

DRAFT
COMPREHEHSIVE PLAN 2016
QUEENSTOWN, MARYLAND

Version 9/14/16

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INTRODUCTION

The 2016 Queenstown Comprehensive Plan (the Plan) replaces the 2010 Queenstown Community Plan. It establishes goals, objectives, and recommendations intended to promote the health, safety, order, convenience, prosperity, and the general welfare, as well as efficiency and economy in the development process. As a policy document, the Plan is general in nature, providing “big picture” guidance as a framework and direction for all components of what may be considered the Town’s planning program. The Plan is not a “stand-alone” document but is supported and in turn supports related program documents such as the following:

- Zoning Ordinance;
- Subdivision Regulations;
- Capital Improvements Program;
- Water and Sewer Facilities Plans; and
- Other important Town ordinances such as Sediment and Erosion Control, Floodplain Management, Chesapeake Bay Critical Areas, Stormwater Management, and Forest Conservation.

The planning area for this document encompasses the corporate limits of the Queenstown and surrounding areas that may be annexed into the Town at some future point. For this reason aspects of the Town’s growth and development plans must be coordinated with Queen Anne’s County and State agencies.

Maryland Planning Laws and Policies

Planning for Queenstown must be mindful of context. Town plans and program for the wellbeing of citizens, land and water must be coordinated with those of the State and Queen Anne’s County. The following briefly summarizes State laws intended to insure coordinated and effective growth management and resource protection policies and programs at all levels of government.

The Land Use Article – Planning & Zoning Enabling Act

The Land Use Article of the Annotated Code of Maryland is the Planning and Zoning enabling legislation from which the Queenstown derives its powers to regulate land use. Title 3, Subtitle 1 of the Land Use Article sets forth the minimum requirements for a comprehensive plan, which shall include among other things:

- a community facilities element;
- an area of critical State concern element;
- a goals and objectives element;
- a land use element;

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- a development regulations element;
- a sensitive areas element;
- a transportation element;
- a municipal growth element;
- a water resources element; and
- if current geological information is available, the plan shall include a mineral resources element.

Maryland's Visions

Planning for Queenstown has been guided by the twelve components of Maryland's visions outlined in § 1-201 of the Land Use Article. Maryland's "Visions" are as follows:

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, recreational areas, and historical, 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 provide 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 is encouraged.
9. Environmental Protection: Land and water resources, including the Chesapeake Bay and its coastal 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.

Sensitive Environmental Areas

The Maryland Economic Growth, Resource Protection and Planning Act of 1992 added the requirement that a comprehensive plan must contain a "Sensitive Areas Element," which describes how the jurisdiction will protect the following:

- Streams and stream buffers;
- 100-year floodplains;
- Endangered species habitats;
- Nontidal wetland;
- Steep slopes; and
- Other sensitive areas a jurisdiction wants to protect from the adverse impacts of development.

Smart Growth Areas Act of 1997

The "Smart Growth" Areas Act of 1997, Chapter 759 of the Laws of Maryland of 1997, requires the State to target funding for "growth-related" projects to Priority Funding Areas (PFAs) beginning October 1, 1998. Growth related projects are defined in the legislation and include most State programs which encourage or support growth and development such as highways, sewer and water construction, economic development assistance, and State leases and construction of new office facilities.

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The intent of the legislation is to marshal the State's financial resources to support growth in Maryland's communities and limit development in agricultural and other resource conservation areas. At the heart of the Smart Growth concept are the "Priority Funding Areas" (PFAs), which represent local growth areas targeted for State funding. PFAs include municipalities, rural villages, communities, industrial areas, and planned growth areas to be served by public water and sewerage.

Local comprehensive plans must show designated "Growth Areas" including areas planned for annexation by municipalities. Land within local growth boundaries may be designated as a Priority Funding Area (PFA) provided sewer service is planned in a 10-Year Water and Sewerage Plan and provided such designation is a long-term and planned development policy that promotes efficient land use and public infrastructure. Plans must include areas considered as PFAs, such as planned water and sewerage service areas, residential development areas, industrial development areas, economic development areas, and parks.

2006 Maryland House Bill 1141

In 2006, the Maryland State Legislature passed House Bill 1141 (HB 1141), which provides for Amendments to the Land Use Article and Article 23A: "Municipal Annexation Act" of the Annotated Code of Maryland. Amendments include provisions for the inclusion of a "Water Resources Element" and "Municipal Growth Element" in local comprehensive plans.

HB 1141 establishes additional substantive and procedural requirements for municipalities preparing comprehensive plans. This includes inter-governmental coordination for land use and growth management planning.

Information developed under the provisions of HB 1141 will be reviewed and evaluated by State agencies including the Maryland Departments of the Environment, Natural Resources, and Planning. Some provisions of the Bill are not effective until October 2009. Substantive procedural requirements include the following:

- The Town must include in its Comprehensive Plan a "Municipal Growth Element" that specifies where Queenstown intends to grow, if at all, outside its existing corporate limits. It also must discuss how the Town intends to address services, infrastructure, and environmental protection needs for the Growth Area.
- The Town must develop the "Municipal Growth Element" in coordination with Queen Anne's County. Prior to approving a Growth Element, the Town must provide a copy to the County, accept their comments, meet and confer with the County, and, on request from either entity, engage in mediation to facilitate the Growth Element.

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- The Town and County must include in their respective comprehensive plans a “Water Resource Plan Element” that identifies drinking water and other water resources to meet current and future demands. It also must identify suitable water and land areas to receive stormwater and wastewater derived from development.
- In order for land annexed after September 2006 to qualify for State assistance as a Priority Funding Area-PFA, the Town must complete an analysis of land capacity available for development. This includes infill and redevelopment. It also includes an analysis of land as needed to satisfy demand for development.
- House Bill 1141 gives affected local governments until October 1, 2009 to update their comprehensive plans to include the Water Resources Element, now required by existing law. There is the possibility of one to two six month extensions for good cause. Local governments that have not updated their plans by that time may not change the zoning classification of a property until their updates are complete.
- The Town must develop and share with other planning agencies an “Annexation Plan” that is consistent with its Growth Element in the Comprehensive Plan.

HB 1141 requires the Maryland Department of the Environment (MDE) to provide technical assistance to local governments regarding the development of a Water Resources Element. The Maryland Department of Planning (MDP) also is required to provide technical assistance to a municipality regarding the “Municipal Growth Element.”

SECTION 1: QUEENSTOWN PROFILE

A demographic and socio-economic profile of who is living in Queenstown helps understanding of the Town’s live/work environment as compared with the surrounding areas – information that may suggest strategies local officials can employ to improve conditions or address anomalies.

Population

Population trends track a community’s growth, and along with data on social, housing and economic characteristics can reveal patterns that may affect future conditions. Population growth in the surrounding area also is indicative of potentially important trends that affect growth of the community.

Both Queenstown and Queen Anne’s County experienced positive population growth in the period 2000 to 2010 albeit at substantially different rates. Queen Anne’s County’s population grew by 7,235, an annualized increase of 1.65 percent. Queenstown’s population grew by 47, an annualized increase of 0.74%.

A more recent estimate, the period 2010 to 2014, indicates Queen Anne’s County’s population is continuing to increase albeit at a slower rate.¹ During the same period it was estimated that Queenstown’s population decreased (see Table 1-1).

Table 1-1: Population trends 2000-2014 – Queen Anne’s County and Queenstown

	2000	2010	Chg.	% Chg.	2014	Chg.	% Chg.
Queen Anne's County	40,563	47,798	7,235	17.8%	48,439	641	1.3%
Queenstown	617	664	47	7.6%	656	-8	-1.2%

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

It also is useful to consider how Queen Anne’s County’s historic population growth patterns have affected growth in Queenstown. The Town's share of County population growth has steadily declined over that last 40 years (see Table 1-2). The 2014 estimates reinforce this observation.

