

MUNICIPAL GROWTH

INTRODUCTION

The Municipal Growth Element begins with future population and housing demographics to provide the data necessary for analysis of impacts to facilities in North Beach or land areas adjacent to Town precipitated by population growth. It will help to analyze existing shortages in housing, the need for higher density in residential districts in future years, and assist in evaluation of annexation petitions of land outside of the Town boundaries. The demographics used in this chapter will be carried over to the Water Resources Element for analysis of water and sewerage facilities.

FUTURE POPULATION AND HOUSING FORECASTING

This section includes trends that identify expected future yearly population projections, and assesses implications of expected future population trends for purposes related to accommodating community planning in the next twenty years. It places an emphasis on expected housing needs, water and sewer availability, and possible growth of community services.

As referenced in the Introduction chapter, North Beach is a diverse community that consists of year-round residents, seasonal property owners, seasonal day visitors, and a growing number of senior citizens. A trend has been established of summer homes converting to permanent homes throughout the past years. Population, housing, acres in each land use, and zoning districts will be utilized during forecasting in this chapter.

Population size serves as the benchmark for planning the physical needs of the community. It is one component for estimating overall land and facility needs. Analyzing the characteristics of the population assists the Mayor, Council, and Planning Commission in making informed decisions regarding the needs and service demands of the present population.

Although population projections are less than precise, they provide the basis for estimating housing and infrastructure impact and demand; and, an analysis of population relative to jobs and journey to work forecasting can be helpful to establish the need for businesses in town. The population in Town is important to the types of services and retail establishments that can be supported in North Beach and in areas in close proximity. The Municipal Element looks at these factors so as future population growth takes place, the appropriate infrastructure, services, and housing will be available to the Town.

In a Market Feasibility Analysis by Real Property Research Group, when comparing 1990 and 2000 Census data, they found that the market area in North Beach experienced strong growth during the nineties, growing from a household count of 6,148 in 1990 to 8,328 in 2000: with a mean annual growth of 218 households, or a compounded annual growth rate of 3.1 percent. In 2001, Hunter Interests, Inc. prepared the Phase II North Beach Revitalization Plan which analyzed their data using concentric circles of 1, 5, and a 10 mile radius: with the point of beginning at the intersection of Erie Avenue and 5th Street. Since both of these studies used a much larger area that contained parts of adjacent communities, rather than the Town's municipal boundaries their growth rates may be more appropriate in the Economic chapter. It is expected that markets will cross over jurisdictional

boundary lines since they are based on distance to the service rather than being confined to the boundaries of North Beach. Both of these studies certainly have value when looking at the Economic data that will be presented in the Economic Chapter.

Review of Census data for North Beach and selected jurisdictions for comparison has helped to establish the growth rate for the Town. North Beach had an average annual growth rate of approximately 6 percent between the years of 2000 and 2007.

**Estimated Population for North Beach and Selected Jurisdictions
2000-2007
Table MG-1**

Jurisdiction	2007	2006	2005	2004	2003	2002	2001	2000	2000-2007 Percent Change
Maryland ¹	5,618,344	5,602,017	5,573,163	5,537,662	5,494,136	5,433,822	5,374,956	5,310,916	6.1
Calvert County ²	88,223	87,582	86,813	85,370	83,385	80,409	77,348	75,165	17.0
North Beach ¹	1,869	1,865	1,862	1,846	1,825	1,785	1,762	1,880	6.3
Chesapeake Beach ¹	3,394	3,380	3,366	3,328	3,278	3,193	3,167	3,179	6.7

¹ Prepared by the Maryland Department of Planning, Planning Data Services

² Source: U.S. Census Bureau, Population Division. Release Date: July 10, 2008

In their 2004 Comprehensive Plan, Calvert County projected a 2010 population as 91,000 with 31,967 households, and 2.85 persons per household. Their projection for 2020 was a population of 96,000 with 35,367 households and 2.71 persons per household. Population projections received from Calvert County to the year 2020 indicates that their growth rate in population will be 1 percent. Both of the County data sets are relatively close. ARRO Consulting, Inc. has established a growth rate in population based on available Census data and Calvert County's growth rate at .09 percent. This takes into account the economic situation in the years 2008 and 2009 and uncertainty in the economy and its recovery.

According to the 2000 Census reports, the average household size in North Beach was 2.34 with an average family size of 3.01. Households represent all people occupying a housing unit, whether related or not (containing no more than one family); a family includes a householder who are related to the householder by birth, marriage, or adoption. Therefore, not all households contain families, since a household may comprise a group or unrelated people or one person living alone. Applying .09 percent growth factor will produce 2295 population in 2030 and will require 981 housing units.

The number of persons in a household that will be used in the Municipal Growth Element analysis will be 2.34, which is based on the 2000 census data. This number is a weighted average between 2.44 per owner-occupied housing units and 2.17 per renter-occupied housing unit.

