Resources and Sensitive Areas, and Historic Preservation. The policies and recommendations of this Plan are accompanied by a composite Comprehensive Plan Map. This map is an illustrated compilation of the primary goals and policies. The map can be found on the following page and is referenced throughout the aforementioned chapters.

It is important to note that the Planning Commission prepared this Comprehensive Plan as called for by Article 66B of the Annotated Code of Maryland. The Plan is consistent with the 12 visions of the State of Maryland, Economic Growth, Resource Protection, and Planning Act of 1992:

1. *Quality of Life and Sustainability*: A high quality of life is achieved through universal stewardship of the land, water, and air resulting in sustainable communities and protection of the environment.
2. *Public Participation*: Citizens are active partners in the planning and implementation of community initiatives and are sensitive to their responsibilities in achieving community goals.
3. *Growth Areas*: Growth is concentrated in existing population and business centers, growth areas adjacent to these centers, or strategically selected new centers.
4. *Community Design*: Compact, mixed-use, walkable design consistent with existing community character and located near available or planned transit options is encouraged to ensure efficient use of land and transportation resources and preservation and enhancement of natural systems, open spaces, recreation areas, and historic, cultural, and archeological resources.
5. *Infrastructure*: Growth areas have the water resources and infrastructure to accommodate population and business expansion in an orderly, efficient, and environmentally sustainable manner.
6. *Transportation*: A well-maintained, multimodal transportation system facilitates the safe, convenient, affordable, and efficient movement of people, goods, and services within and between population and business centers.
7. *Housing*: A range of housing densities, types, and sizes provides residential options for citizens of all ages and incomes.

8. *Economic Development*: Economic development and natural resource-based businesses that promote employment opportunities for all income levels within the capacity of the state's natural resources, public services, and public facilities are encouraged.
9. *Environmental Protection*: Land and water resources, including the Chesapeake and costal bays are carefully managed to restore and maintain healthy air and water, natural systems, and living resources.
10. *Resource Conservation*: Waterways, forests, agricultural areas, open space, natural systems, and scenic areas are conserved.
11. *Stewardship*: Government, business entities, and residents are responsible for the creation of sustainable communities by collaborating to balance efficient growth with resource protection.
12. *Implementation*: Strategies, policies, programs, and funding for growth and development, resource conservation, infrastructure, and transportation are integrated across the local, regional, state, and interstate levels to achieve these visions.

Comprehensive Plan Principles

This plan is based upon three principles of good town planning. These principles are:

1. Natural areas provide form to urban development. They define the edges of intensely developed areas, they provide wide, open spaces, and add to scenic beauty. Natural areas can connect various parts of a Town and, in so doing, can become useful elements in town planning; they become environmental corridors. Sensitive natural areas play significant roles in the quality and health of human settlements. Floodplains and wetlands in their natural state help control flooding, improve water quality, and provide protective habitat for native plants and wildlife. Vegetation on steep slopes helps prevent erosion. Well-connected and forested corridors provide habitat and the necessary means of migration for wildlife. The underlying qualities of the land help determine which uses are viable. To the extent possible, the natural capability and characteristics of the land should guide land use development. Certain development in or near sensitive environmental areas can cause irreparable harm for future generations.

2. Infill development and/or redevelopment can occur in a manner that respects the size, scale, and use of existing and historic development patterns. Successful infill maintains and/or restores spatial continuity to streetscapes; strengthens neighborhoods; respects historic preservation, existing vistas, and natural resources; and introduces compatible uses that complement existing community attributes and needs.

3. Proper stewardship over essential public services and community facilities and a town's investments require that a town grows within the confines of its infrastructure and service capacities while expanding capacity as necessary. Existing town residents should not bear the quality of service or financial burden for new development.

Location

The Area Wide Location Map shows the Town's location within the larger natural and built environment. The location of Chesapeake City may be defined in several ways:

- Chesapeake City is located on the Upper Eastern Shore of Maryland, 1.9 miles west of the Maryland-Delaware border. Chesapeake City is approximately five miles south of US Route 40. The Route 40 corridor is a designated employment and development area in Cecil County, extending from Harford County to the Delaware state line. It is the central focus of development and infrastructure investment in Cecil County.

- Chesapeake City is located on the Chesapeake and Delaware (C&D) Canal. The Canal has been a commercial entity in the Town since the early nineteenth century. The C& D Canal connects the Chesapeake and Delaware Bays via the Elk River in Maryland and the Delaware River in Delaware.

- Chesapeake City is the only municipality located in the Back Creek Watershed, which is part of the Upper Chesapeake Bay Watershed. Back Creek, which passes through Town on the south, is a tributary to the C&D Canal. Cecil County projects that about 2.6 percent of its growth through 2030 will occur in the Back Creek watershed.

- Chesapeake City is located within the Wilmington Area Planning Council (WILMAPCO) planning area. WILMAPCO is the regional transportation planning agency for Cecil County, MD and New Castle, DE. The WILMAPCO region has a population of around 630,000.

Chapter 2 — Demographics

This overview compares Chesapeake City's population and housing to that of Cecil County. In so doing, it provides a point of reference for local statistics to be seen in a meaningful and broader context.

Population

As illustrated in Exhibit 2.1 beginning roughly in 1990, Chesapeake City began to reverse its long-term population decline. Between 1990 and 2008, the population increased by 95 residents to 830. The Exhibit shows that Cecil County, in contrast, has grown steadily since 1960. By 2008, the County had reached an estimated population of 99,926. Between 2000 and 2008, the County added 13,981 residents. Town growth and development has not been a factor in County-wide growth. During the same eight years, the Town grew by 43 residents.

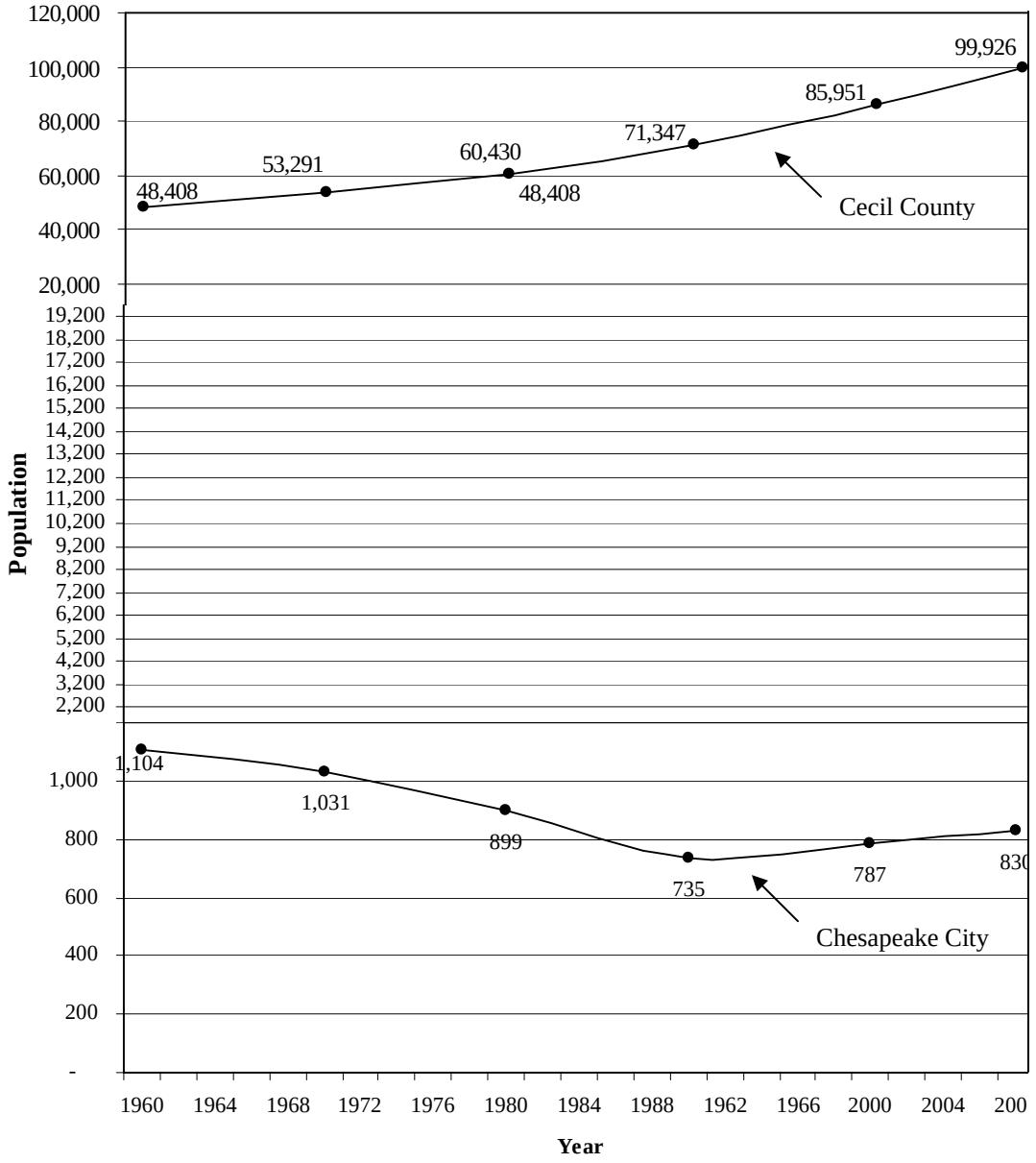
Table 2.1: Population Change by Decade—Chesapeake City and Cecil County

	1960- 1970	1970- 1980	1980- 1990	1990- 2000	2000- 2008	1960- 2008
Chesapeake City						
Average Change (%)	-6.61	-12.80	-18.24	7.07	5.46	-24.82
Annual Rate of Change (%)	-0.68	-1.36	-1.99	0.69	0.67	-0.59
Cecil County						
Average Change (%)	10.09	13.40	18.07	20.47	16.26	106.42
Annual Rate of Change (%)	0.97	1.27	1.67	1.88	1.90	1.52

Source: U.S. Census Bureau and Jakubiak & Associates, Inc.

Table 2.1 shows the population change and rate of change by decade in both the Town and the County. Over the long term—that is between 1960 and 2008—the Town population declined by about 25 percent, or grew less than one percent per year on average. The County's population has more than doubled in this timeframe.

Exhibit 2.1: Population: Cecil County and Chesapeake City (1960-2005)



Age

The age of a population is another element that factors into a community's character. In 2000, Chesapeake City's median age was 39.9 years; five years older than in 1990. In 2000, Cecil County had a median age of 35.5, making the Town's population almost 4.5 years older, on average, than that of the County.

The difference is related to the proportion of residents under 18 versus residents over 65, as shown in Table 2.2 below. Nearly 28 percent of the County's population is under 18 years of age compared to 22 percent in Chesapeake City. Nearly 17 percent of the Town's population is over 65 years of age, compared to 10.5 percent of the County population.

Table 2.2: Population by Age Group (2000)

Years of Age	Chesapeake City	Cecil County
Under 18	21.7%	27.7%
Over 65	16.6%	10.5%

Source: U.S. Census Bureau and Jakubiak & Associates, Inc

Households

A household is an occupied dwelling unit and is the main "demand" unit when considering the impact of growth on public facilities such as water, sewer, and streets. For example, one household is typically estimated to generate a demand of 250 gallons of water per day.

The Town and Cecil County both experienced an increase in the number of households between 1990 and 2000. The Town grew by 40 households or 14 percent, from 290 in 1990 to 330 in 2000. Over the next eight years, Chesapeake City increased its residential base by four housing units, bringing the 2008 estimate of households to 334.

The County grew from 24,725 households in 1990 to 31,223 households in 2000, an increase of about 26 percent (6,498). In 2005, the U.S. Census Bureau estimated that the number of households in Cecil County had increased to 35,135—that is 3,912 households in five years.

As shown in Table 2.3, according to the 2000 U.S. Census, 228 of the 330 total households (or 69 percent) in Chesapeake City were family households. A family household is composed of persons related to the householder by birth, marriage, or adoption. Married–couple families accounted for nearly 52 percent of all households.

Table 2.3: Households in Chesapeake City (2000)

Household Type	Children in Household		Sum	% of Total Households
	Yes	No		
Family Households				
Married Couple Families	54	117	171	51.8%
Male Householder, no wife	7	9	16	4.8%
Female Householder, no husband	31	10	41	12.4%
Subtotal	92	136	228	69.1%
Non-Family Households	10	92	102	30.9%
Total Households	102	228	330	100.0%

Source: U.S. Census Bureau and Jakubiak & Associates, Inc.

Other relevant findings from the 2000 Census regarding households include:

- The average household size for Cecil County was 2.71. Chesapeake City's household size was 12 percent lower than that of the County's at 2.38.
- Of family households in Chesapeake City, around 40 percent include children under age 18.
- In Chesapeake City, about 24 percent of householders live alone. Almost 12 percent of those householders living alone are over the age of 65. In Cecil County, almost 20 percent of householders live alone. Seven percent of those householders living alone are over the age of 65.

Economic Structure

A general understanding of the economic structure can help to illuminate the economic forces that affect land development patterns. For example, the underlying economic support must be present before retail and other associated commercial services can be established. Employment options in an area can illuminate demand for housing.

The main industry in Chesapeake City in 2005, as reported by the U.S. Census, was accommodation and food services. In the County, the main industry in 2005 was retail trade. There is also a concentration in construction in both the County and in the Town.[1]

Workforce, Employment, and Income

Table 2.4 shows where the workforce in Chesapeake City was employed in 2000. According to the U.S. Census, there were 376 individuals in the Chesapeake City workforce. About 13 percent of this workforce was employed within the Town. Almost 50 percent of Chesapeake City's workforce commuted to out-of-

[1] Source: U.S. Census: County Business Patterns 2005.

state employment centers—Delaware. Also noteworthy is that 183 Town residents, or slightly less than half of the workforce, were employed within Cecil County.

Table 2.4: Place of Work

	Number	% of Total
Total	376	
Worked in Maryland	197	52.4%
worked in Cecil County	183	48.7%
worked in Chesapeake City	50	13.3%

Source: U.S. Census and Jakubiak & Associates, Inc.

Table 2.5 shows the number of jobs in the Town and County in 1998, 2000, and 2005. While the number of jobs in Cecil County has grown between 1998 and 2005, Chesapeake City, has seen a decline in jobs during this seven-year period. The Town's share of overall employment has also declined from 3.2 percent in 1998 to 2.4 percent in 2005. In 2005, jobs in Chesapeake City represented two percent of County employment.

Table 2.5: Number of Employees

	1998	2000	2005	1998-2005
Chesapeake City	601	572	560	-7%
Cecil County	18,482	20,829	23,192	25%

Source: County Business Patterns-U.S. Census Bureau and Jakubiak& Associates

The 2000 U.S. Census reports median household income as of 1999. Incomes in the Town were lower than the State and County, but higher than all other towns in Cecil County. Between 1989 and 1999, the number of persons living below the poverty line in Chesapeake City decreased from 62 (or 8.7 percent) to 47 (or 6.2 percent).