Any number of reasons could explain Queenstown’s generally declining share of County population growth including lack of land available for residential development, limited water and/or sewer capacity, and/or factors related to consumer preferences. The uptick recorded in the 2000 Census was undoubtedly due to infill development at Queenstown Harbor and Queenstown Village.

¹ Source: Population Division, U.S. Census Bureau, release date March 26, 2015, Prepared by the Maryland Department of Planning, March 2015

Table 1-2: Queenstown population as share of County

Year	Population		Town as a Percentage of the County Population
	Queenstown	Queen Anne's County	
1970	387	18,422	2.10%
1980	491	25,508	1.92%
1990	453	33,953	1.33%
2000	617	40,563	1.56%
2010	664	47,798	1.39%

Source: Source: U.S. Department of Commerce, Census Bureau

Relative to the State, Queenstown and Queen Anne’s County have experienced substantially different population growth. With the exception of the period 1980 to 1990 Queen Anne’s County’s and Queenstown’s population growth rate regularly kept pace with or exceeded that of the State over of the last forty years (See Table 1-3). However, Queenstown’s growth rates over the last 40 years have been erratic. While the State and County experienced positive population growth rates in the period 1980 to 1990 Queenstown lost population. In the period 1990 to 2000 Queenstown’s growth rate far exceeded that of the County and State in large part due to development of Queenstown Harbor and Queenstown Village. In the period 2000 to 2010 Queenstown’s growth rate fell well below that of the County and below that of the State.

NOTE: Any explanation for the decline in the 1980 to 1990 period?

Table 1-3: Population Growth Rates

Year	Queenstown	Queen Anne's County	Maryland
1970-1980	2.41%	3.31%	0.72%
1980-1990	-0.80%	2.90%	1.26%
1990-2000	3.14%	1.79%	1.03%
2000-2010	0.74%	1.65%	0.87%

Source: U.S. Census Bureau, Maryland Department of Planning, Peter Johnston & Associates, LLC

Social Characteristics

Age

The age distribution of Queenstown’s population was similar to that of the County and State in 2010. Despite a slightly higher percentage 65 and over, Queenstown’s median age recoded in the 2010 Census was lower than that of the County and slightly higher than that of the State (See Table 1-4). Queenstown had a higher percentage of population in the age groups under five years and 25 through 39 than that of the County.

Table 1-4: Age Characteristics 2010

	Queenstown	Queen Anne's County	Maryland
Total population	664	47,798	5,773,552
Under 5 years	8.3%	5.7%	6.3%
5 to 9 years	7.1%	6.8%	6.4%
10 to 14 years	5.6%	7.0%	6.6%
15 to 19 years	5.1%	6.7%	7.0%
20 to 24 years	3.8%	4.7%	6.8%
25 to 29 years	6.5%	4.5%	6.8%
30 to 34 years	6.6%	4.6%	6.4%
35 to 39 years	6.8%	6.0%	6.5%
40 to 44 years	8.0%	8.0%	7.2%
45 to 49 years	8.1%	9.2%	8.0%
50 to 54 years	6.3%	8.5%	7.6%
55 to 59 years	6.0%	7.0%	6.5%
60 to 64 years	6.6%	6.4%	5.5%
65 to 69 years	5.6%	5.4%	3.9%
70 to 74 years	4.1%	3.5%	2.8%
75 to 79 years	2.1%	2.7%	2.2%
80 to 84 years	2.0%	1.7%	1.7%
85 years and over	1.5%	1.6%	1.7%
Median age (years)	40.2	42.6	38.0
16 years and over	77.41%	79.1%	79.4%
18 years and over	75.00%	76.2%	76.6%
21 years and over	72.89%	72.9%	72.3%
62 years and over	19.58%	18.8%	15.4%
65 years and over	15.21%	14.9%	12.3%

Source: U.S. Census Bureau, 2010 Census.

Sex

Queenstown had a slightly higher ratio of females to males in 2010 (45.1 percent male versus 54.9 percent female) as compared to the County. Queenstown's male to female ratio was comparable to that of the State (see Table 1-5).

Table 1-5: Sex distribution 2010

	Queenstown	Queens Anne's County	Maryland
Male population	48.5%	49.7%	48.4%
Female population	51.5%	50.3%	51.6%

Source: U.S. Census Bureau, 2010 Census.

The male to female ratio for the population segment 18 years and over was comparable to the State but compared to the County the ratio of females was higher. The ratio of males to females in the population segment 65 years and over was comparable to that of the State and County (see Table 1-6) with a slightly higher percentage of males.

Table 1-6: Select sex characteristics

	Queenstown	Queen Anne's County	Maryland
18 years and over	498	36,424	4,420,588
Male	47.4%	49.3%	47.5%
Female	52.6%	50.7%	52.5%
65 years and over			
Male	47.5%	47.1%	42.3%
Female	52.5%	52.9%	57.7%

Source: U.S. Census Bureau, 2010 Census.

Race

The population of one race was comparable to that of the County and State (see Table 1-7). The percentage classified as white was slightly higher than the County and significantly higher than the State. The percentage of population in the other race categories was lower than that of the County and State.

Table 1-7: Race characteristics 2010

	Queenstown	Queen Anne's County	Maryland
Total population	664	47,798	5,773,552
One Race	98.49%	98.28%	97.15%
White	92.92%	88.70%	58.18%
Black or African American	3.16%	6.90%	29.45%
American Indian and Alaska Native	0.15%	0.31%	0.35%
Asian	0.90%	0.98%	5.52%
Asian Indian	0.00%	0.20%	1.37%
Chinese	0.45%	0.18%	1.20%
Filipino	0.30%	0.15%	0.76%

Table 1-7: Race characteristics 2010

	Queenstown	Queen Anne's County	Maryland
Japanese	0.00%	0.03%	0.12%
Korean	0.00%	0.17%	0.84%
Vietnamese	0.15%	0.08%	0.41%
Other Asian	0.00%	0.18%	0.82%
Native Hawaiian and Other Pacific Islander	0.45%	0.03%	0.05%
Native Hawaiian	0.00%	0.01%	0.01%
Guamanian or Chamorro	0.00%	0.00%	0.02%
Samoan	0.00%	0.00%	0.01%
Other Pacific Islander	0.45%	0.01%	0.02%
Some Other Race	0.90%	1.36%	3.58%
Two or More Races	1.51%	1.72%	2.85%
White; American Indian and Alaska Native	0.00%	0.31%	0.26%
White; Asian	0.30%	0.39%	0.56%
White; Black or African American	1.05%	0.63%	0.81%
White; Some Other Race	0.15%	0.18%	0.35%

Source: U.S. Census Bureau, 2010 Census.

Hispanic or Latino

The percentage of Hispanic or Latino population in Queenstown in 2010 was slightly higher than that of County, and significantly lower than that of the State (see Table 1-8).

Table 1-8: Hispanic or Latino population 2010

	Queenstown	Queen Anne's County	Maryland
Total population	664	47,798	5,773,552
Hispanic or Latino (of any race)	3.8%	3.0%	8.15%
Mexican	1.2%	0.9%	1.52%
Puerto Rican	0.0%	0.4%	0.74%
Cuban	0.0%	0.1%	0.18%
Other Hispanic or Latino	2.6%	1.6%	5.71%
Not Hispanic or Latino	96.2%	97.0%	91.85%

Source: U.S. Census Bureau, 2010 Census

Education

In 2010, a slightly smaller percentage (88.4 percent) of the population 25 years and over were high school graduates or higher and bachelor's degree or higher than that of the County or State. A slightly higher percentage of the population 25 years and over were high school graduates than that of the County and a slightly higher percentage of the population 25 years and over had an associate's degree than that of the County and State (see Table 1-9).