Table MG-2 shows population projected from 2000 to 2030. Projection in the year 2030 predicts a raise in population of 415 persons and 178 households. These numbers have been used for

forecasting of the Community Facilities and Water Resources Element. Of course the national economy will effect population growth in Town since there are not an abundance of jobs here and there is a higher cost to commute long distances to work. Many may be reluctant to invest in remodeling a home or a developer may want to wait to begin a project until the economy and the housing market improves.

Projected Population and Household Projections
North Beach 2000-2030
Table MG-2

Year	<i>North Beach Population</i>	<i>Population Change Yearly</i>	<i>Households</i>	<i>Household Change Yearly</i>
2000	1880	-	803	-
2005	1862	-18	795	-8
2010	1920	58	821	26
2015	2008	88	858	37
2020	2099	91	897	39
2025	2195	96	938	41
2030	2295	100	981	43

North Beach data is projected by ARRO Consulting, Inc.

GROWTH PATTERNS

North Beach began as a thriving small summer community with churches, shops, restaurants, a lumber yard, a dance pavilion and essential retail establishments that supplied most of the goods that people in the community needed. Following World War II, emphasis was placed on legalized gambling here and in Southern Maryland. North Beach had a few hotels and boarding houses where tourists stayed when they were in Town. After **repeal** of legalized gambling, the Town became more family oriented: as it is today. Although fishing and water related activities have always been important, during the 1960s, transportation allowed people to leave Town to work and shop, and the market for the shopping were not as important as they had once been.

Today the Town has a different mix of businesses, most of which are located along Chesapeake and Bay Avenue and between First and Seventh Streets. The Town has several restaurants, antique, beauty and art shops, business and professional offices, a gas station, florist, gift, beauty, beverage, candy, bakery, and car repair and bicycle shops. The citizen survey has stated that some would like to see a grocery and drug store locate here which may occur if proposed development that has already been approved decides to build when the economy improves.

Since the 1998 Comprehensive Plan was adopted, a number of new community facilities have been added to the Town. The Boardwalk and Pier have been rebuilt and a bicycle path has been added along Bay Avenue; a new Boys' and Girls' Club building was constructed, and a Senior Center were constructed and occupied on Chesapeake Avenue; a three story apartment for Seniors has been built between Chesapeake and Bay Avenues; and a large acre tract of land was annexed into town and provides 135 three story town houses: some with garage options. In addition, several multi-family buildings have been built in the downtown area.

Other proposals that are being considered or have had plans approved are those of a new town hall to be located on Chesapeake Avenue and a large mixed use building that would be constructed on Bay Avenue at Fifth Street. Improvements for a mixed-use project have been proposed for land at the northwest corner of Seventh Street and Bay Avenue.

There have been several proposals discussed for some of the vacant properties that are located in the downtown area which is mainly located from First to Eight Streets and along the west side of Chesapeake Avenue to Bay Avenue with a small area of commercial between Bay and Atlantic Avenues commencing at Seventh Street Maryland Route 261. The rest of the Town consists of single family attached and detached dwelling units, townhouses, and apartments.

A trend in residential housing that has been continuing for many years and is expected to continue is the conversion of small one story beach houses into larger multiple story single family homes many of which can be seen along Atlantic Avenue.

In 2004, the Mayor and Council approved a change to the Town Zoning Ordinance to create the Waterfront Renaissance District. This district allows a developer to deviate from some regulations, from the underlying district upon which the overlay was placed in exchange for other regulations that add flexibility in uses permitted. The Planning Commission reviews the application to modify certain regulations that are requested by the developer. The Planning Commission objective is to allow development that demonstrates excellence in architectural design compatible with the historic architecture of the Town while providing for safety, convenience, economic vitality and beauty for the town residents and tourists. The public hearing process that takes place at the Planning Commission meeting provides input from citizens relative to the proposal brought forth. Much of the negotiation between the Commission and the developer is created due to the small lot sizes, the lack of parking in Town, and the placement of buildings in an optimum place.

North Beach received an Architectural Survey and Historic District Evaluation that identifies 40 existing historic structures that are within the Town. The significance of these structures is their representation of the Residential and Beach colony (c. 1910 to c. 1942) period and the Suburban Community (c.1943 to the present). The Town has developed guidelines for historic preservation; however, there is not a historic **overlay district** established even though the Zoning Ordinance has provided for one.

The Town is fortunate to be located along the beautiful Chesapeake Bay; however, the marshland and wetlands associated with the Bay infringe on the developable land in Town. Approximately twelve percent is classified as Conservation, which is beneficial for outdoor recreation but is not build able land.. Future use of this land may be associated with planned recreational activities that can add more tourists to the economy of the Town.

North Beach has a major part of Town that is located in the Critical Area and a lesser portion of Town that is located in the 100 year FEMA floodplain. Although these natural features make it more difficult to develop the Town, these designations are respected and considered with all development requests.

The existing zoning of the Town is shown in Table MG-3 below and following that is Table MG-4 that contains the proposed land classifications and the uses expected in those areas.