Table 2.6: Median Household Income by Area (1999)

Area	Annual Income
Maryland	$52,868
Cecil County	$50,510
Chesapeake City	$46,917
Cecilton	$38,971
Elkton	$38,171
North East	$39,563
Perryville	$43,984

Source: U.S. Census Bureau and Jakubiak & Associates, Inc.

Chapter 3 — Municipal Growth and Community Facilities

In 2006, the Maryland General Assembly approved changes to Article 66B, the code of laws which enables towns to conduct land use planning and zoning. State law now requires that comprehensive plans contain a "municipal growth element" to address, primarily, the outward expansion of municipal limits and the impacts of this growth. It is the purpose of this section of the Comprehensive Plan to:

- Document the level of growth anticipated through 2030.
- Document the planned distribution of forecast growth by location.
- Identify growth areas where the Town would approve annexation, if petitioned.
- Document the potential impact of growth on community facilities.
- Set forth policies on municipal growth.

As a basis for planning for future public facilities and preparing for growth in general, a Comprehensive Plan typically adopts a forecast of future of growth. This forecast can be considered a target or an estimate of how much a town will grow over a 20-year period. The Plan then provides recommendations for how key community facilities can be made available to support the forecast growth.

Upon the 2006 amendments to Article 66B of the Maryland Code, a town's growth must now be balanced strictly with the ability to provide essential services (water and sewer, for example) to serve that growth. This means that only development which can be served by available infrastructure or infrastructure planned and reasonably expected to be in place can be included in a town's land use plan. In this regard, this Comprehensive Plan recognizes that there is presently insufficient water and sewer capacity to serve the approved housing units in the Town.

This Plan therefore calls for no further growth and development unless and until the capacity of water and sewer systems is made adequate. It further recommends that no water or sewer allocations be made available to the two recently approved development projects (described herein) until water and sewer allocation management plans are prepared and approved by the Maryland Department of the Environment (MDE) and adopted by the Town.

While recognizing the current constraints on growth, this Plan does not shy away from proactively planning for expansion of Town boundaries and the expansion of water and sewer capacities. A key recommendation of this Comprehensive Plan is to expand water and sewer capacity to accommodate planned growth as well as to modernize and expand the systems for current users.

Municipal Growth and Community Facilities Goals

- The planned expansion of the Town occurs in an ecologically sustainable way with minimal impact to natural resources.
- Community facilities are adequate and their quality is ensured as growth occurs.

Background

A 2030 Forecast of Households

Between 1990 and 2000, Chesapeake City added 40 households, growing from 290 to 330 households or by about 1.3 percent per year, on average. Growth since 2000 has been constrained by the availability of water and sewer services. Over the eight years between 2000 and 2008, Chesapeake City increased its residential base by four housing units, bringing the 2008 estimate of households to 334. The estimated 2008 household number is used in this report as the assumed year 2010 number of households for the purposes of projecting Town household growth.

The Maryland Department of Planning (MDP) projects continued strong household growth for Cecil County through 2030. Between 2010 and 2030, MDP projects the County will grow from 39,875 to 61,175 households or by 21,300 households. This is an average annual growth rate of 2.1 percent[2]. During the previous 20-year period, 1990 to 2010, the County grew at an estimated rate of 2.4 percent. MDP also projects employment growth (new jobs) for Cecil County. Between 2010 and 2030, the number of jobs in the County is anticipated to increase by 17,900 or by 1.7 percent per year. These strong growth projections for the County suggest that Chesapeake City must prepare for increased growth.

This Plan forecasts strong growth in the Town's residential base through the year 2030. Of course, this is premised on the expansion of public water and sewer facilities. While Chesapeake City is not located within the County's proposed Route 40 growth corridor, it is located close enough to regional employment centers to justify planning for increased growth pressures. Table 3.1 shows the Town's forecast of households. The Plan forecasts that 426 households will be added to Chesapeake City between 2010 and 2030, at an average annual rate of 4.2 percent.

Table 3.1: Forecast of Households

	2010	2030	Change: 2010-2030 (#)	Change: 2010-2030 (%)	Ave. Annual Growth Rate (%)
Households	334	760	426	127.5	4.20

Source: Jakubiak & Associates, Inc.

[2] MDP projections last revised November 2007.

This represents substantially greater growth than has occurred historically in Chesapeake City. However, it constitutes only 2 percent of the household growth projected for Cecil County through 2030. By 2030, if the forecast is realized, the Town would comprise about 1.2 percent of the County's population, still lower than the Town's share recorded in the 1970's and 1980's but higher than the current 0.8 percent share.

For context, it should be noted that Cecil County projects that 563 households would be added to the Back Creek Watershed by 2030. The Town is the only provider of public water and sewer services in the watershed and this Plan envisions that 75 percent of the watershed's growth should occur as a result of annexation into the Town. (The Town's forecast of 426 households is about 75 percent of 563.) Achieving this forecast will require commitments on the part of the Town, Cecil County, and State of Maryland to policies that direct and accommodate growth within Chesapeake City. This means that all must work together to expand municipal water and sewer facilities and limit development in rural areas.

Infill Capacity

A certain amount of "infill" development is typically allowed in towns. "Infill" refers to the new dwelling units that could reasonably be expected to be built under current zoning. Sometimes infill can come about when an existing lot is subdivided to create another buildable lot. Sometimes infill can come about when single-family lots are converted into a multifamily development project. However, for the most part, infill happens when vacant lots are built on or when large lots are subdivided for more housing.

In Chesapeake City, infill potential approximates 200 dwelling units. This is based on an assessment of available land and zoning. Thirty one housing units are theoretically possible under current zoning on vacant lots-of-record according to a recent study conducted by the Town. However, only two of the vacant parcels have secured the potential for future public water and sewer services through the Town's allocation policies.

The bulk of infill potential is composed of the 169 housing units in recently approved development projects. Table 3.2 shows the number of units proposed in each project. The construction and occupancy of these units alone would bring the total residential base to roughly 500 occupied households[3].

Table 3.2: Approved Housing Units

Development Project	Zoning	Housing Units			
		SF	TH	MF	Total
Chesapeake Village	TND	22	28	100	150
Bridge Point	TND	0	19	0	19
Sum		22	47	100	169

Source: Jakubiak & Associates, Inc.

[3] This assumes the continuation of historic housing vacancy rates of roughly 40 units or 11 percent.

The Plan for Municipal Growth

Chesapeake City is the planned growth area for the Back Creek Watershed.

Distribution of Forecast Household Growth

Planning for municipal expansion begins with designating suitable locations for forecast growth[4]. The location of about 40 percent of the forecast growth (see Table 3.1) is already set—the 169 housing units in the two presently approved subdivisions (169 is 40 percent of the 426 households forecast).

About seven percent of the Town's forecast growth is planned to occur as a result of construction on currently vacant lots-of-record. This assumes that all 31 vacant lots are improved through 2030 with single-family houses, which is a conservatively high estimate[5]. Only 53 percent of the 2030 forecast growth in households is planned for the Town's Growth Areas (through future annexation). These areas are described in the next section.

As shown in Table 3.3, it is anticipated that the approved development projects will build-out and all current vacant lots will be developed by 2030. It also shows that about one-fifth of the development potential of the annexation areas would be realized by 2030. More specifically, the Plan anticipates that only 226 households of the 1,100 household potential in the annexation areas will be developed by 2030.

Table 3.3: Household Growth Potential by Category

Category of Growth	Estimate of Housing Units		
	Total Potential	Units Constructed by 2030	
		#	%
Currently Approved Projects	169	169	100
Infill on Vacant Lots	31	31	100
Annexation in Growth Areas	1,100	226	21
Sum	1,300	426	40

Source: Jakubiak & Associates, Inc.

[4] The Land Use Element details the location and character of future growth and development through 2030.

[5] The infill potential of 31 housing units is provided as a general basis for comprehensive planning. Detailed examination of the development feasibility of all vacant lots should be examined when preparing water and sewer allocation plans. It is a conservatively high estimate because not every owner of a vacant parcel will automatically make that parcels available for development even when market demand for property is strong. In the preparation of this Plan the Town surveyed vacant lots and asked property owners to request water and sewer allocation if they were considering development in the near future. Only two property owners did so.

To restate, it is not this Plan's intention that all of the areas proposed for annexation be developed fully by 2030. The development potential of the annexation areas is greater than this Plan's 20-year forecast of growth. In other words, it is reasonable to expect that it will take more than 20 years for the growth areas to develop completely. However, this Plan identifies future growth areas as a means for declaring the Town's expectation for and visions of ultimate development. It is very important to understand this build-out potential so that community facilities can be properly sized and designed with foresight and County planning can be oriented to the goal of directing residential development potential in the Back Creek Watershed to Chesapeake City.

Annexation Areas

This Plan directs the Town's expansion to three growth areas, shown on the Municipal Growth Areas Map. These areas are labeled Growth Areas "A", "B", and "C". Areas "A" and "B" are separated by Hemphill Street, which runs north-south to the east of MD Route 213. The map shows that a portion of these growth areas would be dedicated to development, while a portion (especially along Long Creek) would be annexed into the Town for the purposes of land preservation and creating a Greenbelt, as discussed in Chapter 4, Land Use.

Another annexation, not labeled as a "growth area" would be consistent with this Plan. This is a Town owned parcel to the west of the Town's existing boundaries on the south side of the Canal. This area would be annexed for the future expansion of water and sewer facilities. It is also shown on the Municipal Growth Areas Map.

Table 3.4: Future Annexation Areas

Annexation Areas	Current Land Use	Recommended Land Use	Sensitive Areas Present *
Growth Area "A"	Agriculture, Natural Areas, low density residential	Residential (minimum net density of 8 units/acre) and Natural Area Conservation	Yes Critical Area, Woodlands, Wetlands, Floodplain
Growth Area "B"	Agriculture, Natural Areas	Village Commercial, Village Center, and Residential (minimum net density of 8 units/acre), and Natural	Yes Critical Area, Wildlife habitat
Growth Area "C"	Natural Areas, Commercial, Institutional	Commercial and Institutional	Yes Woodlands, Wetlands

* Recommendations for how these sensitive areas would be protected can be found in Chapter 5 Sensitive Areas and Chapter 4 Land Use.

Growth Area "A"

Growth Area "A" is primarily the Foard Farm which is a parcel of 214 acres, but it also includes the portion of the St. Basil property located east of Hemphill Street. It is eligible for annexation. Development in Growth Area A will be conditioned on water and sewer facilities being made adequate to support the development. It is recommended that the acreage outside of the Critical Area be developed at a village scale Traditional Neighborhood Development (TND) with a net density of 8 units per acre. This Plan further recommends that Growth Area "A" be developed following sound ecological principles described in the Land Use chapter of this report. Growth Area "A" also includes presently developed low density residential areas along Knights Corner Road. For more information on policies for the protection of natural areas see Chapter 5, Environmental Resources and Sensitive Areas.

Growth Area "B"

Growth Area "B" encompasses the following areas: the Saint Basil property on the east and west sides of MD Route 213, the 50-acre Philadelphia Electric Company property, and existing residential lots along Lock Street. It is eligible for annexation. This parcel contains Critical Area lands. The area on the east side of the MD Route 213 is recommended as a mixed-use commercial and residential center. The area could accommodate a village-scale mixed-use residential and commercial shopping center on the east side of MD 213. Land designated village commercial could accommodate as much as 210,000 square feet of commercial space at full build-out, but it is expected that by 2030 only about 85,000 square feet of commercial space would be constructed[6]. The commercial development in Growth Area "B" should serve the local community and be developed at a scale consistent with that found in the Town's existing village center.

The area on the west side of MD 213 is recommended for Traditional Neighborhood Development (TND) containing housing and open space amenities. This area should be accessed by Lock Street not directly by MD Route 213. Because the lands on the west side of MD 213 are classified as Resource Conservation within the Critical Area, development will require Critical Area growth allocation. This Plan recommends that the growth allocation needed to support the planned development of the Growth Areas be obtained by Chesapeake City from Cecil County and be approved by the Town and Critical Area Commission. All other parts of the Growth Area "B" are recommended for natural area conservation as indicated on the Municipal Growth Areas Map.

Growth Area "C"

Growth Area "C" extends along MD Route 213, south of Town. The area contains emerging commercial development and the Bohemia Manor High School. It is expected that this area would continue to develop with commercial and institutional uses under current County zoning but this Plan proposes that development instead be guided by the Town Plan and provided with necessary public water and sewer facilities. It is eligible for annexation.

Full build out of this area could result in an additional 169,000 square feet of commercial space in Chesapeake City.[7] This plan projects that around 40 percent, or 67,500 square feet, could develop by 2030. Commercial development along MD 213 should serve local and regional needs. These should be

[6] This commercial development estimate provides a basis for the projection of future water and sewer demand used elsewhere in this report. For context, the sizes of modern grocery stores typically range from 45,000 to 65,000 square feet, though some stores are larger.

[7] This commercial development estimate provides the basis for water and sewer demand projections used elsewhere in this report.

highway commercial uses such as service stations and restaurants. Design and access should be coordinated in way consistent with the overall design of Chesapeake City. Access to the highway should be strictly managed as outlined in Chapter 7, Transportation.

Summary of Growth Areas

This Plan does not anticipate the full build-out of three municipal Growth Areas by 2030. Instead, the Plan recommends that the land in Growth Areas "A" and "B" be converted to developed use according to a phased schedule that would be balanced against the need for adequate facilities. The Town should retain professional planning assistance to create a phasing schedule, prior to annexation, as part of a negotiated annexation agreement. This schedule should be guided by the goals of this Comprehensive Plan. Development of the Town through 2030 and full build-out of the annexation areas may be expected to impact community facilities and services. This is discussed below.

Potential Additional Growth Area

During the Public Comment period on the Comprehensive Plan, a proposal to add an additional growth area was presented to the Town. The Planning Commission decided to withhold recommending its inclusion in this Plan at this time. This potential growth area would adjoin Growth Area "C" and encompass the agricultural lands located (1) immediately west of Basil Avenue and South of Randalia Road and (2) immediately west of MD Route 213 and south of Hennesly Lane.

While these land areas are not included in this Plan as a designated growth area, the Town supports further study to determine whether the areas or any portion thereof should become a designated growth area in the future and if so what boundary, land use, infrastructure, and development recommendations would be relevant. Should it be found in the Town's interests to annex these lands, this Comprehensive Plan could be amended as provided for in Article 66B of the Annotated Code of Maryland.

Impact to Community Facilities

By 2030 Chesapeake City will grow by 426 households. The impacts are discussed here. In addition to discussing the impact of the planned growth through 2030, the impacts of full build-out of the Town are addressed. Although these impacts will not be realized by 2030, understanding the impacts of annexation allows for thoughtful, long term, advanced planning.

Schools

The Cecil County Board of Education operates the school system attended by Chesapeake City residents. Table 3.5 shows the 2008 enrollment and capacity of area schools. Enrollment at both Chesapeake City Elementary and Bohemia Manor Middle School are below their state-rated capacity. Bohemia Manor High School enrollment is fourteen percent (91 students) above the school's state-rated capacity. There are plans for a new Cecil County Technical High School that is expected to accept 168 students from Bohemia Manor High School in 2010. There are therefore no upgrades planned for Bohemia Manor High.