Table 1-9: Educational attainment 2010

	Queenstown	Queen Anne's County	Maryland
Population 25 years and over	502	33,691	3,789,931
Less than 9th grade	5.20%	2.00%	4.40%
9th to 12th grade, no diploma	6.40%	6.20%	7.80%
High school graduate (includes equivalency)	39.00%	29.80%	26.40%
Some college, no degree	15.70%	20.30%	19.30%
Associate's degree	8.80%	7.60%	6.30%
Bachelor's degree	12.20%	20.90%	19.80%
Graduate or professional degree	12.70%	13.30%	16.00%
Percent high school graduate or higher	88.40%	91.80%	87.80%
Percent bachelor's degree or higher	24.90%	34.10%	35.70%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Households and Families

The average household and average family size in Queenstown in 2010 was less than that of the County and the State (see Table 1-10). Smaller household and family size translated into more housing units required to accommodate the same number of persons as the County and State. Projections prepared by the Maryland Department of Planning suggest that Queen Anne's County's average household size will decrease from 2.63 to 2.47 in 2040, approximately a six percent decrease. If Queenstown's average household size decreases proportionately, the average household size in 2040 could be as low as 2.3 persons per household. This trend will figure in the calculation of future demand for services and programs related to projected population and housing growth.

Table 1-10: Average household and family size 2010

	Queenstown	QA County	Maryland
Average household size	2.45	2.63	2.61
Average family size	2.92	3.04	3.15

Source: U.S. Census Bureau, 2010 Census.

Family households were the dominant type in Queenstown in 2010 and on average were larger than other households. However, compared to the County and State the Town's percentage of family households was lower. Compared to the County the percentage of married couple households was lower in the 2010 but higher than that of the State (see Table 1-11) and female households, nonfamily households and householders living alone was slightly higher.

Table 1-11: Households and families by type 2010

	Queenstown	Queen Anne's County	Maryland
Total households	271	18,016	2,156,411
Family households (families)	68.3%	73.90%	67.10%
Married-couple family	50.9%	60.29%	47.61%
Male householder, no wife present, family	3.3%	4.42%	4.84%
Female householder, no husband present, family	14.0%	9.19%	14.65%
Nonfamily households	31.7%	26.10%	32.90%
Householder living alone	26.6%	20.58%	26.11%
65 years and over	10.3%	28.07%	23.95%

Source: U.S. Census Bureau, 2010 Census

It was estimated that during the period 2006 to 2010 households living in Queenstown were more likely to have moved into their housing unit before 2000 than was the case in the County or State indicating a somewhat longer residency (see Table 1-12).

Table 1-12: Year householder moved into unit 2010

	Queenstown	Queens Anne's County	Maryland
Occupied housing units	283	17,188	2,121,047
Moved in 2005 or later	22.30%	21.60%	32.50%
Moved in 2000 to 2004	15.50%	27.10%	24.60%
Moved in 1990 to 1999	37.80%	26.60%	21.20%
Moved in 1980 to 1989	14.10%	15.70%	10.30%
Moved in 1970 to 1979	7.80%	5.80%	6.00%
Moved in 1969 or earlier	2.50%	3.20%	5.40%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Housing Characteristics

Estimated housing occupancy characteristics for Queenstown were similar to that of Queen Anne's County and the State in the period 2006 to 2010. Of total housing units in Queenstown the Census Bureau estimated 86.5 percent were occupied (see Table 1-13). Housing vacancy rates in the County and Town was higher than that of the State.

Table 1-13: Housing occupancy 2010

	Queenstown	Queen Anne's County	Maryland
Total housing units	327	19,824	2,354,870
Occupied housing units	86.50%	86.70%	90.10%
Vacant housing units	13.50%	13.30%	9.90%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

A significantly higher percentage of housing units were classified as 1-unit detached in Queenstown than the State (See Table 1-14). The percentage classified as 2 units was much higher than that of the County and State. Queenstown had no units classified as 3 units or more.

Table 1-14: Units in structure 2010

	Queenstown	Queen Anne's County	Maryland
Total housing units	327	19,824	2,354,870
1-unit, detached	82.9%	84.0%	51.6%
1-unit, attached (includes townhouses)	4.9%	6.1%	21.1%
2 units	12.2%	1.2%	1.8%
3 or 4 units	0.0%	0.5%	2.4%
5 to 9 units	0.0%	2.5%	5.3%
10 to 19 units	0.0%	0.7%	8.5%
20 or more units	0.0%	1.3%	7.7%
Mobile home	0.0%	3.7%	1.7%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Housing tenure in Queenstown was comparable to that of the County with a slightly higher percentage of occupied housing and a slightly higher percentage renter occupied units in 2010 (see Table 1-15).

Table 1-15: Housing tenure 2010 Queenstown, Queen Anne's County, Maryland

	Queenstown	Queen Anne's County
	Percent	Percent
Total housing units	100.0%	100.0%
Occupied housing units	92.2%	89.5%
Owner-occupied housing units	71.1%	74.1%
Renter-occupied housing units	21.1%	15.3%

Source: U.S. Census Bureau, 2010 Census

According to estimates, housing units in Queenstown tended to be smaller in terms of rooms and bedrooms than that to the County and State. This may be a determining factor in the smaller average household and family sizes recorded for Queenstown in 2010. The figures indicated the Town had a higher percentage of two, five and six room units and a higher percentage of one and two bedroom units than that of the County and State (see Table 1-16).

Table 1-16: Rooms in housing units 2010

	Queenstown	Queen Anne's County	Maryland
Total housing units	327	19,824	2,354,870
1 room	0.00%	0.20%	0.90%
2 rooms	8.00%	0.60%	1.90%
3 rooms	1.20%	3.40%	7.80%
4 rooms	7.60%	7.70%	13.00%
5 rooms	26.00%	16.90%	15.20%
6 rooms	26.90%	21.50%	17.30%
7 rooms	17.10%	16.90%	14.10%
8 rooms	9.50%	14.20%	11.40%
9 rooms or more	3.70%	18.60%	18.30%
Median rooms	5.8	6.5	6.1
Total housing units	327	19,824	2,354,870
No bedroom	0.00%	0.20%	1.10%
1 bedroom	11.00%	4.70%	10.50%
2 bedrooms	23.20%	15.10%	22.70%
3 bedrooms	48.90%	51.20%	37.90%
4 bedrooms	15.60%	22.10%	20.90%
5 or more bedrooms	1.20%	6.60%	7.00%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

According to U.S. Census estimates, the housing stock in Queenstown tends to be older than that of the County or State. Over 30 percent of housing units were built prior to 1939 and none were listed as being built in 2005 or later (see Table 1-17). A significant percentage of housing units were built in the period 1990 to 1999 (Queenstown Harbor and Queenstown Village) and 1970 to 1979 (Friel subdivisions). Over 60 percent of the housing stock in 2010 was 35 years old or older.

Table 1-17: Age of Structure

	Queenstown	Queen Anne's County	Maryland
Total housing units	327	19,824	2,354,870
Built 2005 or later	0.00%	4.40%	3.30%
Built 2000 to 2004	8.00%	12.40%	7.60%
Built 1990 to 1999	25.40%	18.40%	14.30%
Built 1980 to 1989	4.90%	22.30%	15.90%
Built 1970 to 1979	19.90%	15.80%	15.30%
Built 1960 to 1969	2.80%	7.60%	12.60%
Built 1950 to 1959	5.80%	6.60%	12.50%
Built 1940 to 1949	2.40%	2.60%	6.50%
Built 1939 or earlier	30.90%	10.00%	12.00%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

The median value in dollars of owner occupied housing in Queenstown was estimated to be approximately 87 percent of the median value of owner occupied housing units in the County and nearly comparable to that of the State (see Table 1-18). Compared to the County and State Queenstown had a higher percentage of units valued more than \$200,000 and less than \$499,999 with significant drop off points \$149,000 or less and \$500,000 or greater. Both Queenstown and Queen Anne's County fell below the State percentages in occupied units of \$199,999 or less.