Table MG- 3
Adopted Zoning Ordinance District Classifications

Zoning Classification	Definition
R-1, Single Family Residential	Intended to preserve and protect the primarily single-family detached residential character of the district and to keep these areas free from the land uses that are incompatible with and/or might adversely affect these single-family neighborhoods.
R-2, Multi-Family Residential and Mixed Use	Intended to promote the development of a pleasant living environment with multiple housing types and other low impact land uses which complement residential and institutional character and are compatible with residential use.
R-3, Single Family Residential and Mixed Use	Intended to promote the development of a pleasant living environment with single family housing types and low impact land uses which complement residential and institutional character and are compatible with residential use.
C-1, Neighborhood Commercial	Intended to provide locations for small-scale and low-impact commercial and non-residential uses while protecting residential character within and adjacent to the district.
C-2, Town Center Commercial	Intended to promote the intense development of land for commercial uses that are compatible in scale and impact with nearby residential neighborhoods, and to protect and provide a safe and attractive environment for shopping, entertainment, and community gathering.
W, Waterfront District	Intended to promote the development of a mix of uses that are respectful of and complement a waterfront location and contribute to recreational and tourism activities for residents and visitors.
PR, Park and Recreational District	Established to provide and protect locations for parkland and recreational activities and needs.

Table has been prepared using the 1998 North Beach Comprehensive Plan and the existing 2005 North Beach Zoning Ordinance.

After analysis of the current Zoning classifications, it was determined that the nomenclature and characteristics of the current zoning districts needed to be revamped to define density, intensity, and types of uses. The Land Use Classifications that are show on Table MG-4 Below should be utilized as the basis for Zoning Classifications upon adoption of the Comprehensive Plan and review and adoption of the next Zoning Ordinance.

In addition to the Land Use Classifications, the following Overlay Districts are part of the Plan. The Growth Allocation Overlay's regulations are provided in the 2005 Zoning Ordinance; however, an overlay has not been placed on the Town's Zoning Map to date. A Historic Overlay is referenced in the Zoning Ordinance and should be retained. Although there is not a Town Historic district, if several historic property owner's request and gain approval of a Historic Overlay, the door is left open for creation of a district in the future.

Table MG-4
Future Land Use Classifications

Land Use	Density	Recommended Uses
General Commercial	Variable	Retail services that serve the community and may serve other areas adjacent to the Town or tourists.
Neighborhood Commercial	Variable	Retail and office uses within or in close proximity to residential areas that provide residents pedestrian access to essential and convenience services.
Government	Variable	Publicly owned areas of the town where the public is invited to congregate or areas that are used to private public service.
Waterfront, Renaissance	Variable	A combination of uses including residential and non-residential. Uses may include offices, retail, institutional uses, and small passive recreation areas. The purpose of this district is to enhance and redevelop the downtown area along and adjacent to the Bay. This district requires compliance with the Waterfront Renaissance design guidelines.
Residential, Low Density	3.5 to 8 DU/AC	Single-family, detached, attached, and multi-family, and residential accessory uses. Neighborhood-serving retail and services provided that land uses are compatible with and do not adversely affect residential neighborhoods.
Residential, Medium Density	9 to 12 DU/AC	Single-family, detached, attached, and multi-family, and residential accessory uses. Neighborhood-serving retail and services provided that land uses are compatible with and do not adversely affect residential neighborhoods.
Residential, High Density	13 to 50 DU/AC	Single-family, detached, attached, and multi-family, and residential accessory uses. Neighborhood-serving retail and services provided that land uses are compatible with and do not adversely affect residential neighborhoods.
Recreation	Variable	Lands and facilities generally owned and operated by the Town or other level of government for the purpose of recreation or public open space.
Conservation	Variable	Publicly or Privately owned environmentally sensitive areas.

Table MG-4 shows land uses that are recommended in specific classifications. It is recognized that at the present time many neighborhoods have a mix of uses that the Zoning Ordinance permits by right and that the Comprehensive Plan suggests continuance of mixed uses in the Waterfront Renaissance district and continuance of legal non-conforming uses. The Plan recommends that some uses should be considered as primary in a land use category and some secondary. For example, you would expect to have single family residences in a low density residential district; however, if there has been a legal non-conforming use in existence, it can remain until it ceases use for a certain period of time. The Comprehensive Plan is suggesting that some areas of Town should be Neighborhood Commercial; however, if the Mayor and Council want to allow some residential development to exist in that area, they may do so. However, the Comprehensive Plan only presents goals that are general, so any change to neighborhoods would only take place after amendment of the Town's Zoning Ordinance. Adoption of the Comprehensive Plan does not rezone property which is a process that is conducted during amendment of the Zoning Ordinance. It does support certain logical land uses in certain areas.

Table MG-5 provides a comparison of existing and proposed land uses within the Town. The areas are computed from the existing and proposed land use maps. As can be seen, the area of waterfront mixed use land use will increase with the proposed land use designations.