Table 3.5: School Enrollment Capacity (Fall 2008)

School	Enrollment	Capacity	Percent (%) of Capacity
Chesapeake City Elementary	308	353	87%
Bohemia Manor Middle School	469	601	78%
Bohemia Manor High School	734	643	114%

Source: Cecil County Public Schools

Chesapeake City Elementary school is planned for a renovation that will increase its capacity from the current 308 students to 445 students. This work is expected to begin in 2010.

Table 3.6 compares the currently planned capacity against expected 2030 and build out enrollment. As shown, while school capacity will be sufficient to accommodate projected students through 2030; full build-out of the Town's growth areas could require further expansions of all schools.

Table 3.6: Projected School Enrollment and Capacity

School	Capacity	2030		Buildout	
		Enrollment	Percent (%) of Capacity	Enrollment	Percent (%) of Capacity
Chesapeake City Elementary	445	387	87%	567	127%
Bohemia Manor Middle School	601	514	85%	616	102%
Bohemia Manor High School	643	617	96%	734	114%

Source: Cecil County Public Schools

The growth planned by 2030 would put Bohemia Manor High School at 96 percent capacity and full build-out of the municipal growth areas would mean the school would be at 114 percent of capacity. This means that while there is not a need for expansion of the school in the timeframe of this plan, planning should begin over the next decade to relieve possible overcrowding beyond 2030.

The Chesapeake City Elementary School and Bohemia Manor Middle School may also be over capacity under full build-out of this plan. These capacity concerns will need to be addressed in coordination with the Cecil County Department of Education, with the goal of ensuring that all students in the Town are able to attend elementary school in the Town. Coordination with the Department of Education on future annexation deliberation is encouraged.

Library

The Chesapeake City branch of the Cecil County library system is located on the west side of Route 213, south of the current Town boundary. The current library is sufficient to serve residents through 2030 and full build-out.

Parks

North side: The Helen Titer Memorial Park is the only recreation facility north of the canal. The park site is approximately five acres. Given the amount of growth projected for the north side, additional parkland should be dedicated as a part of development in Growth Areas “A” and “B”.

Southside: In South Chesapeake City there are several parks and recreation areas. There are small parks located near the waterfront. Pell Gardens Park is located near the shops and stores of the village center. This public green is a meeting place for residents and visitors that often take advantage of summer entertainment programmed at the park. The Ferryslip Neighborhood Park is an active park located on 2nd Street. Chesapeake City Park contains ball fields and is located on the west side of Route 213, south of the Village Center. Ball fields are also located at the Elementary, Middle, and High Schools.

Chesapeake and Delaware Canal Greenway: Greenways can provide passive recreation and safe and affordable transportation. The Chesapeake and Delaware Canal Greenway provides a link between Welch Point Managed Hunting Areas, Elk Forest Wildlife Management Area, and Bethel Managed Hunting Area. The south side of the Town’s greenway has been enhanced by adding a promenade along Back Creek. Chesapeake City has also created pedestrian connections from newer residential developments to the greenway in both North and South Chesapeake City.

Police, Fire, and Emergency

Police services to the Town are provided by the Cecil County Sheriff's Department. Forecast growth would result in approximately 1,100 additional residents in 2030.[8] This increase in residents may require additional police services. The Town may consider supplementing police services by contracting sheriff's deputies to provide services for community events as the Town grows.

Fire and EMS services in Chesapeake City are provided by Volunteer Fire Company No.1. There are two fire stations; Station 2, located on Lock Street on the north side of Town, and Station 12, located on Route 213 on the south side of Town, near Bohemia High School. Emergency medical services in the form of paramedics are provided from the southern location. The Fire Company has two ambulances, three engines, one fire rescue boat, and two tankers. It is likely that, in the later years of this plan, additional volunteers will be needed to provide service to new residents. Station 2 in particular will need to add volunteers and potentially new equipment to serve the increased population on the north side of Town. The Town will need to work with the Volunteer Fire Company to monitor staff and equipment needs as growth occurs.

Water and Sewer

Chesapeake City has two water and two sewer systems, one on each side of the C&D Canal. Both the water and sewer systems are currently at capacity and in need of upgrades. The details of water usage and sewer discharge and plans for addressing shortages are discussed in Chapter 6, Water Resources.

The Town owns and operates the sewer lines and the wastewater treatment plant. While the Town provides services to most residents, there are approximately 10 homes that rely on individual septic tanks and private wells. These homes are located along Mt. Nebo Road and along MD Route 285 east. The Town provides drinking water to residents and about 20 users outside of Town limits. Chesapeake City owns the lines and pump stations that provide water to the households within the Town.

Table 3.7 outlines the impacts of future development on the Town's water and sewer services. The current water and sewer systems do not now have additional capacity to support growth. Chapter 6, Water Resources addresses this issue.

Table 3.7: Impact of Forecast Growth on Public Water and Sewer Services

	2030				Buildout			
			Demand (gpd)				Demand (gpd)	
Growth Source	**Dwelling Units**	**Comm. sf[1]**	**Water**	**Sewer**	**Dwelling Units**	**Comm. sf[1]**	**Water**	**Sewer**
Infill	31	-	7,750	7,750	31	-	7,750	7,750
Pipeline	169	-	42,250	42,250	169	-	42,250	42,250
Growth Areas								
Growth Area "A"	165	-	41,250	41,250	800	-	200,000	200,000
Growth Area "B"[2]	61	84,455	31,719	31,719	300	211,137	116,172	116,172
Growth Area "C"[3]	-	67,605	14,062	14,062	-	169,013	35,155	35,155
Sum	426	152,060	137,031	137,031	1,300	380,150	401,326	401,326

[1]This plan projects that 40 percent of commercial development in Growth Areas "B" and "C" will occur by 2030.

[2]Commercial projections for Growth Area "B" assume a target floor area ratio (FAR) of 0.17, and water demand of 0.195 gpd.

[3]Commercial projections for Growth Area "C" assume a target floor area ratio (FAR) of 0.05, and water demand of 0.208 gpd.

[8] This assumes a household size of 2.58 persons per household, this is the projected household size for Cecil County.

Municipal Growth Objectives and Actions

The following list sets forth the key objectives with regard to municipal growth. In effect it develops in some detail the main policies of Chesapeake City. This list could be used as a work program to guide the Planning Commission in its implementation of the Plan.

Objectives	Actions
Development in Chesapeake City's Growth Areas occurs in an ecologically sustainable way. This includes targeting Sensitive Areas for conservation and environmental restoration.	• Adopt a Town Resource Conservation (RC) zoning category. This district should limit development to one unit per 20 acres on natural areas not protected by Critical Area regulations and protect Resource Conservation Area (RCA) Critical Areas not planned for growth allocation. • Require that in areas of the RCA targeted for growth allocation substantial attention is paid to stormwater management, green site planning, environmental site design, native vegetation, etc. • Adopt forest conservation regulations that limit forest and wetlands disturbance. Specifically these regulations, along with RC zoning, should seek to reduce impacts of development on the forested area to the east of Growth Area "C". • Designate the RCA as a target area for re-forestation requirements as part of future annexation plans.
Northern growth areas are developed in a traditional pattern of neighborhood design, with small lots and a variety of housing types.	• Apply Traditional Neighborhood Design (TND) zoning to Growth Areas "A" and "B". This zoning should encourage minimum densities of 8 units per acre. • Negotiate annexation agreements to ensure that planned growth areas include a variety of housing types; small-scale apartments, townhomes, duplexes, and detached single family units. Each residential type should be located based on impacts to natural areas and proximity to activity centers. For example, single family houses on large lots should be located near the RCA while apartments or townhomes should be located close to existing or planned Village Centers. • Obtain growth allocation for development in the RCA and LDA for Growth Areas "A" and "B". • Apply Village Center zoning to Growth Area "B", on the east side of the MD 213. The development plan should include a high-density mixed use center including commercial, residential, and recreational uses.
No new development occurs in planned growth areas, except through annexation by the Town.	• Coordinate with Cecil County to ensure development is focused within the Town's growth areas. The County should consider applying strict Conservation and Agricultural zoning to other parts of the Back Creek Watershed to direct housing demand into the Town. • Work to develop Town and County coordination concerning development decisions in the watershed and especially near the Town's growth areas. • Work with Cecil County to designate the growth areas as receiving areas in the event that a Transfer of Development Rights (TDR) program is established.

Community Facilities Objectives and Actions

The following list summarizes the key objectives of this Plan with regard to community facilities. In effect, it develops in some detail the main policies of Chesapeake City. This list could be used as a work program to guide the Planning Commission in its implementation of the Plan.

Objectives	Actions
Adequate facilities to serve current and new residents are in place before development can occur. Existing residents should not suffer reductions in service or increasing costs as a result of development outside of the Town.	• Require that public facilities are adequate or that a plan is in place to make facilities adequate, to meet the additional demand created by an annexation, before annexation is approved. • Require that developers contribute to the cost of any upgrades to public infrastructure, facilities, and services that will be made necessary by development.
Existing facilities and services are maintained, improved, and optimized as the Town grows. The Town and outside agencies work together to ensure facility upgrades occur at appropriate stages and that quality service is maintained.	• Meet with the Cecil County Department of Education to discuss the impact to schools of the full build-out of the Town and begin planning for how to address these impacts. • Water and Sewer facilities are made adequate as called for in Chapter 6, Water Resources. • Coordinate with the Chesapeake City Volunteer Fire Company to determine staffing and equipment needs in order to serve build-out of the Town. Require developer contributions to necessary service expansions. • Do not grant new development approvals if any public service or facility is at or over capacity. • Conduct a yearly assessment of the Town's public safety needs and coordinate with the County Sheriff Department to address any additional service needs the Town has. • Prepare Capacity Management Plans outlining water and sewer system needs, matched with forecast growth. • Prepare an allocation program to help implement these Capacity Management Plans.
A Town-wide park and open space network is established. This network serves the recreational needs of residents and provides an amenity to encourage growth in the tourism industry.	• Require open space as part of all new development. • Develop a town-wide park and open space plan. This plan should call for the dedication and connection of open spaces, parks, greenways, and residential areas to one another and the Town's planned Greenbelt through a system of trails. The Trails Map provided in Chapter 7, Transportation, provides a guide for this plan. This plan should address upgrades to existing parks in addition to outlining plans for future parks and open spaces. • Require connection to the Town's trail network and the dedication of public parks as conditions of development approval.

Chapter 4 — Land Use

The Land Use Plan establishes the relationship between the Town's existing pattern of development and the location, scale, and character of future development. Land use influences the location of public facilities and transportation improvements and the conservation of natural areas. The Land Use Plan provides the means to integrate various goals into a comprehensive whole. The Town's plan to protect natural resources and open spaces, improve transportation linkages, maintain and enhance community facilities, and protect community character are all elements associated with and incorporated into the Land Use Plan. Chesapeake City's Land Use Plan is the fundamental element that will determine the Town's future pattern of growth and development.

Land Use Goals

- The Town's optimum economic potential is realized through development of a new village commercial area - the MD 213 corridor, vibrant village centers, and maritime development.
- Energy conservation is promoted in all land use decision making.
- The Town's traditional pattern of streets and lots found in the village center serves as a model for how new areas are laid out.
- The area's dominant natural features shape the pattern and guide the location of development. A Greenbelt provides the outer edge to define the edges of the community.

Background

Surrounding Area Land Use

The area land use pattern is illustrated on the Existing Land Use Map. Three observations are most relevant:

1. Natural resource areas and agricultural lands dominate the landscape around Chesapeake City. These areas create a Greenbelt of open space around the Town, creating edges and adding to scenic beauty.
2. The southern approach to Town, north of the high school, along MD Route 213 is partially developed in a highway oriented pattern. This pattern is endorsed by County Zoning, but it is a pattern which can impair the beauty, convenience, and safety of travel along the highway if not thoughtfully managed.
3. To the north of Chesapeake City, there is an evolving pattern of low density suburban development. This development is served by private wells and on-site septic systems. Included

are the housing developments along Knights Corner Road and Spears Hill Road (which has recently obtained County plan approval).

Town Land Use

With regard to land use within the Town, two main observations are relevant:

1. The Town has two village centers, divided by the Canal. They are traditional mixed use districts containing primarily houses, but also small scale retail establishments and institutional buildings. The zoning of these areas promotes a mix of uses. The traditional retail commercial center is on the south side of the Canal.
2. Much of the land area within Town boundaries is in open space or natural resource use (wetlands, woodlands, and floodplain). However some of the land areas on the south side of Town do contain recently approved development projects, which are discussed in the Municipal Growth chapter of this report.

The Plan for Land Use

The Comprehensive Plan Map assigns one of eight different land use categories to each parcel in the Town. Table 4.1 provides a description of the recommended land uses shown on this Plan Map.

Table 4.1: Comprehensive Plan: Major Land Use Recommendations

Land Use	Purpose	Uses	Intensity[1]
Low-Density Residential	Recognizes the presence of low density residential uses and indicates no change.	Residential uses, open space, farming.	
TND Residential	To designate areas of village scale residential density and preserve large areas of open space.	Single-family houses at minimum lot size of 5,400 square feet, duplexes, townhouses.	8 units/acre
Institutional	To identify the location of key stand alone institutions, in the present case, schools and the library.	Schools and other institutions.	-
Village Center	To conserve and expand the mix of uses, scale, and architecture of the historic village center.	Residential, small-scale retail, services, offices, parks, institutional uses.	F.A.R 0.17
Village Commercial	To encourage mixed use development in the character of the historic village center.	Retail, services, offices, residential use, parks, institutional uses.	F.A.R 0.17
Commercial	To provide areas for the production and sale of goods and services to local residents and visitors.	Businesses, retail, services, offices.	F.A.R 0.05
Natural Resources / Open Space	To protect natural resources and provide recreational opportunities and create a Greenbelt around the Town.	Woodlands, open space, recreation, institutions.	-
Agriculture	To indicate where active farmland will be maintained.	Farming and related activities.	-

[1] The intensity figures are provided to indicate the development assumptions used in this plan's projection of future water and sewer demands and other impacts to community facilities as may be relevant, with the exception that 8 units per acre is the recommend minimum density for TND. Residential intensity is measured in terms of Net Density; the density for the development site, excluding undeveloped areas, as measured in units per acre. Non-residential intensity is measured in terms of Floor Area Ratio (FAR); which is a ratio of square feet of building space to total lot area.

The land use plan shows three growth areas that are described in Chapter 3, Municipal Growth. The development of these areas would be guided by Town zoning upon annexation. Each of the Town's

proposed growth areas contains sensitive environmental resources. Plans for reducing impacts to these resources are discussed in Chapter 5, Environmental Resources and Sensitive Areas.

Growth Area "A" is proposed for TND Residential use on the Comprehensive Plan Map. The intent is that this area develops at an overall density of eight units per acre while the open space within the Critical Area is largely allowed to revert to a natural forest and meadow condition. This recommended density reflects existing densities found in traditional areas of Chesapeake City and allows for preservation of large portions of the growth area. The minimum lot size allowed for single-family lots would be 5,400 square feet.