Table 1-18: Housing values owner occupied units

	Queenstown	Queen Anne's County	Maryland
Owner-occupied units	236	14,580	1,464,162
Less than \$50,000	0.00%	1.40%	2.50%
\$50,000 to \$99,999	0.00%	1.40%	3.70%
\$100,000 to \$149,999	0.00%	3.60%	5.60%
\$150,000 to \$199,999	2.10%	4.50%	8.80%
\$200,000 to \$299,999	35.60%	20.30%	23.20%
\$300,000 to \$499,999	51.70%	41.10%	34.20%
\$500,000 to \$999,999	8.50%	20.00%	18.80%
\$1,000,000 or more	2.10%	7.60%	3.20%
Median (dollars)	328,200	375,700	329,400

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Estimated median gross rents in 2010 were substantially higher (20 and 17 percent respectively) than that of the County and State (see Table 1-19). These relative costs may change with the new water and sewer rate structure.

Table 1-19: Gross Rent 2010

	Queenstown	Queen Anne's County	Maryland
Occupied units paying rent			
Less than \$200	0.0%	0.8%	2.5%
\$200 to \$299	0.0%	8.2%	2.5%
\$300 to \$499	0.0%	11.3%	4.5%
\$500 to \$749	0.0%	7.2%	10.8%
\$750 to \$999	11.6%	19.5%	21.7%
\$1,000 to \$1,499	58.1%	24.9%	37.7%
\$1,500 or more	30.2%	28.1%	20.3%
Median (dollars)	1,307	1,050	1,091
No rent paid	9.3%	14.5%	4.3%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Estimates indicate that renter costs as a percentage of household income in Queenstown were generally lower than that of the County (see Table 1-20) except for the percent of renters paying rents 35 percent or more of income, which were slightly higher.

Table 1-20: Gross rent as a percentage of household income (grapi)

	Queenstown	Queen Anne's County
Occupied units paying rent (excluding units where GRAPI cannot be computed)	100.0%	100.00%
Less than 15.0 percent	41.9%	11.26%
15.0 to 19.9 percent	4.7%	8.39%
20.0 to 24.9 percent	0.0%	12.50%
25.0 to 29.9 percent	7.0%	16.30%
30.0 to 34.9 percent	7.0%	12.94%
35.0 percent or more	39.5%	38.60%
Not computed	4	344

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Selected monthly owner costs are calculated from the sum of payment for mortgages, real estate taxes, various insurances, utilities, fuels, mobile home costs, and condominium fees. Estimated selected monthly owner costs for housing units with and without a mortgage were somewhat lower in Queenstown than that of the County (see Table 1-21). Again, these relative costs may change with the new water and sewer rate structure.

Table 1-21: Selected monthly owner costs (SMOC)

	Queenstown	Queen Anne's County
Housing units with a mortgage	100.0%	100.0%
Less than \$300	0.0%	0.1%
\$300 to \$499	0.0%	0.7%
\$500 to \$699	0.0%	1.6%
\$700 to \$999	4.3%	5.1%
\$1,000 to \$1,499	39.6%	19.0%
\$1,500 to \$1,999	16.5%	22.9%
\$2,000 or more	39.6%	50.6%
Median (dollars)	1,601	2,014
	Queenstown	Queen Anne's County
Housing units without a mortgage	100.0%	100.0%
Less than \$100	0.0%	0.1%
\$100 to \$199	9.3%	1.9%
\$200 to \$299	0.0%	6.9%
\$300 to \$399	34.0%	14.1%
\$400 or more	56.7%	77.1%
Median (dollars)	424	545

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Economic Characteristics

Recent estimates for Queen Anne's County indicate the leading industries of employment (66 percent) for County residents are educational services, and health care and social assistance, professional, scientific, and management, and administrative and waste management services, retail trade, health care and social assistance and public administration. For the Town over 73 percent of civilian population 16 years and over were employed in the educational services, and health care and social assistance, public administration, retail trade, health care and social assistance and construction industries (see Table 1-22).

Table 1-22: Industry for civilian employed population over 16 years of age

	Queenstown	Queen Anne's County	Maryland
Civilian employed population 16 years and over	100.0%	100.0%	100.0%
Agriculture, forestry, fishing and hunting, and mining:	1.1%	2.7%	0.5%
Agriculture, forestry, fishing and hunting	1.1%	2.7%	0.5%
Mining, quarrying, and oil and gas extraction	0.0%	0.0%	0.1%
Construction	11.0%	8.7%	6.7%
Manufacturing	3.8%	6.8%	4.8%
Wholesale trade	1.4%	3.2%	2.0%
Retail trade	14.0%	12.4%	9.8%
Transportation and warehousing, and utilities:	6.0%	4.1%	4.3%
Transportation and warehousing	6.0%	3.2%	3.6%
Utilities	0.0%	0.9%	0.7%
Information	0.0%	1.7%	2.2%
Finance and insurance, and real estate and rental and leasing:	3.6%	4.7%	6.2%
Finance and insurance	1.6%	3.1%	4.1%
Real estate and rental and leasing	1.9%	1.5%	2.1%
Professional, scientific, and management, and administrative and waste management services:	6.3%	12.7%	15.0%
Professional, scientific, and technical services	4.9%	8.2%	10.5%
Management of companies and enterprises	0.0%	0.0%	0.1%
Administrative and support and waste management services	1.4%	4.5%	4.4%
Educational services, and health care and social assistance:	21.2%	20.2%	23.6%
Educational services	8.5%	8.6%	10.0%
Health care and social assistance	12.6%	11.6%	13.6%
Arts, entertainment, and recreation, and accommodation and food services:	8.5%	8.5%	8.1%

Table 1-22: Industry for civilian employed population over 16 years of age

	Queenstown	Queen Anne's County	Maryland
Arts, entertainment, and recreation	4.1%	1.7%	1.8%
Accommodation and food services	4.4%	6.8%	6.3%
Other services, except public administration	8.8%	4.7%	5.4%
Public administration	14.3%	9.6%	11.3%

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

Like the County and State, 2010-2014 data estimates management, business, science, and arts occupations and sales and office work were the leading occupations for over one half the civilian employed population 16 years and over in Queenstown (see Table 1-23).

Table 1-23: Occupation For the Civilian Employed Population 16 Years and Over

	Queenstown	Queen Anne's County	Maryland
Management, business, science, and arts occupations	33.5%	40.1%	44.5%
Service occupations	14.6%	15.6%	17.0%
Sales and office occupations	25.8%	26.6%	22.9%
Natural resources, construction, and maintenance occupations	9.9%	9.0%	7.9%
Production, transportation, and material moving occupations	16.2%	8.8%	7.8%

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

According to Bureau of Economic Analysis data the average annual payroll per employee in Queen Anne's County for establishments across all industries in 2013 was \$31,998 and the highest paid employees worked for establishments classified as manufacturing.² The average annual payroll for the Queenstown zip code (21658) was \$26,374.

Less than a fifth of Queenstown's labor force 16 years and over worked in Queenstown (see Table 1-24) in 2010. About one quarter worked at jobs located outside of Queenstown and in Queen Anne's County. Over half worked at jobs outside of Queen Anne's County.