Table MG-5 Comparison of Existing & Proposed Land Uses
By Percent of Acres of Land in North Beach

Land Use	Existing Acres	Share of Town %	Proposed Acres	Share of Town %	Percent of change in Proposed Land Use from Existing Land Use
General Commercial			7.22	3.0 %	
Neighborhood Commercial			6.35	3.0 %	
Total Commercial	19.44	8.7 %	13.63	6.0 %	-2.7 %
Government			10.50	5.0 %	
Waterfront Mixed Use	7.05	3.1 %	18.00	8.0 %	4.9 %
Residential Low Density			106.05	47.0 %	
Residential Medium Density			35.82	16.0 %	
Residential High Density			8.25	4.0 %	
Total Residential	159.47	71.5 %	150.09	67.0 %	-4.5%
Recreation			9.00	5.0 %	
Conservation			21.56	9.0 %	
Total Sensitive Areas	36.79	16.5 %	30.56	14.0 %	2.5 %
Total Acreage	222.75	100 %	222.75	100 %	

Based on existing and proposed land use map.

DEVELOPMENT CAPACITY AND BUILD OUT ANALYSIS

The development capacity analysis is the basis for determining whether existing developable land will accommodate future population growth or whether redevelopment of parcels with higher density, development on existing vacant land, adaptive reuse of structures, or annexation is required. This is one function of the Municipal Growth Element that is mandated to appear in the Comprehensive Plan by State law. This analysis is important because it helps to determine if there is an adequate balance between land supply, demand, services, and infrastructure.

As stated in the Land Use Element, North Beach is located in the northwest corner of Calvert County right at the Anne Arundel southern boundary Line. The marsh land of the Chesapeake Bay borders

approximately 95 percent of the north border of Town. Although there is a small area (approximately 5 percent of the north boundary of the Town) of land that is designated as Rural in Anne Arundel

County that fronts the Chesapeake Bay marsh land; only the width of the right of way of Maryland Route 261 Bridge connects the two areas. The area in Anne Arundel County appears to be limited due to the marshland.

The entire east boundary of the Town is the Chesapeake Bay. The Town's southern boundary is the common boundary line with the incorporated Town of Chesapeake Beach which is designated Residential, Resource Conservation, and Mixed Use-Low Intensity. The Resource Conservation is placed on marshland that abuts North Beach to the south. The area that is Residential and Mixed Use-Low Intensity is developed already and is served by Chesapeake Beaches' public services. On the west of Town, houses fronting Greenwood Avenue are in Calvert County on the west side of the street and North Beach on the east side of the street. The County land is designated as Rural Community/Residential. This property is built up and contains single family homes in the County that are served with public sewer and private wells.

Future Annexation

During preparation of this Comprehensive Plan, the possibility of annexation of adjacent land areas was analyzed and it appears that there is no land outside of the Town to annex due to the fact that the only section of Calvert County that fronts Greenwood Avenue would be unlikely to request annexation since it is already built up and served by public sewer. It is possible that failure of private wells could require a need for public water in the future; otherwise there is no incentive for the County residents to annex into North Beach unless septic systems are failing.

It is prudent for the Town to encourage infill development that can improve the quality of this older community. Infill development is in keeping with Smart Growth and is urged by the State as an efficient method of development because the infrastructure is already present at future building sites. However, it is important when reviewing projects that infill development should be designed to be attractive and compatible with the existing development in Town. In addition, some vacant lots may need to be consolidated due to their small size. Zoning text to provide regulations to accomplish development of infill lots should be considered for small infill lots during a rewrite of the Zoning Ordinance.

Incentives may be necessary for infill lot development due to the fact that construction is generally higher since it is more difficult to realize economies of scale for one building rather than several in an area. Infill development can be beneficial, especially since the Town does not have a lot of annexable area around it. In addition, this type of development is efficient for emergency and public safety services because it makes turn-around times faster; and, it adds to the goal of being a walk-able and bike-able community. Infrastructure is already in place and infill lots are less costly to sewer and water.

Table MG-6 lists the vacant lots that exist in North Beach and the densities that would be applied to dwelling units that could be constructed in Town.

Vacant Lots with Potential for New Construction
Table MG-6 North Beach

Block	Lots	Density	Land Use Classification
4	11-16	variable	Waterfront Mixed Use; General Commercial
4	variable	variable	Waterfront Mixed Use; General Commercial
3	variable	13-50	Waterfront Mixed Use
2	7-10	13-50	Waterfront Mixed Use
1	23-24	13-50	Waterfront Mixed Use
10	1-3	3.5-8 du/ac	Residential Low Density; General Commercial; Government
10	5-9	3.5-8 du/ac	Residential Low Density; General Commercial; Government
10	39-40	3.5- 8du/ac	Residential Low Density; General Commercial; Government
9	7-8	3.5- 8 du/ac	Residential Low Density; General Commercial
8	38-39	3.5- 8 du/ac	Residential Low Density; small portion of General Commercial
13	27-31	3.5- 8 du/ac	Residential Low Density
18	22-24	3.5- 8 du/ac	Residential Low Density
18	37-39	3.5- 8 du/ac	Residential Low Density
17	51-53	3.5- 8 du/ac	Residential Low Density
17	42-43	3.5- 8 du/ac	Residential Low Density
24	16-18	3.5- 8 du/ac	Residential Low Density
TOTAL	42 + lots available	200-250	