The proposed developed parts of Growth Area "B" are shown as TND Residential, Village Center, and Village Commercial on the Comprehensive Plan Map. Development of Growth Area "B" should include residential uses and a pedestrian oriented shopping center. As described in Chapter 7 Transportation, the plan for the growth area should provide pedestrian and vehicular connections between residential and commercial areas. The area to the west of MD 213 should be developed as TND residential.

Growth Area "C" is proposed for commercial use on the Comprehensive Plan Map. Over time, this area would be developed with highway oriented commercial uses. Chapter 7, Transportation, outlines an access management plan for Growth Area "C" and Chapter 5, Environmental Resources and Sensitive Areas, discusses the protection of the large stand of forest to the east of this planned development area.

Because of the environmentally sensitive areas within and around the planned growth areas, development would be required to minimize its impacts to area water resources. In addition to the land uses described in Table 4.1, the Comprehensive Plan Map shows a Low-Impact Development (LID) Overlay. LID uses the natural environment and non-structural stormwater management systems to manage stormwater at its source. LID approaches include preserving the natural landscape and restoring natural features as part of development. This approach seeks to minimize impervious surfaces and re-use stormwater. Approaches to LID include stormwater management techniques such as bioretention, rain gardens, vegetated rooftops, rain barrels, and permeable pavements.[9] The LID overlay shown on the Comprehensive Plan Map would require that in these areas non-structural stormwater management techniques are used, water reuse systems are incorporated into the development, and all stormwater is managed at or near its source through non-structural techniques and shared stormwater management systems.

In addition to growth areas outside of Town limits there are two areas designated for residential development on the Comprehensive Plan Map; the Chesapeake Village and Bridge Point subdivisions. These projects have already been approved by the Town.

Another major feature of the Land Use Plan is the expansion and perseveration of a Greenbelt of open space and woodlands around the Town. A Greenbelt would become a permanent recreational and natural resource for future generations. The Greenbelt serves to define and provide an edge to the Town's outward growth.

When the planned growth areas "A" and "B" are developed, the Town should also annex the land up to Long Creek and require natural resource preservation and reforestation in the Greenbelt area. The Town should require that connections be made between the Town's activity centers and the Greenbelt. Chapter 7, Transportation, includes a trail map with trail connections to and within the Greenbelt.

[9] EPA Polluted Runoff (Non-point source pollution), Low Impact Development (LID). http://www.epa.gov/nps/lid/.

Land Use Objectives and Actions

The following list summarizes the key objectives of this Plan with regard to land use in Chesapeake City. In effect, it develops in some detail the main policies of Chesapeake City. This list could be used as a work program by the Planning Commission in implementing the Plan.

Objectives	Actions
To reduce the ecological impact of future development, and, to the extent possible restore and protect natural areas.	• Adopt a Low-Impact Development (LID) overlay in the Zoning Ordinance. Apply this overlay to Growth Areas "A" and "B" when these areas are annexed. An LID overlay should require non-structural methods of stormwater management, high ratios of open space, and low amount of impervious surface. • Update the Subdivision Ordinance to allow narrow streets and require non-structural stormwater management along roads in the LID overlay district. • Implement the Greenbelt concept by planning for the expansion and preservation of open space and woodlands outside of the Town boundaries. • Apply Resource Conservation zoning to areas of the Critical Area Land Classification RCA not targeted for growth allocation. • Require that development plans show how they will minimize and mitigate impacts to the forest on the east side of Route 213. • Actively promote energy conservation in all manners of building and land use development. • Adopt regulations in the building and zoning code specifically related to environmental performance and update the Town's Critical Area Program. • Conduct an energy audit of existing Town buildings and seek ways to improve efficiency and reduce energy costs.
To be the center of growth and development for the Back Creek Watershed, and thereby make the most efficient use of available land while allowing for preservation of open space in rural areas of the watershed.	• Update the Town's regulations to support the goals and policies of this plan. • Apply TND zoning to Growth Areas "A" and "B". • Amend the Zoning Ordinance and map to reflect the land uses on the Comprehensive Plan Map. • Update the Zoning Ordinance to incorporate minimum lot sizes recommended in Table 4.1.

Chapter 5 — Environmental Resources and Sensitive Areas

The Town of Chesapeake City cherishes its rural character and natural environment with its vast surrounding farmlands and natural areas. The area teems with fish and wildlife and serves as the foundation for an enjoyable rural lifestyle. These irreplaceable natural assets are most important to the health and well being of the Town and to humanity as a whole. Human settlements built across these landscapes will disturb and alter this fragile natural environment. The Town desires that future building and development be designed in ways that recognize sensitive natural features, support ecosystems, and provide measures to protect and minimize disturbance and damage to these important natural areas. This section is accompanied by the Chesapeake City Environmental Features Map which shows the location of the features described here.

Environmental Resources and Sensitive Areas Goal

The natural environmental features in and around Town and the key role they play in sustaining life and property are protected from development and its impacts.

Background

Chesapeake Bay Critical Area

The Chesapeake Bay Critical Area Protection Program was passed by the Maryland General Assembly in 1984 because of concern for the decline in the natural resources of the Chesapeake Bay. The Chesapeake Bay Critical Area Legislation consists of the following three goals:

- To minimize adverse impacts on water quality that result from high nutrient loading in runoff from surrounding land or from pollutants that are discharged from structures;
- To conserve fish, wildlife, and plant habitats; and
- To establish land-use policies for development located within the Chesapeake Bay Critical Area that accommodate growth and also address the fact that, even if pollution is controlled, the number, movement, and activities of persons in that area can create environmental impacts.

The State Critical Area Program established land-use policies within the Critical Area to address matters of development and accommodate growth. Chesapeake City was required to formulate site-specific development objectives and procedures to eliminate or minimize impacts to the Critical Area which is defined as all land located 1,000 feet landward of tidal waters or tidal wetlands. These objectives and their implementing regulations were adopted by the Town in 1988.

The following is a brief description of each of the land use zones in the Critical Areas Program:

Resource Conservation Area (RCA)

RCAs are characterized as undeveloped lands, dominated by agricultural uses, forest cover, and wetlands, supporting resource utilization and recreation activities. RCAs, as defined by the Critical Area Law are areas that are nature-dominated or used for resource utilization. RCAs have one of the following features:

- Density is less than one dwelling unit per five acres; or
- Dominant land uses are agriculture, wetland, forest, barren land, surface water, or open space.

Limited Development Area (LDA)

LDAs are characterized by low to moderately intense land uses (residential, commercial, and/or business), and contain areas of natural plant and wildlife habitat. The quality of runoff from these areas has not been significantly degraded or altered. The intention of the Critical Area Law is to allow continued development in LDAs at an equal or lesser density so as not to change the prevailing character of the area. Development must be sensitive to protection of habitat and serve to improve runoff and groundwater entering the Chesapeake Bay. LDAs have at least one of the following features:

- Housing density ranging from one dwelling unit per five acres up to four dwelling units per acre;
- Areas not dominated by agriculture, surface water, open space, or wetlands—forest or barren;
- Areas of less than 20 acres where residential, commercial, institutional, and/or industrial developed land uses predominate and where relatively little natural habitat occurs. These areas shall have at least one of the following features:
    - Housing density equal to or greater than four dwelling units per acre,
    - Industrial, institutional, or commercial uses that are concentrated in the area, or
    - Public sewer and water collection distribution systems are currently serving the area and housing density is greater than three dwelling units per acre;
- Areas having public sewer or public water or both.

Intensely Developed Area (IDA)

IDAs are characterized by commercial, industrial, or high-density residential uses and where relatively little natural habitat occurs. New intense development in the Critical Area should be directed in or near existing IDAs provided that water quality is improved over pre-existing levels, habitat protection areas are conserved, expansion of intense development into RCAs is minimized, and existing adverse impacts on water quality are mitigated. IDAs have at least one of the following features as of December 1, 1985:

- Housing density equal to or greater than four dwelling units per acre;
- Industrial, institutional, or commercial uses are concentrated in the area; or
- Public sewer and water collection and distribution systems are currently serving the area and housing density is greater than three dwelling units per acre.

In addition, these features shall be concentrated in an area of at least 20 adjacent acres, or the entire upland portion of the Critical Area within the boundary of a municipality, whichever is less.

The Critical Area legislation allows for more intense development to occur through the use of a growth allocation process. This process provides for an RCA or LDA to be converted to an LDA or IDA. The land that can be converted for growth allocation is equal to five percent of all the County's RCA lands (not including federal land and tidal wetlands). There are restrictions on the areas that are allocated growth:

- Specific locations and Habitat Protection Area Standards as outlined in the Town's Critical Area Program and Natural Resources Article 8-1808. 1 (c), Annotated Code of Maryland must be met.
- Specific factors as outlined in Natural Resources Article 8-1808. 1 (c), must be considered by the Critical Area Commission.
- Cecil County must provide the Town allocation and the Critical Area Commission must approve the allocation.

Streams and Stream Buffers

Streams and their buffers are important resources. Streams support recreational fishing and serve as spawning areas for commercial fish stock. In some areas streams provide drinking water. Streams and their adjacent buffers are home to countless species of animals and plants and transport valuable nutrients to rivers and creeks, and, in turn, to the Chesapeake Bay. The floodplains, wetlands and wooded slopes along streams are important parts of the stream ecosystem. Development near streams subject to flooding can result in loss of life or property.

Development activity can impair water quality. The cumulative loss of open space and natural areas reduces the ability of remaining land along streams to buffer the effects of greater stormwater runoff, sedimentation, and higher levels of nutrient pollution. Buffers adjacent to streams serve as protection zones. They reduce sediment, nitrogen, phosphorus, and other runoff pollutants by acting as a filter, thus minimizing stream impairment. The effectiveness of buffers is influenced by their width (which should take into account such factors as; contiguous or nearby slopes, soil erodability, and adjacent wetlands or floodplains), the type of vegetation within the buffer (some plants are more effective at nutrient uptake than others), and maintenance of the buffer.

Buffers also provide habitat for wetland and upland plants which form the basis of healthy biological communities. A wide variety of animals use natural vegetation as a corridor for food and cover. A natural buffer system provides connections between remaining patches of forest to support wildlife movement. Table 5.1 describes the recommended size of buffers by function.

Table 5.1: Riparian Buffer Functions and Size

Function	Description	Reccomended Buffer
Flood and Storm Surge Mitigation	Riparian vegetation minimizes down river flooding.	70 - 200 feet
Sediment Control and Stream Stability	Sedimentation is controlled by vegetative buffers which trap sediments before they reach the stream channel. Reduced sedimentation combined with the forest structure helps to stabilize streams and prevent excessive erosion.	50 - 100 feet
Nitrogen / Phosphorous Removal	Nitrogen is removed from water entering the stream channel through vegetation consumption of nitrogen and through the conversion of nitrogen into nitrogen gas. The sediment control function helps to reduce phosphorous as sediments often contain phosphorous.	50 - 100 feet
Pesticide Reduction	Bacteria in the soil of riparian buffers help to reduce the pesticides in streams and rivers.	45 feet
Food Production	The rich organic matter provided by natural vegetation supports fish stock and other river inhabitants that are dependent on it for food.	25 feet
Habitat for wildlife	Forested areas provide a habitat for birds and mammals. Certain species can exist in smaller forests; however, most species require forest interior dwelling areas.	300 - 1,600 feet

Source: USDA Forest Service-Northeastern Area State and Private Forestry

The Town is divided by the Chesapeake and Delaware (C&D) Canal, its largest water resource. The C&D Canal connects the Chesapeake and Delaware Bays via the Elk River in Maryland and the Delaware River in Delaware. Long Creek to the north and Back Creek to the south are also present. There are other small unnamed streams that can be seen on the Environmental Features Map.

The C&D Canal has two dredge disposal areas that are located on the south side of the Canal outside of the Town's boundaries.

100-Year Floodplain

The 100-year floodplain limits are delineated by the Federal Emergency Management Agency (FEMA) as areas that have a one percent annual chance of being flooded. The limit of floodplain inundation is generally determined by the size of the watershed, local geology, and pattern of surrounding land uses. The Federal Emergency Management Agency (FEMA) defines FEMA flood zones according to varying levels of flood risk according to elevation above sea level. Flood zones are often congruent with floodplains.

Some areas are subject to periodic flooding. This poses risks to public health and safety, and potential loss of property. Flood losses and flood-related losses are created by inappropriately located structures which are inadequately elevated or otherwise unprotected and vulnerable to floods or by development which

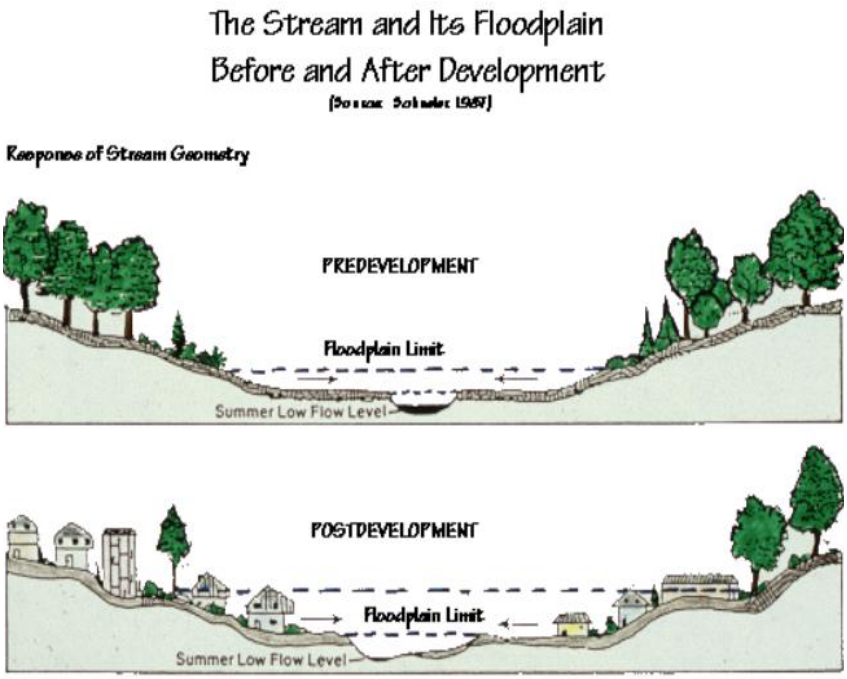
increases flood damage to other lands. While protection of life and property provided the initial basis for protection of floodplains, there has been a growing recognition in recent years that limiting disturbances within floodplains can serve a variety of additional functions with important public purposes and benefits.

Floodplains moderate and store floodwaters, absorb wave energies, and reduce erosion and sedimentation. Wetlands found within floodplains help maintain water quality, recharge groundwater supplies, protect fisheries, and provide habitat and natural corridors for wildlife.

Floodplains in Chesapeake City can be seen on the Chesapeake City Environmental Resources Map. Floodplains are present in the Town along the C&D Canal and around the Back Creek Tributary Basin (Engineer's Cove). Just outside of the Town, Long Creek and Back Creek have floodplains associated with them. In addition, there are two areas just northeast of Back Creek that have associated floodplains.

Exhibit 5.1 shows a stream and its floodplain before and after development. This Exhibit illustrates the expansion of the stream channel and floodplain limit as a result of development. The floodplain limit has risen in the bottom illustration. The floodplain now includes newly developed structures.