Table 1-24: Work place of workers 16 years and over 2000 and 2010

	2000	Percent	2010	Percent
Workers 16 years and over	343	100%	399	100%
Worked in place of residence	51	15%	79	20%
Worked in county of residence*	128	37%	99	25%

² Source: U.S. Census Bureau, 2013 County Business Patterns

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Worked outside county of residence	139	41%	205	51%
Worked outside state of residence	25	7%	16	4%

* Less worked in place of residence

Source: Source: U.S. Department of Commerce, Census Bureau

Estimates of average household and family income for Queenstown were nearly equal to those of the County and State. The estimated average per capita income for Queenstown was slightly higher than that of the County and State (see Tables 1-25 and 1-26).

Table 1-25: Household Income and benefits (in 2014 inflation-adjusted dollars)

	Queenstown	Queen Anne's County	Maryland
Total households	100.0%	100.0%	100.0%
Less than \$10,000	5.1%	3.2%	5.2%
\$10,000 to \$14,999	0.7%	2.3%	3.3%
\$15,000 to \$24,999	1.8%	5.5%	6.9%
\$25,000 to \$34,999	0.7%	6.2%	7.3%
\$35,000 to \$49,999	13.9%	9.0%	10.7%
\$50,000 to \$74,999	18.6%	17.7%	17.2%
\$75,000 to \$99,999	16.1%	13.2%	13.4%
\$100,000 to \$149,999	25.2%	23.7%	18.1%
\$150,000 to \$199,999	11.3%	9.9%	8.9%
\$200,000 or more	6.6%	9.4%	9.1%
Median household income (dollars)	82,083	86406	74,149
Mean household income (dollars)	98,898	103775	97,135
Per capita income (dollars)	41,080	38,392	36,670

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

Table 1-26: Family income and benefits (in 2014 inflation-adjusted dollars)

	Queenstown	Queen Anne's County	Maryland
Families	100.0%	100.0%	100.0%
Less than \$10,000	1.1%	2.1%	3.1%
\$10,000 to \$14,999	0.0%	1.2%	1.9%
\$15,000 to \$24,999	2.7%	3.4%	4.7%
\$25,000 to \$34,999	1.1%	5.1%	6.0%
\$35,000 to \$49,999	12.8%	7.5%	9.5%
\$50,000 to \$74,999	18.6%	17.4%	16.3%
\$75,000 to \$99,999	23.4%	13.9%	14.2%
\$100,000 to \$149,999	14.4%	27.0%	21.1%
\$150,000 to \$199,999	16.5%	11.6%	11.2%
\$200,000 or more	9.6%	10.8%	12.0%

Table 1-26: Family income and benefits (in 2014 inflation-adjusted dollars)

	Queenstown	Queen Anne's County	Maryland
Median family income (dollars)	85,714	98,798	89,416
Mean family income (dollars)	108,828	113,662	112,955

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

Conclusions

Examining the causes of population change offers insight into the dynamics underlying growth or decline and highlights potential areas of inquiry. Local government policies can be crafted to respond to these dynamics, to reinforce the positive and address the negative aspects of change to the extent possible.

Population growth or decline is a result of natural increases (births versus deaths) and in-migration to the jurisdiction. Recent estimates indicate that Queen Anne’s County’s population growth between 2000 and 2012 was largely the result of in-migration (80 percent) as opposed to natural increase.³ If a large portion of population growth is from in-migration, as is the case in Queen Anne’s County, it would be helpful to understand what is causing this trend, e.g., whether people are moving to the area for jobs, cost of living factors, quality of life, or a combination of reasons.

There was a net in-migration to Queen Anne’s County of 3,809 persons in the period 1995 to 2000.⁴ Of this total, 3,391 were intra-state migrants, 91 were inter-state migrants and 327 were from aboard. Slightly more than 80 percent of the net intra-state in-migration in this period was from the Baltimore region with Anne Arundel and Baltimore counties being the primary sources (70 percent plus).

Estimates for the period 2006-2010 indicate the rate of in-migration to the County has slowed dramatically since 2000 but the trans-location trends remain similar. The estimates indicate that over 85 percent of in-migration is intra-state, over 85 percent of the intra-state migration was from the Baltimore Region, and Anne Arundel, Baltimore and Prince George’s County accounted for over 93 percent of the migrants⁵. Net inter-state migration was primarily from Delaware. So we conclude that population growth in Queenstown in large part is due to in-migration from the Baltimore and Washington regions of people, many who commute to the Western Shore for employment.

³ Data Sources: U.S. Department of Commerce, 2012, Census Bureau, Population Division, Washington, D.C., *A Profile of Socioeconomic Measures, Selected Geographies: Queen Anne's County MD, Benchmark Geographies: United States, Economic Profile System-Human Dimensions Toolkit*, EPS-HDT, January 17, 2014

⁴ Source: Maryland Department of Planning, Planning Data Services, from Census 2000 Migration Tabulations

⁵ Source: Maryland Department of Planning, based on 2006 to 2010 American Community Survey.

Data would indicate that moving to reduce commute time to work does not appear to be a leading factor in the decision to move to Queen Anne's County or Queenstown. In 2000 the majority of workers commuting from Queen Anne's county for employment were journeying to the Baltimore and Washington regions, primarily Anne Arundel and Prince Georges Counties. Of the 426 Queenstown residents in the labor force in 2010, not including those that walked to work, over 93 percent commuted to work with an average commute time of 29.9 minutes.⁶ The mean travel time for commuting workers in Anne Arundel, Baltimore and Prince George's Counties in 2010 were comparable to those of Queenstown's workers who commute to places of employment.

An encouraging trend is the differences in the number of people that worked in their place of residence which may be due to telecommunication technologies beginning to blur the distinction between the locus of work and the place of domicile. Compared to 2000 Census figures, more workers 16 years and over worked at home, substantially less worked in Queen Anne's County, and slightly less worked outside the State (see Table 25). The change in worked in the county of residence figures may be the result of more and better employment opportunities located outside of the County. Key policy areas for local governments involve the quality of telecommunications infrastructure.

Data also indicates that relative housing cost may not have been a factor in the decisions to move to Queenstown or Queen Anne's County. The median value of housing in Queenstown in the period 2006 to 2010 was reported as \$328,200 (See Table 18). The Town's median value was approximately 87 percent of the median value of owner occupied housing units in the County and nearly comparable to that of the State. Median value of owner occupied housing units in Anne Arundel and Baltimore Counties during the same period was \$370,100 and \$269,900 respectively. Median housing values in Baltimore County were 21 percent less indicating lower housing costs was not a motive for these migrants.⁷ Median housing costs in Anne Arundel were about 11 percent higher indicating that lower housing costs may have been a motive but the savings were relatively marginal.

Concerning lower cost rental housing the strongest incentive to migrate appears to be for individuals and households from Anne Arundel County. Recent Census Bureau estimates indicate that median gross rents in Queenstown were ten to more than fifteen percent higher than that of Baltimore or Princess George's County but nearly half of the figure recorded for Anne Arundel County.⁸

Considering all of the preceding it seems reasonable to assume that people migrating to Queenstown:

⁶ Source: U.S. Census Bureau, 2006-2010 American Community Survey

⁷ Ibid

⁸ Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

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- were mostly from in-state areas, primarily metropolitan areas on the Western Shore;
- did not move in order to reduce travel time to their place of employment; and
- were not strongly motivated by relative housing costs.

This leaves quality of life as a potentially key consideration for those deciding to move to Queen Anne's County, and by inference Queenstown. Obviously Queenstown has little direct control over many of the government services that figure into "quality of life", e.g., education facilities and services, public safety, health care and employment opportunities. Town policies can have an impact on quality of life factors such as neighborhood quality, social and civic engagement, recreation, housing affordability and a limited and indirect impact on overall environmental quality.