Even the most conservative manipulation of the numbers in this chart can provide housing for the **178 dwelling unit** increase projected for 2030. Realistically, the 178 new dwelling units that **are** projected to be built **over the planning period** will consist of a mix of densities that are indicated on the chart. Because several of the vacant lots are in the Waterfront Renaissance district, the highest density residential district, there could be as much as 13-50 dwelling units permitted on one or more of these lots. Although we do not have the dimensions of each lot, there is approximately 7+ acres of vacant land contained in these parcels as measured from the air photographs. It is expected and hoped that the Waterfront Renaissance district will develop at a higher density **than** single families. Therefore, the Development Capacity and Build out Analysis indicates that there are sufficient vacant lots within the municipality that would accommodate the future growth to the year 2030. It is

not expected that Annexation of Calvert County land will be necessary unless wells fail in the County and the State mandated that they hook on to North Beaches' public water.

Redevelopment within North Beach's existing municipal boundaries is the best option. It is an option that is within keeping with Smart Growth and meets the intent of House Bill 1141. In fill development relieves growth pressure on areas in Calvert County and can improve rejuvenate and improve the quality of life for older communities like North Beach. The Town does have vacant, underutilized land within its build up areas where infrastructure already exists. Infill development conserves an existing community's finances due to the presence of infrastructure and services that can be enhanced and improved rather than starting from new construction.

It is important that in fill development be designed to be attractive and compatible with the existing development in Town, which appears to be known by the citizens, Planning Commission, and elected officials who were interviewed and surveyed during the Comprehensive Planning process.

The State encourages Comprehensive Plan **policies** and provisions for infill. Of course, this would need to be followed by revising the text of the Zoning Ordinance with such provisions as:

- ✓ Zoning that encourages in fill on certain vacant, abandoned, or underutilized parcels of land within built-up areas of the jurisdiction;
- ✓ Zoning tools that require connectivity of infill with surrounding streets and open spaces;
- ✓ Zoning that allows a mix of planned housing types;
- ✓ And regulatory processes that make infill competitive with conventional development. Since North Beach has a number of small lots in Town, variances may allow the developer to build a better product or granting modifications may allow for consolidation of lots to produce a cost effective option to new construction.

There are some barriers to infill development as shown below.

- ✓ Site constraints, such as: wetlands; poor drainage; poor soil; brown fields.
- ✓ Site next to nuisances, such as: rail lines, heavily traveled roads.
- ✓ Social barrier: fear of the unknown; opposition to higher density; difference of housing types in the community; insufficient parking.
- ✓ Concern that the development will not be compatible with the neighborhood.
- ✓ Economic barriers; uncertainty of regulations if they do not meet the size, building materials, style of other buildings in the neighborhood may discourage the builder from constructing his project because of the extra time it takes to get approvals.
- ✓ Construction is higher for in fill development since it is more difficult to realize economies of scale for one building rather than several in an area.

Site constraints such as wetlands, poor soils, and brown fields impede this type of development. North Beach is aware and knows the limitations that are caused by wetlands, floodplain, and Critical Area legislation and have endured and built their fine community in spite of those natural restrictions. North Beaches' streets are established and the locations of vacant lots are mostly in the downtown area which would expect to increase in activity as the Town attracts new retail and office uses; however, the trade off would be an increase shopping opportunities and necessary services for their citizens.

Human nature and fears of the unknown are always present with new development. The Town officials agree that there needs to be compatibility in new development and have indicated that they want the historic character of this small family friendly Town to continue into the next decades. They realize that it is very important to have citizen participation in the decisions that are made at Town Hall and welcome resident input.

However, there are some issues that do need to be addresses with any growth that would take place in Town.

- Parking is insufficient at the present time. The Town has hired a consultant who has prepared a report and an analysis that contains recommendations that are incorporated into this document.
- Sewer Taps are limited.

FUTURE INFRASTRUCTURE AND COMMUNITY FACILITIES SERVICES ANALYSIS

Potable Water Analysis Assessment

MG-7 – Water/Sewer Demand and Population and Household Projections for 2030

	2000	2005	2010	2015	2020	2025	2030	Change %
Population	1,800	1,862	1,920	2,008	2,099	2,195	2,295	0.9%/yr
Household	803	795	821	858	897	938	980	0.9%/yr

The projected population as indicted in Table **MG-7** is 2,295 persons. The projected average day demand based on the historical usage of 70 GPDC is 160,650 GPD. After adding 10% for drought conditions the average day flow is projected to be 176,715 GPD, which remains less than the current permitted allocation of 185,000 GPD.

Using the State of Maryland’s conservative estimate of 250 GPD per dwelling, the projected 2030 increase in households of 178 dwellings, the increase in average day use would be **41,150 GPD** or **174,150 GPD** total as seen in Table **MG-8**. Increasing this by 10% for drought conditions would yield an average day use of **191,565 GPD** necessitating an increase in the permitted allocation by **6,565 GPD**. This worse case scenario would therefore require the Town to seek and obtain an increase in the existing appropriation permit by **year 2028**.

The Town has indicated that projects in the development review pipeline reflect an increase in average daily use of 27,000 GPD to 40,000 GPD, which would remain within the available allocated average daily flow limitations.