Exhibit 5.1



Wetlands

Wetlands play a pivotal role in regulating the interchange of water within watersheds. By definition, they are characterized by water saturation at or above the soil surface for a certain amount of time during the year. Precipitation and surface water are stored and released slowly into water resources and the atmosphere. Acting as a sink for nutrients, wetlands provide organic compounds, nutrients, and other components necessary for plant and aquatic life. There are two types of wetlands, non-tidal and tidal. Non-tidal wetlands are where the water table is usually at or near the surface. Non-tidal wetlands are

protected as a Habitat Protection Area in the Town's Critical Area Program. Tidal wetlands are waters along the coast of water bodies affected by freshwater run-off and the coming and going of tides.

All wetlands must be field identified and delineated in the development process. In general, non-tidal wetlands can be found adjacent to the C&D Canal on the north side. Tidal wetlands can be found in the same area. On the south side, non-tidal wetlands can be found primarily around the Back Creek Tributary Basin. While there are some tidal wetlands present in this same area, more can be found adjacent to the Canal. Outside of Town, larger amounts of tidal and non-tidal wetlands can be found along Back Creek and Long Creek. Additional non-tidal wetlands can be found northeast of Back Creek.

Soils/Geology

The underlying geology of Chesapeake City is composed mainly of upland deposits, earlier known as the Wicomico Formation. These deposits consist of medium to coarse gravel and sand, silt, and clay. Quartzrose gravels, sands, and multicolored silts and clays, known as the Potomac Group, also contribute to the geological composition of the Town.

The Potomac Group is further comprised of the Patuxent Formation, Raritan and Patapsco Formations, and Arundel Clay. The Patuxent Formation consists of sands, made up of silt and clay, as well as quartz gravels. Arundel Clay is made up of clays and an abundance of siderite (iron carbonate) and can be found in sedimentary rock. It is present only in the Baltimore-Washington area. Various colored silts and clays, course sands, and minor gravel make up the Raritan Patapsco Formation.

Mineral Resources

There are neither mining activities nor any known mineral resources within the Town's corporate limits or planned growth areas.

Woodlands

Woodlands in and around Chesapeake City enhance water quality and provide habitat for plants and animals contributing to the conservation of the region's biodiversity. Other benefits from preserving and expanding woodlands include; stabilization of steep slopes, slowing of storm water run-off, and cleaning of the air during photosynthesis. Major stands of forests, at a large scale, act as natural buffers to harsh weather conditions and help to moderate temperatures.

Vegetation in forested areas absorbs and stores carbon dioxide, removing this greenhouse gas from the atmosphere. Carbon dioxide is a contributor to global warming, which in the Chesapeake Bay region is a component of sea level rise, among other things. Afforestation—converting lands to forest—increases the rate at which carbon is removed from the atmosphere. Converting cultivated lands to forest provides that two to ten tons of carbon per year is removed for every 2.5 acres converted; making afforestation an important ecological tool to mitigate local carbon emissions.[10]

[10] Richards, K.R. and C. Stokes. 2004. "A Review of Forest Carbon Sequestration Cost Studies: A Dozen Years of Research." Climatic Change 63(1-2): 1-48.

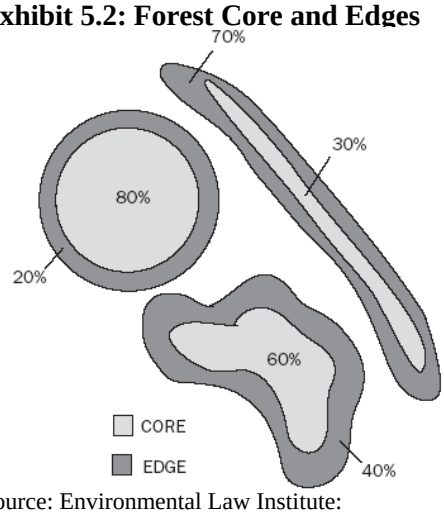
Chesapeake City was built around the commercialization of the C&D Canal; few forested areas are present within the Town limits. More forested areas can be found on the south side of Town than to the north. On the south side, woodlands can be found along the western border. A denser woodland area is located just off the Canal to the east. A small forested area can be found on the north side of Town along the northeastern border. These forested areas can be seen on the Environmental Resources Map. The Town's Critical Area Program outlines protection measures for Forest and Developed Woodlands.

In addition to conserving natural systems that help convey, store and filter stormwater, there is value associated with biodiversity. Biodiversity is the measure of variety of all levels of life, from genetics to species, and their interaction within a given ecosystem.

The Forest Conservation Act of 1991 was enacted to protect the forests of Maryland by making forest conditions and character an integral part of the site planning process. It is regulated by the Maryland Department of Natural Resources, but implemented and administered by local governments. The Forest Conservation Act seeks to maximize the benefits of forest and slow the loss of forested land in Maryland while allowing development to take place. Existing forests contain native species, which may be rare or endangered. Expanding existing stands of forest (rather than creating new ones) helps to protect these elements by reducing interaction between the older growth interior sections and forest edges.

Exhibit 5.2 shows different scenarios of forest, the circular forest has the largest portion of core area where interior habitat would be located. Forest edges create a dangerous environment for plant and animal life within forested areas increasing exposure to invasive species, predators, and disease. Edges also increase exposure to wind, sun, water, nutrients, and pesticides. Edge effects generally exist in the first 750 feet of a forested area. To reduce edge effects, transition zones are recommended at forest edges. There should be both a height and forest density transition of the edge. Table 5.2 shows the optimal forest size by its function for nutrient removal and habitat provision.

Exhibit 5.2: Forest Core and Edges



Source: Environmental Law Institute: Conservation Thresholds for Land Use Planners

Table 5.2: Optimal Forest Size by Function

Function	Recommended Size
Protecting forest interior dwelling species (FIDS)	Minimum 500 contiguous acres. (can range up to 6,250 acres for some birds)
Provide habitat for mammals	2.5 - 25 acres
Nutrient Removal	300 feet of edge

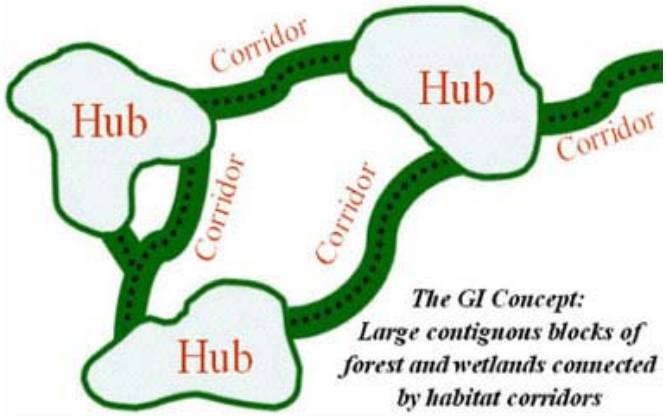
Forest Interior Dwelling Bird Habitat

According to Maryland's Department of Natural Resources (DNR) High Quality Forest Interior Dwelling Bird Species (FIDS) habitat is forest of at least 100 acres of mature hardwood or hardwood/pine containing at least 25 percent of forest interior habitat. The Town's Critical Area Program's chapter on Plant and Wildlife Habitat outlines protection measures for Forest Interior Dwelling Birds. To realize the full benefits from forested areas high-quality FIDS environment is necessary. It is recommended that protecting and establishing high quality forest stands occurs by foresting around existing areas and creating forest edges of new growth, while protecting existing old growth interior forests. According to DNR, generally, a Forest Interior Habitat contains:

- contiguous forest greater than 500 acres; or
- riparian forest along a perennial stream with an average width of 600 feet; or
- one or more highly area-sensitive species or Black-and-white Warbler; or
- mature hardwoods at least 300 feet interior from the forest edge; or
- at least 5 contiguous acres of old growth forest at least 300 feet from the forest edge.[11]

DNR "Green Infrastructure"

Exhibit 5.3



Green infrastructure refers to an interconnected network of forested areas and open spaces. Green infrastructure provides all the benefits of the natural features discussed in this section and connects these natural features to one another. Large forested areas act as hubs in the green infrastructure system. DNR defines hubs as "contiguous forest blocks and wetland complexes of at least 250 acres; rare or sensitive species habitats, biologically important rivers and streams, and existing conservation lands managed for natural values." These wooded hubs are connected though a system of open space and woodland corridors. Well-connected forested areas allow for movement of species. Large forests can be connected by smaller patches a short distance away or through forested corridors. DNR recommends corridors are at least 1,100 feet wide to provide the most ecological and natural route.

There is a Cecil County Green Infrastructure Plan which includes plans for preservation and expansion of green infrastructure. Large stands of forests around the Town are an important part of this network.

The Town's greenways along the C&D Canal are protected corridors of open space, maintained in a largely natural state for water quality protection, wildlife habitat enhancement, aesthetic relief, recreation, non-motorized transportation, and environmental education. These areas can be expanded and connected to other parts of the Green Infrastructure network.

[11] MD DNR High Quality FIDS Habitat.
http://www.dnr.state.md.us/forests/planning/sfla/indicators/hi_qual_fids.htm

Endangered/Sensitive Species Habitat

The Maryland Nongame and Endangered Species Conservation Act provides definitions of threatened or endangered species. Maryland law does not currently provide a definition of habitat. As a basis for establishing protection measures for habitats of threatened and endangered species; these areas may include breeding, resting, migratory, or overwintering areas. Habitat destruction and degradation is currently estimated to threaten some 400 native Maryland species. The key to protecting these endangered species is protecting the habitat in which they exist. The Town's Critical Area Program outlines protection measures for threatened and endangered species in the Plant and Wildlife Habitat Chapter.

The Plan for Environmental Resources and Sensitive Areas

Preservation of the sensitive areas within and around Chesapeake City is a central focus of this Comprehensive Plan. While very little of the Town's future development will disturb streams, stream buffers, floodplains, wetlands, or woodlands, much of the Town's planned development will occur in or adjacent to the Critical Area. There are three planned growth areas shown on the Comprehensive Plan Map; they are labeled on the Municipal Growth Map as "A", "B", and "C". Development in these three areas will seek to minimize impacts to sensitive natural areas.

Growth Areas "A" and "B" have substantial land area within the Critical Area. The plan for development of areas "A" and "B" includes the preservation of much of the RCA in the Critical Area. Development of residential and commercial areas along with associated infrastructure will largely occur outside of the Critical Area. To further protect the area's sensitive environmental resources all of the development in areas "A" and "B" is required to be low-impact development (LID). Chapter 4, Land Use, describes the LID overlay that is applied to the new development areas.

Growth Area "C" is not within the Critical Area but shows planned development of the edge of a stand of forest that contains several small wetlands. The area planned for development contains one of these wetlands. This plan recommends that the parcels containing this wetland remain in a forested state and not be developed. This plan further recommends that commercial development on the east side of Route 213 use a system of shared parking lots to reduce the number of parking spaces, and therefore impervious surface, necessary along the forest edge. The Town would update its Zoning Ordinance to include provisions for shared parking in this and other areas of Town. Chapter 4, Land Use, calls for area "C" to develop in a way that minimizes forest edge loss and other impacts to the stand of forest on the east side of MD 213.

It will be the Town's policy to establish river, wetlands, and floodplain buffers. Natural areas are preserved and environmental buffers that coincide with streams and wetlands are established while expanding and connecting intact woodland areas. The preservation and expansion of the Town's forested areas can connect fragmented or isolated woodlands into coherent networks while providing water quality benefits for the Town's water resources. Preservation of lands in the Critical Area can further these benefits. The plan for the Town's growth area includes the preservation of a large portion of lands in the Critical Area. This plan further recommends establishing buffer zones along the Town's water resources. Buffers should be established as follows:

- Streams: 300 feet
- Canal: 200 feet
- Floodplains: 50 feet
- Wetlands: 50 feet

Prior to the location and design of public facilities or the approval of private development, that may be impacted by sea level rise because of their location, the Planning Commission will request an evaluation of the anticipated extent of sea level rise as such mapping becomes available and is refined for this use.

Environmental Resources and Sensitive Areas Objectives and Actions

The following list summarizes the key objectives of this Plan with regard to environmental resources and sensitive areas. In effect, it develops in some detail the main policies of Chesapeake City. This list could be used as a work program or guide by the Planning Commission in implementing the Plan.

Objectives	Actions
Development in the Critical Area is limited to those locations shown on the Comprehensive Plan Map.	• Limit development in the RCA to that proposed in this Plan allowed through grants of Growth Allocation on the west side of MD 213. No development in any growth area should occur in the RCA associated with Long Creek except as may be permitted under RCA Critical Area regulations. • Make the annexations of Areas “A” and “B” contingent upon the preservation of lands in the RCA between the development parcels and Long Creek. • Require development in Growth Areas “A” and “B” to be LID. • Allow for Growth Areas “A” and “B" to be developed at high densities. This is to minimize the total land area needed to accommodate future residential demand.
Sensitive areas are preserved and protected from the impacts of development. Streams and floodplains have vegetated buffers that help restore their natural function.	• Update the Zoning Ordinance to require buffers around streams, floodplains, and wetlands. These buffers should be: o Streams: 300 feet o Canal: 200 feet o Floodplains: 100 feet o Wetlands: 50 feet • Require that these buffers are planted in species native to Chesapeake City and the surrounding area. Make stream buffers target areas for forest conservation planting requirements. • As a condition of annexation of Growth Area “C”, require that parcels containing wetlands remain in a forested state. • Restrict development on steep slopes greater than 25 percent and in the Critical Area, slopes 15 percent and greater. • Ensure that development proposals minimize impacts to sensitive natural areas. • Ensure that development in Growth Area “C” minimizes impacts to the large stand of forest to the east.
Preservation and restoration of natural areas occurs as northern growth areas are annexed. Development improves the quality of the environment.	• Require reforestation as part of all development proposals. The transition from agriculture to developed uses should restore the natural environment. • Make the RCA a target area for reforestation. The RCA is preserved and restored to forest over the long term. • Require that streams, tributaries, or small creeks in agricultural areas are restored and reforested. • Update the Zoning Ordinance to prohibit the temporary or permanent burying or channeling of creeks or streams. • Update the Zoning Ordinance to include provisions for shared parking. The purpose of this is to reduce the land area and impervious surface necessary for commercial development.

Chapter 6 — Water Resources

This Plan is designed to help ensure that a thoughtful balance is maintained between the natural resource base and the needs of existing and future development. This section specifically addresses water resources and the protection of these resources in light of the growth forecast through 2030.

House Bill 1141, a 2006 amendment to Article 66B, requires a Water Resources Element as part of all comprehensive plans. A Water Resources Element must address future water and sewer capacity needs and identify future sources of drinking and receiving waters. A Water Resources Element must also contain the framework for water resource protection and water quality improvements. The objective of this Water Resources Element is to ensure that capacity exists for existing and future residents and businesses while maintaining responsible stewardship of water resources.