Queen Anne's County's population growth has slowed in large part due to a decrease in the number of people migrating to the County. Population growth in Queenstown has slowed even more, is stagnate or even declining. This is understandable considering the limited amount of developable land for residential growth within the corporate limits. Consequently a key factor affecting potential population growth in Queenstown in the short term will be infill and redevelopment. The 22 unit duplex development the recently approved Steamboat Landing subdivision is an example if infill development. The recent projects approved at 7001 Marin Street and 310 and 312 Del Rhodes Avenue are examples of redevelopment that increases housing stock. Another short term factor will be occupying vacant units. There were 327 reported housing units in Queenstown in 2010. Of this total 44 units were listed as vacant. Long term the Town's annexation plan should include areas for residential growth.

The existing housing stock in Queenstown tends to be older than that of the County and State indicating the need for policies that encourage investment in maintenance and up keep. Generally households have lived in housing units in Queenstown a little longer than households in the County and State. Coupled with the high percentage of owner occupied units and family households this data may be indicate a stable population who have chosen Queenstown as a final settlement location. However, increasing housing costs, including property tax, utilities, etc., may increase the number of household and families with disproportionate housing cost to income ratios. Ways to reduce housing costs for existing and future residents includes increasing the user base on public utilities, and for new residents, compact development at increased density to reduce infrastructure costs.

Queenstown's housing stock exclusively consists of one and two family units. This data indicates the need for more housing variety especially as relates to affordable housing objectives and considering the relative high cost of production for these types of housing units as compared with multi-family units. This is particularly true considering Queenstown's higher median gross rents and the percent of renters paying 35 percent or more of income for housing.

In general, it appears that economic conditions affecting Queenstown residents are very similar to those affecting the County and State. So grows the region's economy so grows Queenstown's. This makes sense considering that Queenstown has very limited local industry, and with the exception of the recently annexed Wheatlands farm limited land capacity for economic development. Infill and redevelopment can result in limited economic growth within the old town limits. On the positive side, the recent annexation of the Wheatlands Farm gives the Town approximately 65 acres planned for regional commercial development along with increased wastewater treatment plant capacity support opportunities for economic development within the Town. However, prospects for substantial regional commercial development at this site in the short term are limited and focusing on development and reinforcement of small-scale local businesses may be an appropriate emphasis. A regional shopping center of between 300,000 to 750,000 square feet requires a trade area of 8 to 15 miles and a trade area population in the range of 100,000 to 250,000⁹. A trade area of approximately eight to ten miles surrounding Queenstown had a 2000 population of approximately 26,500, well below the threshold requirement for a regional center.

⁹ Source: Urban Land Institute, Dollars and Cents of Shopping Centers, Property Counselors

SECTION 2: LAND USE PLAN

Introduction

Under the provisions of the Maryland’s Economic Growth, Resource Protection, and Planning Act of 1992 (Planning Act of 1992), all policies, programs and regulations (e.g., zoning, subdivision regulations, annexations) that implement the comprehensive plan must be consistent with the recommendations and policies of the plan. In addition, State and local funding decisions must be consistent with the local plan as well as the twelve State visions.

The Land Use Plan element defines the “most appropriate and desirable” land use pattern for the Town. It reflects what the Town considers as “smart growth” within the guidance provided by the State and tempered by the other factors that influence land use. As stated in the Land Use Article, the plan should contain, among other minimum elements, a land use plan which “on a schedule that extends as far into the future as is reasonable propose the most appropriate and desirable patterns for the general location, character, extent, and interrelationship of the uses of public and private land.”¹⁰ The Land Use Plan also must reflect careful consideration of factors that influence how land is used to insure minimal conflict at all jurisdictional levels. Public policy concerning municipal growth, community facilities and services, transportation infrastructure, resource conservation, housing, community design, and fiscal management must be balanced against such things as existing land use, expectations created by existing zoning, existing and future private investment trends, market forces, and the plans of surrounding jurisdictions.

Goals, Objective and Policies

Goal

Ensure the orderly growth and development of Queenstown through the wise allocation of land to the various uses based on the anticipated needs of the current and expected population, with attention in planning and implementation to protection of the existing man-made environment, conservation of natural resources, transportation accessibility, the availability of utilities and public facilities, and financial resources.

Objectives

- Objective 1: Promote appropriate infill development and redevelopment.
- Objective 2: Protect existing residential neighborhoods from incompatible uses.

¹⁰ Land Use Article, Annotated Code of Maryland, § 3-111(a).

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- Objective 3: Encourage and provide for mixed-use development with a variety of housing types, densities, nonresidential uses, open spaces, and recreational amenities in annexed areas that blends appropriately with existing land uses.

Policies

- The Land Use Plan represents Queenstown's official policy for land use, development, and growth and shall be the basis for zoning and other implementation tools;
- Development shall avoid designated sensitive areas and employ best management practices to minimize adverse impacts on water quality.
- Water and sewer service, transportation and other community facilities will be designed to support the planned land use pattern and the timing and pace of new development will be managed to be compatible with the Town's ability to provide adequate public services and to ensure that the character of the Town is protected.
- The Town will discourage inefficient use of land planned for development and will encourage the County to prevent sprawl residential development and resource-consuming patterns of growth surrounding the Town.

Existing Land Use

Existing land use is a basic component of the Town's community character (See Map 2-1). The way land is being used, the geographic distribution of the various land uses, and how one use at a given location relates with other uses and community infrastructure affect how the community is perceived and used by residents, customers and guests. The established pattern of land use is an indicator for determining the most appropriate and desirable future land use.

Queenstown's existing land use pattern can be generally described as follows:

- large lot residential fronting Queenstown Creek;
- established neighborhoods within a comfortable walking distance of and surrounding the town center;
- limited highway oriented commercial uses situated along the north side of US 301;
- linear commercial and industrial uses situated along the south side of Del Rhodes Avenue south of US 301;
- a small residential enclave situated along the south side of Del Rhodes Avenue south of US 301;
- a cluster of regional commercial located adjacent to US 50 and separated from the old town by the US 301 corridor; and

- a large golf course/open space area to the west.

Queenstown’s corporate area encompasses approximately 1,217 acres. Queenstown Harbor Resort and portions of Queenstown Creek that are within the town limits make up approximately 69 percent of the corporate area (see Table 2-1). Eliminate these two categories and the predominant land uses are almost evenly divided between single family residential, vacant agriculture and open space. The Wheatlands property dominates the latter two, vacant agriculture land and open space. Within what may be considered the old town portion of Queenstown, single family residential is the dominant existing land category. Although classified as a “commercial” land use, Queenstown Harbor Resort functions as a character defining feature more like “open space”.

Table 2-1: Existing Land Use 2013

Land Use Description	Acres	Percent
Single Family Residential	94	7.7%
Attached Residential	2	0.2%
Multifamily Residential	1	0.1%
Commercial	46	3.8%
Resort Commercial	685	56.2%
Industrial	5	0.4%
Institutional	4	0.3%
Town Owned	1	0.1%
Public Works	3	0.3%
Open Space	77	6.3%
Agriculture/Vacant	84	6.9%
Vacant	31	2.5%
Under Water	157	12.9%
Right of Ways	27	2.2%
Total Area	1,217	100.0%

Source: Maryland Department of Assessment and Taxation, Peter Johnston & Associates, LLC

Current Zoning

Zoning can both reflect existing land use and expectations for future land use. Queenstown is divided into ten separate zoning classifications (see Map 2-2). As was the case of existing land use, Queenstown Harbor Resort property dominates, accounting for over 60 percent of all zoned land. The category is followed by the Planned Regional Commercial classification, about 14 percent of all zoned land. The significance of this category is somewhat misleading as approximately 59 acres or about 40 percent of the site will be dedicated open space (see Table 2-2).