Table MG-8 below provides the projected water and sewer demand for the year 2030.

MG-8 – Water/Sewer Demand and Population and Household Projections for 2030

	2000	2005	2010	2015	2020	2025	2030	Change %
Population	1,800	1,862	1,920	2,008	2,099	2,195	2,295	0.9%/yr
Household	803	795	821	858	897	938	980	0.9%/yr
Water Demand (GPD) ¹	126,000	130,340	134,400	143,650	153,400	163,650	174,150	1.30%/yr
Wastewater Flow (GPD)	209,531	210,748	223,500	232,750	242,500	252,750	263,250	0.85%/yr

¹ Average day demand at 250 GPD/EDU for future flows beyond 2010 based on MDE criteria.

The Town’s existing water storage consists of one (1) 250,000 gallon elevated storage tank. Analyzing the sufficiency of the existing storage requires a judgment involving the quantity and duration of fire flow. Given the nature of development in Town of residential use, relatively small-scale multi-family and commercial use, and the ability of the existing 12-inch main to convey flow, a value of 1,500 GPM for two (2) hours was used. An analysis of the existing storage volume given the existing and 2030 projected population is provided below in MG-9. Although the analysis illustrates a slight deficiency in storage volume, the Town has the option of using water (and storage) provided by Chesapeake Beach through an emergency interconnection should it become necessary.

MG-9 – Water Storage Analysis

YEAR	POP	1 EDU’s	2 Average Daily Demand (GPD)	3 Equalizing Storage (GAL)	4 Fire Flow (GAL)	5 Emergency Reserve (GAL)	6 Required Storage (GAL)	7 Existing Storage (GAL)	8 Storage (GAL) Surplus (+) or Deficit (-)
2000	1,800	803	126,000	32,760	180,000	70,920	283,680	250,000	- 33,680
2005	1862	795	130,340	33,888	180,000	71,297	285,185	250,000	- 35,185
2010	1920	821	134,400	34,944	180,000	71,648	286,592	250,000	- 36,592
2015	2008	858	143,650	37,349	180,000	72,451	289,800	250,000	- 39,800
2020	2099	897	153,400	39,884	180,000	73,294	293,178	250,000	- 43,178
2025	2195	938	163,650	42,549	180,000	74,183	296,732	250,000	- 46,732
2030	2,295	980	174,150	45,279	180,000	75,093	300,372	250,000	- 50,372

Column 2 – From **MG-8**

Column 3 – Equalizing storage is 20% of maximum daily demand – Maximum daily demand is assumed at 1.3 x average daily demand.

Column 4 – Fire Flow at 2 hours duration (per AWWA Manual M31) at 1,500 GPM

Column 5 – Emergency Reserve is 25% of total storage.

Column 6 – Required Storage is Column 3 + 4 + 5

NOTE: North Beach is interconnected to Chesapeake Beach water system for emergency use.

Wastewater Treatment Assessment

The Town of North Beach is currently served by the Chesapeake Beach Wastewater Treatment Plant designed for 1.18 MGD. The Chesapeake Beach Wastewater Treatment Plant currently serves four (4) entities including: Chesapeake Beach; North Beach; Calvert County; and Anne Arundel County (Rose Haven and Holland Point). An inter-jurisdictional Agreement provides for the shared responsibilities and a flow allocation to each entity. The flow allocation is shown in the table MG-10 below.

MG-10 Wastewater Treatment Allocation

Jurisdiction	Allocation [Flow in GPD (# of Taps)]	Percentage
Calvert County	302,325 (1,512 Taps)	25.6%
North Beach	250,200 (1,251 Taps)	21.2%
Chesapeake Beach	489,975 (2,450 Taps)	41.5%
Anne Arundel	137,500 (550 Taps)	11.7%
Total Flow	1,180,000 (5,763 Taps)	100.0%

The existing 1.18 MGD Chesapeake Beach Wastewater Treatment Plant currently serves a population of 8,933 people and discharges effluent via a 30-inch gravity outfall offshore in the Chesapeake Bay (Tributary Basin #02139998). The plant is currently designed for biological nutrient removal utilizing a cyclic nitrogen removal process. Recent improvements completed in 2008 include replacement of the outfall and the addition of a surge tank for shellfish protection and interim expansion. In addition to the cyclic nitrogen removal process, the plant includes three (3) clarifiers and disinfection using chlorine gas (150 lb. cylinders) and sulfur dioxide gas for dechlorination.

A new project to retrofit the plant for enhanced nutrient removal (ENR) is planned but has not yet begun. The ENR process, when completed will limit the nitrogen loading to 18,273 lbs/year and the phosphorus loading to 1,371 lbs/year with a total treatment capacity of 1.5 MGD. Upon completion of the upgrade, the plant will be capable of achieving an effluent with a total nitrogen goal of 3 mg/l and a total phosphorus goal of 0.3 mg/l. It is anticipated the project will begin in early 2011 and be completed in 2013.