Planned growth must be balanced with the ability to provide drinking water and sewer services to serve that growth. This means that only development which can be served by available or reasonably expected infrastructure can be included in a town's land use plan. This Comprehensive Plan recognizes four important things with respect to water resources in Chesapeake City:

1. There is presently insufficient water and sewer capacity to serve planned housing units and forecast development.
2. The Town expects to contract with Artesian Wells of Delaware to purchase 400,000 gallons of water per day beginning in the fall of 2009.
3. The discharge from the Town's WWTP presently exceeds the required caps on phosphorus concentrations in the Back Creek Watershed.
4. The Town has applied for funding assistance from the Maryland Department of the Environment (MDE) to construct a new 300,000 gallon per day wastewater treatment plant and upgrade the treatment of wastewater.

This Plan calls for no further growth or development until water and sewer systems are made adequate and water and sewer allocation management plans are prepared and approved by the Maryland Department of the Environment and adopted by the Town. This Comprehensive Plan recommends that water and sewer capacity be expanded to accommodate future growth and to modernize the system.

Water Resources Goals

- The quality of drinking water in Chesapeake City is high. There is adequate drinking water to serve residents and water conservation methods are standard in the Town.
- Sewer facilities are adequate to serve the Town. The quality of sewer discharge for the Town's Wastewater Treatment Plant is improved. Discharge concentrations stay below established TMDLs.
- Land development and conservation in Chesapeake City aims to minimize non-point source loading in the Back Creek Watershed.

Background

This section will reference water quality in Chesapeake City by reference to total maximum daily loads (TMDLs). TMDLs consider the amount of nutrients that enter the stream from both point sources (such as wastewater treatment plants) and non-point sources (such as runoff from development and farmland). Limits are established on the maximum quantity of nutrients that can enter a stream from both point and non-point sources. Specifically, the Town must show that despite future growth, it will meet TMDL caps for the streams in the Back Creek Watershed; this includes caps on wastewater treatment plant discharge and caps on non-point sources. The Back Creek watershed is now impaired by sediments, toxins, and nutrients.

Wastewater Treatment and Point Source Water Pollution

Chesapeake City owns and operates two wastewater treatment plants (WWTP), one on the south side and one on the north side of the Canal. The plant on the north side is nearing its treatment capacity while the plant on the south side has about 25 percent of its capacity available. The capacity and average flows expressed in gallons per day (gpd) for both WWTPs are shown in Table 6.1.

Table 6.1: Wastewater Treatment Demand and Capacity

Public System	Existing Treatment Capacity (gpd)	Average Daily Flow (gpd)	Available Capacity (gpd)
Chesapeake City (North)	75,000	54,650	20,350
Chesapeake City (South)	88,000	73,650	14,350
Total	**163,000**	**128,300**	**34,700**

Source: Town of Chesapeake City

While the Chesapeake City WWTPs are both under capacity, the Town's commitments to planned developments and infill is equal to 40,750 gpd. This is 6,050 gpd over the total system capacity.

Inflow and infiltration and point water source pollution create system-wide problems. Inflow is stormwater that enters the wastewater collection system as a result of insufficient stormwater management on lots (e.g., downspouts that direct water into sewer collection pipes). Infiltration is flow from groundwater that enters the system through cracks in pipes, for example. I & I add to the amount of wastewater that needs to be treated and discharged, which reduces available capacity for households and businesses. Point water source pollution is that which is directly discharged into water sources from municipal WWTPs.[12]

The TMDL caps for the Chesapeake City WWTPs are listed in Table 6.2. These TMDLs are for nitrogen and phosphorus. This table shows that both WWTPs are over the TMDL cap for phosphorus. The table shows for instance that currently the North WWTP discharges 1,332 pounds of phosphorus per year which exceeds the cap by 647 pounds. This means that no new connections can be made to the sewer

[12] A comprehensive study of the amount I&I entering the two Chesapeake City WWTPs has not been conducted.

system until the phosphorus concentrations in discharge is reduced. This will require an improvement in treatment technology.

Table 6.2 Current Nutrient Loads for the Back Creek Watershed

	Chesapeake City (North) Wastewater System		**Chesapeake City (South) Wastewater System**	
Existing WWTP Demand (gal/year)*	26,645,000		23,725,000	
	Nitrogen	Phosphorus	Nitrogen	Phosphorus
Treatment Level (lbs/gal)	0.00015	0.00005	0.00013	0.00004
Existing Nutrient Loading (lbs/year)	3,997	1,332	3,121	1,040
Load Cap (lbs/year)	4,112	685	4,441	740
2008 Overage (lbs/year)	-	647	-	300

Source: Town of Chesapeake City

* An estimate of gallons per year was calculated by multiplying the average gal/day by 365

Drinking Water

The Town has two drinking water systems, one on the north side and one on the south side of the C&D Canal. Each system has two wells, its own treatment plant and its own 70,000 gallon storage tank. These wells take water from non-marine Cretaceous deposits.[13] The general location of the Town's wells, storage tanks, and treatment facilities are shown in Exhibit 6.1.

Exhibit 6.1: Chesapeake City Water Source Locations

MDE provides one combined permit for the two systems which allows the Town to withdraw an average of 170,000 gallons per day (gpd). In the month of maximum use, usually in the summer, the Town can withdraw as much as 220,000 gpd. In the first six months of 2007 the average daily use for water was

[13] Cecil County Master Water & Sewer Plan, March 2004. p. 3-13

176,000 gpd—6,000 gpd more than permitted by MDE. In June of 2007, the average daily use was 215,000 gpd, just 5,000 gpd short of the average daily use for the month of maximum use. This indicates that water supply is effectively insufficient to meet current demand. Table 6.3, below, summarizes this information.

Table 6.3: Public Drinking Water System Capacity

Public System	Existing Water Permit (gpd)		Demand (gpd)	Available Capacity (gpd)
	Yearly Average	Month of Maximum Use	2007	
Combined Permit	170,000	220,000	176,000	-6,000

Source: Town of Chesapeake City

In addition to insufficient capacity in permitted withdrawals, several other issues need to be addressed with respect to drinking water:

- Well number two on the north side needs to be replaced,
- the Town is over capacity at each of its two water treatment plants,
- there are leaks in the distribution lines, and
- storage capacity needs to be expanded.

The Town plans to contract with a private Company to address concerns related to well number two and treatment plant capacity. As discussed in the next section, the Town should also ensure leaks in the distribution lines are repaired before it begins purchasing water. The next section further addresses the Town's plans for expanding storage capacity.

The Plan for Water Resources

Future Water and Sanitary Sewer Demand

In projecting demand for water and sewer services, each dwelling unit is equal to one Equivalent Dwelling Unit, or EDU. One EDU is typically estimated to consume 250 gallons per day (gpd) of drinking water and contribute 250 gpd to wastewater flow. Non-residential development (commercial) is also converted to EDUs through the use of per square foot demand factors which differ depending on the type of commercial activity. Table 6.4 shows the future demand for water and sewer services under this Comprehensive Plan (See Chapter 3, Municipal Growth and Chapter 4, Land Use).

There are two parts to this table. The first part describes the water and sewer demand that could be generated by 2030 assuming infill and pipeline development and some residential and commercial development in the planned Growth Areas. This is not meant to be read as a development phasing strategy or an infrastructure development schedule. For instance, development in the Growth Areas by 2030 may ultimately be somewhat higher or lower than that assumed here. This part of table is instead, meant to show the likely impact that a reasonable amount of growth over the next 20 years would have on existing and planned water and sewer services. For example, the table shows that 426 additional dwelling units and about 152,000 square feet of new commercial development would increase the demand for sewer services to 275,000 gallons per day by 2030. An expansion of WWTP capacity to 300,000 gpd would satisfy this demand and leave a remaining capacity of nearly 25,000 gpd.

The second part describes the water and sewer demand associated with the full build-out of the Town. It shows that the full build out of the Town. It shows that the full build out of the Town, including its planned Growth Areas could be served by a WWTP capacity of 600,000 gpd. It also shows that ultimately the Town will demand more than 400,000 gpd of water. The build-out potential is described in some detail in Chapter 3, Municipal Growth.

Table 6.4: Forecast Impact of Growth on Public Water and Sewer Services

	Part 1: 2030				Part 2: Build out			
Demand and Capacity	**Dwelling Units**	**Comm. Space (sf)[1]**	**Water Demand (gpd)**	**Sewer Demand (gpd)**	**Dwelling Units**	**Comm. Space (sf)[1]**	**Water Demand (gpd)**	**Sewer Demand (gpd)**
Existing Demand	-	-	176,000	138,000	-	-	176,000	138,000
Growth Demand								
Infill	31		7,750	7,750	31		7,750	7,750
Pipeline	169		42,250	42,250	169		42,250	42,250
Growth Areas	226	152,060	87,031	87,031	1,100	380,150	351,326	351,326
Sub-total	426	152,060	137,031	137,031	1,300	380,150	401,326	401,326
Total Demand	-	-	313,031	275,031	-	-	577,326	539,326
Capacity Evaluation								
Existing Capacity	-	-	170,000	163,000	-	-	170,000	163,000
Remaining Capacity (with no expansion)	-	-	-143,031	-112,031	-	-	-407,326	-376,326
Planned Capacity (2030)	-	-	400,000	300,000	-	-	400,000	300,000
Remaining Capacity	-	-	86,969	24,969	-	-	-177,326	-239,326
Planned Capacity (ultimate)							400,000	600,000
Remaining Capacity							-177,326	60,674

[1]In the projection of water and sewer demand in the Growth Areas assumptions were made about commercial development and its demand. The plan projects that 40 percent of planned commercial development in Growth Areas “B” and “C” will occur by 2030. Commercial projections for Growth Area "B" assumes a target floor area ratio (FAR) of 0.17, and a water demand of 0.195 gpd per square foot, an average for the types of uses expected for this area. Commercial projections for Growth Area "C" assume a target floor area ratio (FAR) of 0.05, and a water demand of 0.208 gpd per square foot, an average for the types of uses expected for this area.

In summary, Table 6.4 indicates, the existing wastewater treatment and drinking water facilities are insufficient to meet the demand projected in this plan. In order to meet the demand for water and sewer services, the Town will need to upgrade and expand both systems. Ultimately, the Town will demand more than the 400,000 gpd in water that is currently planned.

The Plan for Drinking Water

The Town intends to privatize the drinking water system. This would mean that the Town would retain ownership of its drinking water facilities but water would be supplied by a private company. That company would then be responsible for supplying adequate water for the Town's needs and collecting appropriate fees for this service. It is expected that by the fall of 2009, a private company will be supplying water to the Town. The Town is considering contracting with Artesian Wells of Delaware. This Company could construct a water main along MD 285 to connect to the Town's distribution system, providing the Town with 400,000 gpd of water. The Town would replace its current water storage tanks with one new 300,000 gallon water storage tank. Beyond 2030, for the full build-out of this Plan, the Town would need to either purchase more water or supplement the private supply with water from its own wells.

The Plan for Wastewater

Chesapeake City has applied for funding to upgrade and expand the sanitary sewer system. The Town will seek to combine its two wastewater treatment plants into one plant located on the north side. In addition to this combination of the two plants, the wastewater treatment level and capacity must be upgraded. MDE will not grant the Town permits for additional discharge capacity unless TMDL caps can be met. This requires an improvement in the level of treatment to reduce the concentration of nitrogen and phosphorus in each gallon of wastewater discharged from the plant.

The Town is seeking funding support for development of the new combined WWTP, which would discharge into the C&D Canal. The new plant should be constructed to accommodate 300,000 gpd in the short run with the ability to be easily expanded eventually to a 600,000 gpd capacity to accommodate the full build-out of the Town. The plant would be developed as a Sequence Batch Reactor (SBR). SBR is capable of being upgraded to Enhanced Nutrient Removal (ENR) treatment. This is the level of treatment that would be necessary to meet TMDL caps with planned growth through 2030 and build out of the Town. Table 6.5 shows these discharge and nutrient loading levels.

Table 6.5: Nutrient Loads from Chesapeake City WWTP[14]

	TMDL Caps (lbs/year)	Current (lbs/year)	Future (lbs/year) 2030	Future (lbs/year) Buildout
Nitrogen	8,553	7,118	3,353	5,856
Phosphorus	1,425	2,372	251	439

The existing WWTPs have some capacity to accommodate growth while a new system is being constructed. However, the nutrient discharges by the WWTPs are beyond the TMDL caps. As an interim solution the Town should seek to use nutrient trading to meet its TMDL caps. Given the recent release of MDEs nutrient trading policy, the Town will evaluate the policy for its applicability to Chesapeake City.

[14] Future loading assumes ENR treatment technology with concentrations of 4 mg/l TN and 0.03 mg/l of TP.

Water Quality and Non-point Source Pollution

While this plan discusses both point and non-point TMDLs, it specifically addresses only point source TMDL caps. While non-point source TMDLs are described and discussed in general, these caps will be assessed on a watershed level by Cecil County during their Comprehensive Plan update. In completing a water resources element, Cecil County will consider various land use scenarios and assess the non-point source impacts of these scenarios. It can then select the land use plan that has the lowest impact. Chesapeake City will request that the County incorporate the Chesapeake City Plan into its non-point source assessment mode. Future updates to the Town Plan will provide a description of this analysis and incorporate it into the development of the goals, polices, and actions of the Plan.

In the absence of watershed level information, Chesapeake City has chosen to establish guidelines for development that are known to reduce non-point source loading. These guidelines include clustering development, preserving large tracts of open space (Greenbelt), and requiring the use of low-impact development techniques. Chesapeake City also intends to accept a large percentage of the growth planned for the Back Creek Watershed. By accepting higher densities in already developed areas, the Town will allow much of the undeveloped land in the watershed to remain in its natural state. While this may result in a potential for greater localized nutrient loading in the Chesapeake City area, it will have a significant impact in reducing total non-point source loading for the watershed. A less dense and more sprawling pattern of development would result in a land use plan that creates more non-point source loading in the watershed.

The Town will need to coordinate with the Maryland Department of the Environment (MDE), the Maryland Department of Natural Resource (DNR), and the Upper Eastern Shore Tributary Strategy team to monitor water quality in the region and meet the TMDL guidelines described in this section.

Water Resources Objectives and Actions

The following list summarizes the key objectives of this Plan with regard to water resources. In effect, it develops in some detail the main policies of Chesapeake City. This list could be used as a work program to guide the Planning Commission in its implementation of the Plan.