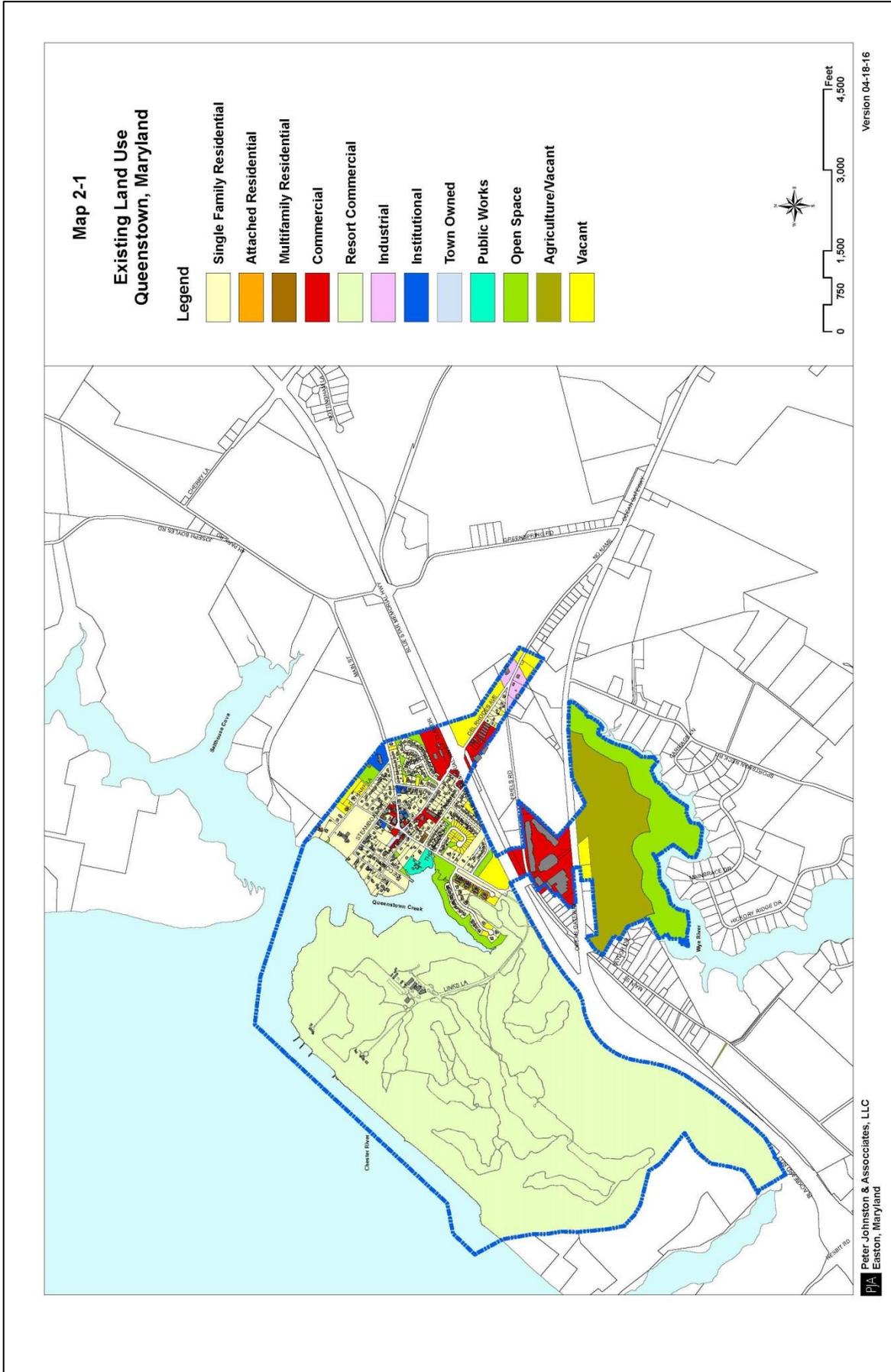


Table 2-2: Existing Zoning

Zoning Classification	Acres	Percent
Base Zones		
R-1 Residential	73	7.1%
R-2 Residential	47	4.6%
Town Center	11	1.1%
Highway Commercial	15	1.5%
Regional Commercial	29	2.8%
Industrial	21	2.0%
QRD Queenstown Resort	114	11.1%
QCS Queenstown Countryside	577	55.9%
Floating Zones		
Planned Regional Commercial	146	14.1%
Planned Neighborhood Development	0	0%

Sources: Maryland Department of Assessment and Taxation, Peter Johnston & Associates, LLC

The stated purpose of each of the base zoning districts is as follows:

R-1 Residential: Provide for a pleasant, quiet, hazard-free residential environment in which residential and related uses are permitted.

R-2: Residential: Allow a diversity of housing types and densities within neighborhoods in suitable locations in Queenstown, to broaden the housing types and configurations; to provide desirable open space and recreational lands close to residences; to create visual interest and relate development more sensitively to environmental features; and to establish reasonable controls and standards of design for the dwelling types allowed in this district.

TC: Town Center: Encourage the revitalization of Queenstown's town core, while at the same time reinforcing its historic, mixed-use and pedestrian-oriented character.

HC- Highway Commercial: Provide appropriate locations and standards for commercial uses which are primarily oriented to highway travelers, which require large floor area in their operations, and which are likely to generate high volumes of automobile traffic.

RC- Regional Commercial: Recognize and provide for the continuation of existing regional retail shopping establishments located adjacent to U.S. Routes 50 or 301.

I-Industrial: Provide appropriate locations and standards for industrial uses which are compatible with adjacent uses to the extent that adverse effects on health, safety, welfare

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or the environment are avoided. The uses are limited to light manufacturing, fabricating, warehousing, wholesale distributing and certain types of commercial uses.

QRD - Queenstown Resort Development: Provide for recreation, hotel, conference center, food and lodging, dining and associated uses in a waterfront and golf course environment within the Town and to encourage commercial adaptive reuse of historic properties consistent with an Eastern Shore historic village. The district provides for flexible development concepts, good site design, and architectural integration in the configuration and style of buildings as part of a unified and coherent plan of development.

CS - Countryside: The Queenstown Countryside District: Preserve and protect rural, agricultural and recreational areas of the Town that generally lie within the Chesapeake Bay Critical Area and contain sensitive natural resource. This district shall be predominantly characterized by open space, golf courses and very low-density uses with significant associated open space.

The stated purpose of each of the floating zoning districts is as follows:

PN - Planned Neighborhood Floating Zone District: Permit master planned, mixed-use developments of large tracts of land.

PRC - Planned Regional Commercial District: Establish an area for master-planned regional commercial uses at appropriate locations near arterial highways in accordance with the Queenstown Community Plan.

In addition to the base and floating zoning districts previously outlined the Queenstown Zoning Code includes two overlay zoning districts, the CA Critical Area Overlay District and the CR Community Redevelopment Overlay District. These overlay districts supplement the standards in the underlying zoning district.

The purpose of the CA Critical Area Overlay District is to:

- Minimize adverse impacts on water quality that result from pollutants that are discharged from structures or run off from surrounding lands;
- Conserve fish, wildlife, and plant habitat; and
- Establish land use policies for development in the Critical Area which accommodate growth as well as address the environmental impacts that the number, movement, and activities of people may have on the area.

The purpose of the CR Community Redevelopment Overlay District is

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- Accommodate growth in Queenstown by encouraging and facilitating new development and redevelopment on vacant, bypassed and underutilized land where such development is found to be compatible with the surrounding neighborhood and adequate public facilities and services exist;
- Encourage efficient use of land and public services;
- Stimulate re-investment and development in the Town Center and portions of older established neighborhoods;
- Provide developers and property owners flexibility that achieves high quality design and result in infill and redevelopment projects that strengthen existing neighborhoods;
- Stabilize existing neighborhoods; and
- Implement the goals, objectives, and policies of the Queenstown Community Plan.

The CR overlay district has proven useful since its inception, resulting in new infill residential units on several properties in and around the town center.