The Town of North Beach's wastewater collection system consists of gravity sewer lines ranging in size from 6 inches to 12 inches, force mains from 4 inches to 8 inches and four pumping stations. The Bay Avenue pumping station is designed to pump at a rate of 120 GPM at 28 feet of total dynamic head using duplex 3 ½ HP submersible pumps in a 6 foot x 6 foot wet well. The station is equipped with an emergency generator and separate valve vault. The pumping station conveys on average 26,000 GPD via a 4 inch force main.

The Chesapeake Avenue pumping station which conveys about 70% of all flow from the town is designed to pump at a rate of 750 GPM using two-15 HP pumps in a dry well/wet well configuration with a 10 foot diameter wet well and equipped with an emergency generator. A new programmable logic controller and control panel with transducer was recently installed. The pump station conveys **on** average 150,000 GPD of flow via an 8-inch force main.

The Greenwood Avenue pumping station consists of duplex 5-HP submersible pumps in a 5 foot diameter wet well pumping at a rate of 100 GPM at 34 feet of total dynamic head through a 4 inch force main. The station is equipped with an emergency generator and a recently installed transducer and control panel for level control. The station pumps an average 67,000 GPD. The San Francisco pump station, recently installed as part of a new residential multi-family development, consists of duplex 3 ½ HP submersible pumps at a rate of 130 GPM through a 4 inch force main. The station is equipped with an emergency generator and emergency pump around connection.

The Town currently has no septic tanks or grinder pumps within the Town. It is suspected, based on the pump station flow data, that excessive inflow and infiltration exists in the sewer collection system. In order to potentially increase the number of sewer taps and reduce operational costs for the pumping stations, an inflow/infiltration study and rehabilitation project is recommended.

The historical wastewater flow from the Chesapeake Beach treatment plant for the past three (3) years (2006 – 2008) is 810,000 GPD. The design capacity of the plant is 1,180,000 GPD. The plant is scheduled for an ENR upgrade as well as a capacity increase to 1,500,000 by year 2013.

Based on the existing inter-jurisdictional Agreement, the Town of North Beach has been allocated 1,251 taps or 21.2% of the plant's flow. According to the Town's accounting, the existing number of sewer taps used **and** committed to development is 1,114. The remaining taps available are therefore 137 taps based on the existing plant capacity of 1,180,000 GPD. The number of taps needed to provide for development projected in year 2030 is **178**. The Town will therefore need to participate in the planned upgrade of the plant to 1.5 MGD in order to obtain an increased allocation of taps to provide for all projected development over the planning period. **Assuming growth is consistent with the projected growth, the Town will exceed its current sewer allocations by year 2024.**

Stormwater Management Assessment

The Town currently enforces storm water management regulations for new or redevelopment using the State of Maryland 2000 Maryland Design guidelines. The Town must adopt new stormwater management regulations developed by the state by May 4, 2010. **The new regulations will require environmental site design to the maximum extent possible.** In urban sub water sheds, such as North Beach, American Forests recommend an overall twenty-five percent tree canopy and fifteen percent in commercial areas. Tree canopies intercept and absorb rainfall, filter pollutants, and reduce temperatures at the ground that is important especially where heat islands are created due to asphalt and roofs absorption of the sun's rays. Encouraging planting of trees within the Town can have a beneficial effect and assist reduction of rain water, provision of a cooler environment, and reduction of storm water.

North Beach is currently about twenty-percent impervious. Maintaining impervious surfaces to less than twenty-five percent can achieve certain goals" such as having swim-**safe**, fishable waters, and reducing nutrient loads to a point that precludes algal blooms.

Stormwater runoff from the Town of North Beach drains to the east to the Chesapeake Bay. There is no current TMDL wasteload allocation for the area of the Town draining to the Chesapeake Bay; however, the Town recognizes the importance of minimizing nitrogen and phosphorous runoff to the waters of the Bay.

Nonpoint source nitrogen and phosphorous loading values based on land cover were determined based on the most recent (2008) Western Shore, MD watershed data in the “Watershed Model Output Data” available from the Chesapeake Bay Program. The total nitrogen and phosphorous loading for each land use in the watershed were divided by the total acreage for each use, with the resulting values being the nitrogen and phosphorous loading in pounds per acre per year for each type of land use. Based on the Watershed Model Output Data classifications, land use within the Town of North Beach is virtually all either “Pervious Urban” or “Impervious Urban,” with proportions equivalent to the pervious and impervious percentages as shown in the preceding table.

Table MG-11 below summarizes current nitrogen and phosphorous loading by drainage area based on the previously determined loading values and land cover. There are no septic systems in the Town.