Objectives	Actions
All residents of Chesapeake City have access to safe, cost-effective drinking water and sanitary sewer facilities.	• Contract with a private company to provide water. Leaks in the distribution system should be repaired prior to connection. • Develop a capacity management plan for public sewerage facilities. Sewer facilities remain adequate to meet current and future demand, while staying within TMDL discharge limitations. • Pursue funding for the expansion of sewer services. • Require that developers of Growth Areas “A”, “B”, and “C” contribute to making water and sewer facilities adequate to supply new households and businesses as a condition of annexation. • Monitor leaks in the water distribution system by comparing monthly water use and wastewater discharge. • Study methods to reduce water consumption per household (such as; low flow devices, rain barrels, water re-use systems in new development, etc). • Install water conservation and low-flow devices in public buildings. • Require new development use low-flow devices and water re-use methods. • Implement an educational program to encourage water conservation. • Study I&I entering the sewer system and make repairs to reduce I&I
Water quality of all water resources is maintained and improved for future generations. Source water, including ground and surface water resources, is protected.	• Establish open space and forested buffers around water sources. • Ensure provision of water by a private company no later than fall of 2009. • Wellhead protection regulations are reviewed and updated. • Conduct a study in newly annexed areas to determine if potential well sites are present. Future water resources (well sites) should be protected. • Work with MDE, DNR, and the Upper Eastern Shore Tributary Strategy Team to meet TMDL goals for point and non-point sources of pollution.
The most ecologically sound practices of stormwater management are incorporated into development planning.	• Require forested buffers in growth areas to ensure that stormwater does not enter streams, creeks, or the canal directly. • Update the Zoning Ordinance to make low impact development (LID) the standard for all new development. • Update the Zoning Ordinance to require on-site stormwater management. The Zoning Ordinance should also allow for shared stormwater management systems in dense commercial areas. • Inventory public buildings and sites to determine where LID elements can be retrofitted. Establish a plan for retrofitting public buildings and sites. Make this part of the Town’s Capital Improvements Program. • Buffers are established around streams, wetlands, and floodplains as outlined in Chapter 5, Environmental Resources and Sensitive Areas. • Update the Town’s Critical Area Program.

Chapter 7 — Transportation

Chesapeake City is located along water and vehicular transportation routes. It is located along a major waterway, the C&D Canal, which connects the Chesapeake and Delaware Bays. The Town is also located along Route 213, which connects the Town to Route 40 and Interstate 95. The internal road network of Chesapeake City is an interconnected grid pattern with limited connections to Route 213.

Transportation Goals

- Keep MD 213 open for safe, efficient regional traffic flow while protecting the circulation needs of Town residents.
- Circulation between the north and south sides of Town is protected and enhanced.
- Viable pedestrian and bicycle routes are an integral component of the transportation network.
- The Town's Growth Areas should be served by an efficient but highly accessible street network.

Background

The location of Chesapeake City, on the C&D Canal and in close proximity to major north-south connector highways, is both beneficial and detrimental to the Town's transportation facilities. The C&D Canal has been a large part of the community's rich heritage. It provides waterfront access to Town residents and visitors alike and opportunities for economic growth through water-related activities. However, the Canal also divides the Town, requiring duplication of vital Town services and disturbing the general flow of activity. Managing a Town divided is like managing two distinct communities. Each requires its own resources, attention, and services.

The close proximity of the Town to major highways, U.S. Route 40 and I-95 via MD Route 213 again provides both opportunities and challenges to the Town. Easy access to these major highway corridors provides residents of the Town direct access to major metropolitan areas for shopping, employment, and other cultural activities. Additionally, tourists have easy access to the Town to utilize the unique waterfront and small town resources Chesapeake City currently provides. However, this close proximity also increases the amount of traffic, creating local congestion, safety issues, and conflicts with pedestrian and bicycle traffic.

Functional Classification

Streets and highways do not exist independently; they form a network. Streets and highways differ in their function; there are arterial roads, collector roads, and local streets. These classifications are described below.

Minor Arterials emphasize regional movement while providing local access. They provide links to the collector roadway system and connect small population centers to the overall arterial highway system. Augustine Herman Highway/MD Route 213 is a minor arterial, moving regional traffic through Cecil County.

Collector roads provide access within residential, commercial, industrial, or agricultural areas. Collectors are intended to efficiently carry traffic throughout the street network. Collectors allow greater access to adjoining properties and local streets than arterials. MD Route 285 serves as a major collector from the northern limits of Town to its intersection with MD 284, Hemphill Street. From this point Hemphill Street is classified as a major collector until its intersection with Biddle Street, where MD Route 285 is again classified as a major collector. MD Route 286 serves as a minor collector.

All other streets in Town are local streets, meaning that they function to permit access to and between individual properties.

Regional Circulation

The main regional route in Chesapeake City is Augustine Herman Highway/MD Route 213. Traffic volume on MD Route 213, on the north side, is 14,260 average vehicles per day.[15] This highway provides access to the US Route 40 corridor. MD Route 285 and 286 provide access to the Town from points east, urbanizing areas of Delaware, and the MD Route 301 corridor.

Sidewalks/Trails

The historic district on the south side of Town has a fully developed sidewalk system. Sidewalks extend along Third Street to the neighborhood west of MD Route 213.

On the north side, sidewalks extend along Biddle Street, Bank Street, and the lower part of Lock Street. Moss, Cecil and Union Streets, which are low-speed, residential streets, do not have sidewalks. Lock and Hemphill Streets do not have sidewalks, but should given their roles in the local street network.

Scenic Byways

MD Route 213 is part of the Chesapeake Country Scenic Byway. This is both a state and nationally designated Scenic Byway and it begins on the north side of the Chesapeake City Bridge. The byway designation continues southward to the Eastern Neck National Wildlife Refuge in Kent County and to Stevensville in Queen Anne's County. Improvements to and development along Route 213 should be consistent with the Maryland State Highway Administration (SHA) Context Sensitive Solutions guidelines for work along scenic byways.

[15] 2008 Traffic Volume Map, prepared by the Maryland Department of Transportation.

Transportation Issues

The Town of Chesapeake City has identified several transportation issues and challenges that should be addressed through a number of implementation policies and programs. These include connectivity between the north and south sides of Town, traffic volume increases, and lack of parking and ridesharing. In 2000, 83.5 percent of workers in Chesapeake City drove to work alone; only 7.4 percent carpooled. The low rate of carpooling increases traffic on local roads, particularly at peak travel times. Other issues of concern include a need for; consistent signage, a streetscaping policy for Town beautification, improved non-motorized systems, and alternate forms of transportation. Over 16 percent of Town residents are over the age of 65. Providing for the transit needs of an aging population requires a focus on non-motorized and alternate forms of transit.

Connectivity

As stated earlier, the Town is divided by the C&D Canal, which impedes the flow of vehicle and pedestrian traffic. In addition, connecting new residential streets to the existing Town grid system is important to maintain a consistent traffic flow and ensure that neighborhoods are well connected. The Town has instituted water taxi service to increase mobility of residents and visitors between the north and south sides of Town.

Zoning and subdivision regulations should require that new development on the north and south sides of the Canal provide appropriate connections to the existing street system. The design and layout of new streets should provide for the extension of the Town's grid street pattern into and within new developments.

Traffic Volume

MD Routes 286 and 285 both operate at a level of service C or better. Summer average daily traffic along these Routes and MD Route 213 increases as travelers from the north seek less congested routes to ocean resorts. Traffic speed and volume, particularly during the summer months, creates unsafe conditions for pedestrians and local motorists in Town and adversely impacts the quality of the community during the peak tourist season.

Parking

The Town of Chesapeake City lacks adequate parking for residents and visitors during the summer tourist season. The lack of parking impedes the Town's ability to accommodate tourist traffic—a critical component of the local economy. Parking is essential for the Town's tourism industry. The Town seeks to balance this need for parking with a desire to reduce the environmental impacts of development and the impervious surfaces created by development. Shared parking strategies will be considered in an attempt to balance these two goals.

Non-motorized Systems

The vision for the City's circulation system should be a network of attractive, walkable, and well-connected streets. Well connected streets with on-street parking, sidewalks, and street trees on both sides

should be encouraged to make travel around Chesapeake City as efficient as possible and to encourage walking and bicycling.

In the future, the Town and County should plan for the extension of local bike routes along State and County routes where "loops" through the country side can be created for use by recreational bikers. In addition, bike riders need to be encouraged with good bike routes, bike racks at destinations, and showers and lockers at work and school.

While the Chesapeake City Bridge has a sidewalk along the east side, access to the sidewalk requires either backtracking out of the main part of Town or climbing a high, open stairway. Neither access to the sidewalk, nor the sidewalk creates a pedestrian-friendly environment on the bridge. This deters residents and limits access for residents most in need of pedestrian facilities (children and the elderly). Vehicular traffic along the bridge travels at high speeds and the overall pedestrian experience on the bridge is lacking. Both safety and accessibility limit the Chesapeake City Bridge as a viable non-motorized connection between the northern and southern parts of Town. The Town has focused on providing a water taxi service as a safe and accessible connection between the north and south sides of Chesapeake City.

Rail Service

Rail service to Elkton is under consideration. This would improve regional mobility and increase transportation choice for residents of Chesapeake City. The Town should support efforts to restore rail service to Elkton. If rail service from Elkton becomes a reality the Town should consider connecting to the rail system through a bus or trolley route to Elkton. This should be a regional endeavor involving coordination with Cecil County and other Upper Eastern Shore counties and WILMAPCO.

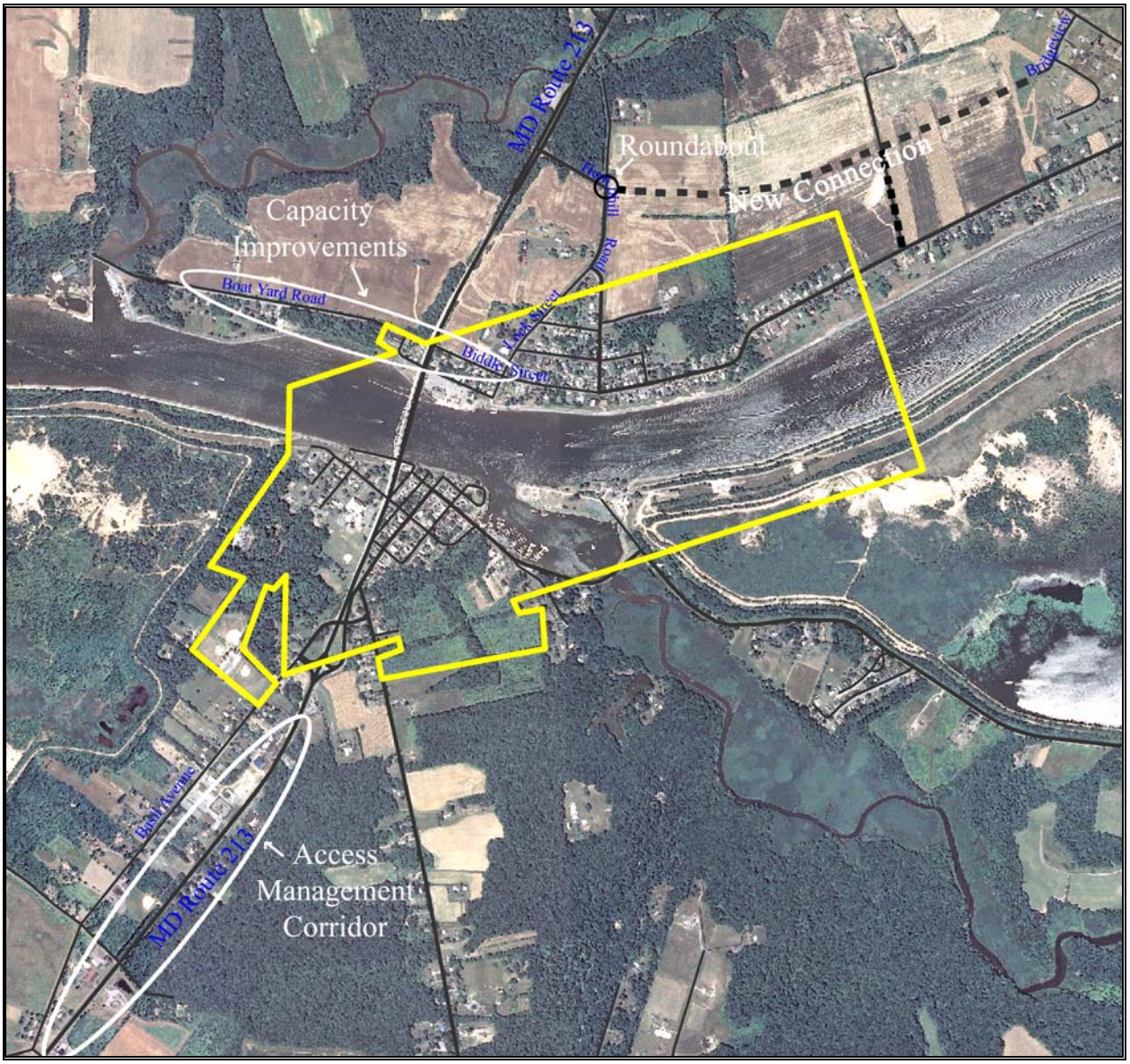
The Plan for Transportation

Chesapeake City's transportation plan includes maintenance to and improvement of the existing road system and development of new connections in annexation areas. The major recommendations include connections in Growth Area "A" from Hemphill Street eastward; a southern route to Biddle Street; a roundabout at Lock and Hemphill Streets; a connection in the west side of Growth Area "B" to Boat Yard Road; controlled access along MD Route 213 in Growth Area "C"; and a town-wide trail network.

Growth Areas A and B, when fully developed, will need a supporting network of new streets. The extension of Hemphill Street eastward into Growth Area "A" would provide direct access to Route 213. This road should be designed as a residential collector street with a possible right-of-way of 65-80 feet and include sidewalks and street trees. The connection of Growth Area "A" to Hemphill Street will significantly increase traffic at this location as a substantial percent of traffic will access Route 213 along this road. The intersection will essentially become a three-way intersection between Hemphill Street, Lock Street, and the new residential collector. A roundabout is proposed for this intersection to manage the safe flow of traffic.

Exhibit 8.1 shows two basic and conceptual road improvements that may be necessary. These includes the residential collector mentioned above which would connect Hemphill Road and Bridgeview Road. It also includes the possible conversion of the existing unpaved Foard farmstead access drive into a public street. While the alignment of these roads should be determined during the annexation process, the connections should be made as guided by Exhibit 8.1. This exhibit also shows the location of a roundabout at the intersection of Lock Street and Hemphill Road with the new residential collector road planned for the growth area. These transportation improvements would be constructed by the developer but would ultimately be owned and maintained by the Town.

Exhibit 8.1 Road Improvements



To the extent possible the street network of Growth Area "A" should be modeled on the traditional and historic sections of Town. A grid system of streets with short blocks and alleyways should be provided. A system of pedestrian/bicycle ways should be planned and constructed as part of the development. Hemphill Road and the Bridgeview Drive extension, in particular, should include dedicated bicycle lanes.

Growth Area "B" would require internal networks of streets and roads. The section of this growth area on the east side of MD 213 is planned as a mixed use development and is proposed to be a village center on the north side of the Town. The internal road network should therefore reflect that of the existing village center. Transportation plans for this area should also include shared parking. Parking can be shared between residential, commercial, and office uses reducing the overall quantity of parking spaces and therefore impervious surface in this growth area.

The portion of Growth Area "B" west of MD Route 213, would have no direct connection to MD Route 213. Depending on the development scenario, Growth Area B could generate about 2,000 trips per day along Boat Yard Road. Traffic from this new residential area would access MD Route 213 via Boat Yard Road / Biddle Street, ~~to~~ Lock Street and Hemphill Road. Upgrades to Boat Yard Road and Biddle Street (west of Lock Street) may be necessary to accommodate this additional traffic.