MG-11 - Current Non-Point Source Loading

Cover/Source	Area (acres)	Average Nitrogen Loading (lbs/acre year)	Average Phosphorous Loading (lbs/acre year)	Nitrogen Loading (lbs/year)	Phosphorous Loading (lbs/year)
Pervious Urban	113.11	10.59	1.45	1,197.83	164.01
Impervious Urban	72.85	7.17	0.45	522.33	32.78
Mixed Open	36.79	4.24	0.68	155.99	25.02
Total Non-Point Loading				1,876.15	221.81

The total current non-point source loading to the Chesapeake Bay from the Town is approximately 1,876.15 lb/year of nitrogen and 221.81 lb/year of phosphorous. The population growth projected in the previous sections will occur as infill within the residential or mixed use zoned areas of the Town. Although it is planned that the zoning for the Town will be changed as described in previous sections, the land use should not significantly change other than some infill. The infill and associated new infrastructure will result in a net increase in impervious cover, which based on the historical trends in the Watershed Model should decrease nitrogen and phosphorous loading. Thus, the values calculated above represent probable maximum non-point nitrogen and phosphorous loading for the projected growth period; future development trends along with implementation of best management

practices in stormwater design should help reduce the ultimate loadings to the Chesapeake Bay from the Town.

Community Services: Schools

As North Beach continues to grow and new residential units are constructed, the school populations will increase. Although North Beach does not have an Adequate Public Facilities Ordinance, Calvert County does keep track of the number of students that are associated with each additional dwelling unit that is occupied over and above the existing number of households. Values are assigned for each type of housing as shown in Table MG-12 below that provides the pupil yield values by household type. Schools that become overcrowded would be considered for redistricting. The information below will be utilized in the Municipal Growth Element to forecast the number of school children that may attend Calvert County Public Schools in future years.

Although public schools are controlled by the State and County (the Town does not have the responsibility of providing schools) the Comprehensive Plan needs to look at the amount of growth in the Town in the years up to 2030. It has been determined that population in 2030 is expected to be approximately 2,295 if the Town continues to grow at the historic rates. Table MG-2 shows that there will be approximately 981 households and each household is estimated to have 3.4 persons in single family dwellings and 3.17 persons in an apartment. Generally, apartments in this community would have less school age children since there is a fairly high percentage of older population who would be living in apartments; it is expected that this trend will continue. However, based on the pupil yield for single family detached, single family attached, and low rise apartments, and the fact that single family dwelling units hold the highest percentage of existing structures, an assumption will be made to use an average of single family attached and detached pupil yields per dwelling unit and compare the results to the projections that the Calvert County Public Schools have made.

Pupil Yields by Household Type
Table MG-12

Household Type	Grades K-5	Grades 6-8	Grades 9-12
Single-family detached	.291	.130	.176
Single-family attached	.194	.084	.118
Low-rise apartments	.097	.043	.059
Manufactured Homes	.145	.065	.088

Data from Calvert County Adequate Facilities Ordinance.

North Beach is projected to have 178 new dwelling units to serve their future population by 2030. As stated before the factor that will be applied for this analysis is .33 which is a weighted average of the single family detached and the single family attached household type because most of the apartments in Town are occupied by seniors and most of the majority of the children are located in the most populated housing type which is single family. It is estimated that 59 students will be generated with development in the next twenty years as new dwellings come on line.

Twin Beaches Library

The current 4,240 square foot library in Chesapeake Beach is heavily used and extremely crowded and under-sized to serve the current population of the Twin Beaches area. The staff does an excellent job with their current resources and serving their patrons; however, more space is needed. Using a service ratio of 1.65 persons per square foot, the Twin Beaches Branch library should serve about 2,650 people. However, just considering the population of North Beach and Chesapeake Beach which had a combined total population of 5,263 in 2007, indicates that the library needs to be expanded or relocated. Although at one time the County had budgeted for a new library that would range in size from approximately 10 to 12 thousand square feet, funds have not been available for the project due to budgetary problems; therefore, the expansion or location of a new branch library was removed from the County's budget.

The citizen survey that was conducted with this Comprehensive Plan indicated that the Town would like to see a branch library return to North Beach; however, if the County were to construct a new branch library containing 10 to 12 thousand square feet, one branch library site would be able to serve the population of both North Beach and Chesapeake Beach until the end of the twenty year planning period. If a site were to become available in North Beach it is likely that the Town should interact with the County to be sure that the site would be large enough for the size library that the County plans to construct.

Parkland and Recreation

The State standard recommends 30 acres of parkland per 1000 persons. Based on the 2000 census, 880 people live in North Beach¹. The total recreational and conservation land in Town 36.79 acres; however, the Bay is adjacent to the Town and the land calculation does not provide for recreational activities that are in the water. Most of this parkland is beach or beach related areas, and marshland that may have some areas where fishing can take place. Some boardwalk areas provide recreational opportunities also. The National Recreation and Park Association suggest a minimum acreage of 6.25 to 10.5 acres of open space per 1000 population for a park system. This varies from community to community; however, North Beach does meet this requirement now and will meet it in 2030. It would be beneficial if more variety would be introduced into the parkland and recreation park system in the Town.

Parking

In June 2009, a parking study was completed by Desman Associates. The parking study indicated that over the planning period, a deficit in parking spaces will be created during peak times over the summer months resulting from visitors to the beach and boardwalk. To mitigate this expected deficit, the study recommended infrastructure improvements including stripping, curbs, sidewalks, signage, new cluster pay-by-space meters, and the development of alleyways to provide additional parking options. Implementation of the study recommendations will assist in alleviating parking concerns.