Growth Area "C" is an emerging commercial area along the main access route to Chesapeake City, Route 213. The recommended spacing for access points along a minor arterial, such as MD 213 is one connection every half mile. Multiple driveway connections to this main road would impede the free flow of traffic into the Town and cause congestion along this route. For this reason, this plan strongly recommends that Basil Avenue function as a commercial service road; that it be used as an access to the businesses along Route 213; and that over time the driveway access points on Route 213 be consolidated and/or closed.

On the east side of Route 213 an access would need to be controlled, however, sensitive natural areas prevent the construction of a service road. Therefore, this plan recommends that access points be limited on the east side of Route 213 and that access be provided through a series of inter-parcel connections via shared parking. Necessary upgrades to Basil Road and inter-parcel connections on the east side of Route 213 should be a condition of annexation. The cost of this access controlled network should be paid for by the developers of commercial property in Growth Area "C".

SHA's Highway Needs Inventory lists the need for converting Route 213 into a divided highway in the future. Access management along Route 213 should consider accessibility for a future divided highway.

A town-wide trail network is shown on the Trails Map on the following page. This trail network includes connections between existing and future parks and natural areas, and the village centers on both sides of the C&D canal. The Chesapeake City Bridge provides pedestrian facilities; however, these facilities are inconvenient and unsafe. Reliable, safe, and convenient pedestrian connectivity between the north and south sides of Town is provided by the Town's water taxi service.

Transportation Objectives and Actions

The following list summarizes the key objectives of this Plan with regard to transportation. In effect, it develops in some detail the main policies of Chesapeake City. This list could be used as a work program to guide the Planning Commission in its implementation of the Plan.

Objectives	Actions
Protect safety and capacity of Route 213 by promoting access management.	• Require that access be managed along 213 south of Town through a service road along Basil Avenue to the west and a system of inter-parcel connections and shared parking on the east. • Limit connections to Route 213 to one per half mile spacing. • Conduct an access management study along the southern part of Rte. 213. • Incorporate regulations in the Zoning Ordinance to allow shared parking and inter-parcel connections among commercial uses.
Support bicycle and pedestrian access to all areas of Town.	• As part of a parks and open space plan, develop a town-wide trail network plan. This should be guided by the Trails Map. Require developers to construct and dedicate parks and trails in early development phases. • Update the Subdivision Ordinance to require sidewalks and connections to the existing sidewalk network in all areas of Town. • Undertake a sidewalk study to identify those sidewalks in need of repair or replacement. The study should also identify those areas that are disconnected and establish a plan for completing connections. • Develop a policy to make planning for bicycle and pedestrian access part of all transportation planning. • Amend the Zoning Ordinance to require space be provided for the parking of bicycles in non-residential areas. • Update the Subdivision Ordinance to require that roads in growth areas include pedestrian and bicycle facilities. • Expand the C&D Canal greenway, which provides safe, convenient, and inviting routes and walkways between activity centers. • Invest in and maintain water taxi service between the two sides of Town.
All Town roads provide efficient and safe access within the Town and to the regional transportation system.	• Growth Area “A” includes connections between Hemphill Road and Bridgeview Drive; along Foard Lane; to Lewis St.; and to Grayson Ave. • Update the Subdivision Ordinance to reduce the required width of new roads and incorporate shared parking requirements for commercial areas. The purpose of this is to exhibit judicious use of impervious surfaces. • Implement the Town’s parking study. • Develop and implement measures to encourage carpooling. • Require the developer of Growth Area “A” to build a roundabout at the intersection of the Bridgeview Dr. extension with Hemphill and Lock Sts. • Prior to development of Growth Area “B” conduct a traffic study to identify capacity improvements needed fir Boat Yard Rd., Biddle St., and Lock St. The developer of Growth Area “B” will pay the cost of upgrades.

Chapter 8 — Community Character and Historic Preservation

The historic character of Chesapeake City provides a sense of place in history and is a base for the community's character and culture. The Town was developed as a result of the construction of the C&D Canal, from its early beginnings as a small village, to a vibrant stop along this marine transportation route; to the historic Town it is today. This plan seeks to preserve the Town's rich historic past while continuing to develop in a way that will add character and new history to the Town in the future.

Community Character and Historic Preservation Goal

In the future, Chesapeake City has become a Town whose stages in history can be seen through the Town's architecture.

Background

Chesapeake City is truly a historic, nineteenth century town. When the C&D Canal was completed in 1829, it was reported in the log of a traveler that two buildings existed at what was then referred to as Bohemia Village. The village grew as canal traffic increased. Particularly during the last quarter of the nineteenth century, the Town experienced prosperous times. This resulted in the construction of many fine shops, elegant homes, and stately churches that still exist today. It is these structures, along with a variety of small, working-class houses that form the core of the Town's South Chesapeake City Historic District.

The Town of Chesapeake City is centered on the hand-dug, Chesapeake & Delaware Canal. On October 17, 1829, the 14-mile Canal was opened to marine traffic, and soon a busy commercial community had been established. In 1839, this commercial community was named Chesapeake City. The Town grew as the result of a former lock that existed at Chesapeake City, which required all vessels traversing the canal to stop and be "locked" through. The waiting crews and passengers would often debark and shop in Town. This precipitated a lively commercial district in the Town and surrounding areas.

The Town's economic base quickly declined when the Canal was dredged to a sea-level waterway in 1927; part of this economic hardship could be attributed to the ensuing depression the Country would face just two years later. The economy was then sustained by increasing automobile traffic. North/south vehicular traffic crossed the Canal at a vertical lift bridge which connected Lock Street on the north side with George Street on the south, and often would stop for gas or food. In addition, during the 1930s and 1940s, the Town was busy on Saturday nights with farmers and other County residents coming from nearby areas to obtain weekly provisions.

In 1942, a passing tanker, Frans Klassen, destroyed the vertical lift, leaving residents and travelers with only a ferry as a means to cross the canal. Unfortunately, the opening of the current steel high arch bridge

in 1949 did nothing to turn the economy around as the Town was effectively bypassed. In 1960, the Canal was widened. However, the Town's damaged economy faced another dilemma with this venture—an entire street of 39 homes was demolished.

Today, Chesapeake City is the only town in Maryland that is situated on a working commercial canal. Most of the Town's original architecture remains intact. Many existing buildings remain, but in many cases show signs of neglect. However, some homes were well maintained so that the Town has a patchwork of well-kept and drab structures, nearly all of which are capable of being saved.

The south part of Town east of Route 213 is listed as a historic district. In addition to this historic district, one property is listed on the National Register of Historic Places (NRHP). This the Old Lock Pump House located on Bethel Road (MD 286).

The Chesapeake City Historic District Commission has encouraged the preservation and restoration of historic properties in Town. They approve all changes to the exterior of historic structures in an effort to maintain the Town's heritage. As such, 148 properties are listed in the Maryland Inventory of Historic Properties (MIHP). Table 9.1 displays some of these properties and their locations.

Table 8.1: Historic Place in Chesapeake City Recognized by the Maryland Historical Trust

Property	Location
Bristole	Elk Forest Road
Great House	284 Great House Farm Lane
Staworsky-Cropper House (old post office)	19 Bohemia Avenue
Trinity Methodist Episcopal Church	Bohemia Avenue and Third Street
Gassaway House	Charles Street
Bethel African Methodist Episcopal Church	Second Street and Pine Street
Pyle's Store	George Street and Second Street
Eleanor Lucas Cottage	Second Street
Ellwood House	Bohemia Avenue
Caldwell House	Bohemia Avenue and Fourth Street
Foard Funeral Home	George Street
Shamblin House	George Street and Fourth Street
Martin's Tavern	Second Street
MD 286 over Back Creek	Bethel Road (MD 286) over Back Creek
Chesapeake City Bridge	MD 213 over Chesapeak & Delaware Canal

Source: Maryland Inventory of Historic Places and Jakubiak & Associates, Inc.

The Plan for Community Character and Historic Preservation

There are a number of structures and sites within the Town that are of historic, cultural, or architectural significance. These structures, given proper concern and recognition, have tremendous potential to serve as physical reminders of the history and heritage of our past. Continued historic and cultural resource preservation and enhancement through sensitive land use planning and other administrative means would provide Chesapeake City with a number of benefits, including:

- Promotion of a strong sense of community pride for Town residents,
- Community revitalization through the renovation or adaptive reuse of older structures,
- Increased property values and tax revenues as a result of renovation and restoration, and
- Increased revenues generated from tourism

The Town of Chesapeake City seeks to preserve its essential historic structures and community character. This involves the preservation of historic structures, the extension of traditional patterns of development, and the construction of compatible infill that contributes to the Town's history. The Town should conduct an inventory of historic structures and target those that are most essential to the Town's history and character for preservation. The Town should also document the pattern of development in its historic center and apply regulations that will result in a similar pattern of development in the Town's growth areas. Compatible infill throughout the Town will be encouraged. Compatible infill will be similar in size and scale to the existing structures while advancing the quality of modern architecture.

Historic Preservation Objectives and Actions

The following list summarizes the key objectives of this Plan with regard to historic preservation. In effect, it develops in some detail the main policies of Chesapeake City. This list could be used as a work program to guide the Planning Commission in its implementation of the Plan.

Objectives	Actions
The architecture of future development will reflect the character found in village centers, creating a unified sense of place. New development should enhance the character of Chesapeake City.	• Through a coordinated effort of residents and local historians, identify those historic structures that are most elemental to the historic character of Chesapeake City. These structures should be targeted for investment and preservation. Create an inventory of historic structures and their significance. • Use the Zoning Ordinance to promote infill that is both compatible with the historic context of Chesapeake City and advances the quality of modern architecture. • Amend the Town's Zoning Ordinance to include commercial and residential design standards. • Adopt lot size, setback, height, and lot coverage regulations in the Zoning Ordinance. These regulations should ensure infill development is compatible with the pattern and style of existing development.
Development of new streets and roads supports the Town's traditional character and pattern.	• Require that developers use the traditional pattern of lots, streets, and roads to guide the layout of roads in planned growth areas. • Update the subdivision ordinance to include street design regulations that reflect the design of streets in the village core. • Require that annexation plans show a grid system of roads with multiple connections to existing areas of Town.

Chapter 9 – Implementation

Implementation will require a commitment on the part of the Town to the main principles of this plan: preservation of natural areas, development of compatible infill, and stewardship of community facilities.

Several steps will be necessary to achieve the vision described in this Comprehensive Plan. The Town will need to update its Zoning Ordinance and Map, revise it Subdivision Regulations, and schedule upgrades to infrastructure in a Capital Improvements Program. This Plan calls for the construction of new roads and trails and establishing and preserving a Greenbelt. The Planning Commission will play an essential role in implementing this plan and achieving its vision.

Zoning Ordinance and Map

In general, the Zoning Ordinance and map should be updated to reflect the Comprehensive Plan Map and the Land Use Categories described in Chapter 4, Land Use. Some of the priority changes that should be made include:

- Establish a Low-Impact Development (LID) overlay.
- Establish a Resource Conservation district.
- Update the Critical Area Program
- Establish commercial design guidelines.
- Establish standards for shared parking.

Subdivision Regulations

The Town's Subdivision Regulations should be updated to ensure that development of Growth Areas "A" and "B" will be reflective of traditional areas of Town. The regulations should be amended to incorporate principles of low impact development, best practices in stormwater management techniques, and open space planning. Further, the review and approval procedures, submittal requirements, public works standards and requirements should all be reviewed and modernized.

Capital Improvements Program

The Town should adopt a Capital Improvements Program (CIP). There will be costs associated with the planned infrastructure improvements to the Town. These costs should be scheduled in a CIP. Current costs estimates for the major projects are provided below:

- Sewer plant upgrade and expansion is expected to cost $9 million. The Town has applied for funding assistance through MDE.
- Water system upgrades (not including additional storage) and connection to Bohemia Manor High School is expected to cost $3.9 million.
- The Town intends to construct a new water storage tank. An estimate of this cost is $1.5 million.

- A Parks and Open Space Plan is proposed. This plan should address the costs of acquiring, constructing, and maintaining parks and trails.

This Plan's priority funding mechanisms center on water and sewer infrastructure. The Town should consistently track the County Water and Sewer Master Plan and coordinate with the County to ensure it remains useful in light of the Town's changes. Loans from the Maryland Department of Housing and Community Development's Local Government Infrastructure Financing Program, grants and technical assistance from the Maryland Department of the Environment, and Community Development Block Grants (MD DHCD) should be all considered. To some extent, the Town could also seek to cover the costs of water and sewer system rehabilitation, repair, and expansion through surcharges on new connections. The Town could use tap fees to cover the water treatment costs of new connections. Developers seeking annexation should be required to make capital contributions as well.

Also, this Plan calls for public buildings and spaces to reduce energy and water consumption. An audit of energy and water use should be conducted. This audit should result in an assessment of costs for energy and water consumption reduction methods. The Plan calls for public buildings and spaces to be retrofit with LID techniques. An assessment should be conducted to determine what LID techniques can be retrofitted to these buildings. This assessment should estimate the cost of these modifications.

Roads

The roads called for in growth areas of this plan should be built by developers at the time of approval to the Town standards. This includes upgrades to roads and the construction of the roundabout described in Chapter 7, Transportation.

SHA's Scenic Byway Program can provide assistance with regard to improvements along Route 213.

Trails

This Plan calls for an interconnected trail system throughout the Town and its Greenbelt. Portions of the trail system that will be in developed areas should be constructed and dedicated by the developer at the time of construction. This includes trails in the Greenbelt of Growth Areas "A" and "B". Other portions of the trail along MD 213 in the southern part of Town and along Back Creek should be public trail construction projects. An important part of this trail is the connection between the elementary school, library, and the high school. These institutions should be connected, allowing students—who have limited transportation options—to access the library and school safely. WILMAPCO, as the regional transportation planning authority, should be asked to take a role in funding these connections. Other programs that may be available to assist in funding these improvements include; Safe Routes to School, Sidewalk Retrofit Program, Transportation Enhancement Program, Maryland Scenic Byways Program, Highway Safety Grant Program (Section 402), Program Open Space, GreenPrint Program, and the Community Parks and Playgrounds Program,

Greenbelt

This plan calls for the preservation of a Greenbelt of natural areas and open spaces around the Town. Natural areas and open spaces in the Greenbelt should be permanently preserved. The Town should coordinate with the County to designate areas of its Greenbelt for preservation. Annexation of Growth

Areas "A" and "B" would include annexation of preservation areas as well as development areas. The annexation agreements for Growth Areas "A" and "B" should require the permanent preservation of areas shown as Greenbelt on the Comprehensive Plan Map. These areas should be protected by conservation easements and/or dedicated to the Town at the time of annexation.

Role of the Planning Commission

The Planning Commission is responsible for administering this Comprehensive Plan. Its role is most essential in creating the Chesapeake City described in this Plan's vision statement. The Planning Commission is responsible for:

- Reviewing development proposals for conformance with the Comprehensive Plan and adherence to the Town's development regulations.
- Reviewing and commenting on the Town's Capital Improvements Program and reviewing all capital projects to determine their conformance with the Comprehensive Plan prior to their funding.
- Working to create and sustain public interest in and support for the Plan.
- Retaining and directing the work of professional planning support to undertake detailed planning and the update of regulations.
- Reassessing the Comprehensive Plan in 6 years to determine if revision is warranted.