Not including the vacant agriculture land which is being considered for regional commercial development, approximately 2.5 percent of the town land area is vacant. Of the total approximately 15 acres is zoned for residential development, all of which is considered infill development (see Table 2-3). Slightly more than 11 acres are zoned for industrial use. Slightly less than five acres are zoned for commercial use.

Table 2-3: Vacant Land by Zoning Classification

Zoning Classification	Acres
Industrial	12
Highway Commercial	5
R-1 Residential	4
R-2 Residential	11
Planned Regional Commercial	142
Total	174

Source: Peter Johnston & Associates, LLC

The distribution of vacant land within each of the town’s zoning districts has implications for nature and form of future development. There is very little vacant residentially zoned land within

the old town portion of Queenstown. Most of what remains has already been subdivided into building lots, the largest area being Steamboat Village.

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The approximately five acres of vacant Highway Commercial land is located at the intersection of Main Street and US 301 cannot be developed. A portion of this site is dedicated open space. Development on the remainder is severely limited by the presence of a large area of nontidal wetlands.

Development also is limited on the 1.8 acres of vacant industrial property located adjacent to a tributary feeding to the Wye River and owned by the State Highway Administration (SHA) due to presence of environmentally sensitive areas. About three of the approximately 7.8 acres located on the northeast side of Del Rhodes Avenue, south of US 301, is within the Chesapeake Bay Critical Area and is classified Resource Conservation Area (RCA). The Town and the Chesapeake Bay Critical Area Commission would have to approve growth allocation to change the Critical Area classification of this land in order for it to be developed. The remaining industrially zoned land is already developed.

Approximately 174 vacant acres have been given a Planned Regional Commercial (RPC) floating zone classification. Of this total, approximately 83 acres can be developed. The remainder of the property is dedicated open space. Any development of the property is currently pending approval of growth allocation under the terms of the Town's Critical Area Program and Town Commissioner approval of a master plan as per the Planned Development provisions of the Queenstown Zoning code.

Land Use Plan

The "Land Use Plan" is a primary component of the Queenstown's Comprehensive Plan. It describes the preferred land use characteristics deemed to be consistent with the Town's vision. It is intended to provide adequate land to accommodate population and economic growth consistent with Queenstown's land use and municipal growth goals, objectives and policies. In addition, these land use planning areas provide the basis for public decisions concerning such things as land use regulations and public facilities programming.

The Town's Land Use Plan (Map 2-3) includes 12 distinct land use categories. Table 2-4 summarizes the acreage in each land use category. The Land Use Plan includes the following areas:

Table 2-4: Land Use Plan Summary

Land Use	Acres
Town Center	11
Neighborhood Conservation	101
Highway Commercial	16
Industrial	22
Resort Residential	117
Regional Commercial	16
Planned Regional Commercial	88
Institutional	5
Utility	3
Open Space	838
Total	1,217

Source: Peter Johnston & Associates, LLC

Town Center

The Town Center planning area encompasses 49 parcels. It is characterized as a mix of residential, office, commercial, public, and semi-public uses and includes a store and a restaurant, two offices, a post office, the fire department, a church, apartments and the Town office.

This current mix of uses and the traditional scale and type of architecture reflects the essential existing character of the Town deemed important to retain. The Town wants keep the commercial and services uses and would like to add more compatible town-scale, neighborhood commercial as these businesses. Development regulations and ordinances for the Town center will emphasize flexible development standards that support reinvestments and encourage infill and redevelopment.

Neighborhood Conservation

The Neighborhood Conservation land use planning area is made up of the Town’s established residential neighborhoods. This plan area encompasses 291 parcels and is primarily characterized by detached single family dwellings at low densities. Average lot size is about 15,500 square feet or slightly less more than third of an acres and the net residential density is approximately 2.7 dwelling units per acre.

Approximately 215 or about three quarters of the properties located in this planning area are within a comfortable (five minute) walking distance of the Town Center (1/4 mile). Of course, whether or not residents actually walk to the Town center is a function of pedestrian qualities (sidewalks, safety, etc.), the land uses or activities that attract, and the quality of the walking

experience (e.g., shade, interesting textures, street level social interaction opportunities). Transportation and community design objectives should include development of alternative modes of travel within the Town. Strategies for improving pedestrian and bike access to the Town Center, municipal and recreation facilities and other places where residents may travel may include sidewalk improvements and street tree planting to enhance the pedestrian experience.

A primary objective for Neighborhood Conservation areas is to maintain the existing stable residential character and property values. Development regulations for these residential areas should reflect the existing development pattern in the neighborhoods, e. g., lot sizes, yards, parking arrangements, and architectural styles, and ensure that infill and redevelopment is consistent with this existing character. At the same time, development standards should be established to minimize non-conforming situations. Context sensitive infill and redevelopment on vacant and underutilized properties should be encouraged.

The Town will employ tools, such as the Community Redevelopment Overlay District and administrative variances to encourage and facilitate new development and redevelopment on vacant, bypassed and underutilized land where such development is found to be compatible with the surrounding neighborhood.

Highway Commercial

The Highway Commercial land use area encompasses a little more than 26 acres. Most of the usable portions of the land use category are already developed. Properties located north of US 301 and adjacent to Del Rhodes Avenue are currently developed with two convenience commercial fueling stations and a business office with storage.

The approximately five acres located north of US 301 at the intersection with Main Street is part of the Queenstown Harbor Links Golf Course. As mentioned earlier, these properties are either dedicated open space or nontidal wetlands and cannot be developed.

The obvious intent for these areas is provide appropriate locations for commercial uses primarily oriented to highway travelers but at the same time serve local residents. Of major concern for any development on these sites is ensuring compatibility with adjacent residential uses and addressing potential traffic safety issues, noise, and air pollution impacts as they affect adjacent residential areas.

Industrial

The area along Del Rhodes Avenue Road on the east side of US 301 is currently within Town limits and contains a few small-scale industrial uses and some single-family homes. It is zoned Industrial. The Town Limits presently cut through portions of properties in this area and it is

recommended that Town annexation be used to bring these sites entirely within Town limits. Due to the predominance of wetlands in this area, it is not recommended that the existing industrial area be expanded beyond this area.

Existing uses here include a portion of the Friel Lumber site. It is recommended that this entire site be annexed into the Town and rezoned Highway Commercial since it is already benefitting from Town services and functioning as a highway commercial use.

Approximately five acres of industrial property are located on the north side of Del Rhodes Avenue, southeast of US 301. This land is part of the Dudley South property. Development of this property should be held in abeyance until the property is annexed and a master development plan for the entire Dudley South property approved. It is recommended that the Town portion of this Dudley South property be zoned R-1 Residential until the entire property is annexed.

Resort Residential

The Queenstown Harbor Golf Course plans to add a resort component to the golf course offers many benefits to the Town and region. Among them are more customers for Town Center businesses, regional business, and more visitors to spread the word about the Town's attributes. Recent decreases in rounds played on the golf course have prompted the owners to begin exploring additional uses to ensure continuing profitability for the facilities. The Town will work with the owners of the golf course by being open to a variety compatible uses complementary to the Town's character including residential units. The development of appropriately configured walking trails connected to the Town is highly desirable.

Regional Commercial

This land use area is primarily occupied by the Prime Retail Outlet, a regional center of approximately 300,000 square feet of retail commercial uses. It is the intent of the Town to limit the extent of this zoning district to parcels currently zoned RC Regional Commercial. The Town may consider expanding the extent of the RC Regional Commercial district to permit expansion of an existing regional commercial use onto contiguous parcels.

Planned Regional Commercial

The Planned Regional Commercial land use area is intended for development of master-planned mixed-use development projects including a wide range of commercial and retail trades and uses, as well as offices, business and personal services that will serve local and regional commercial markets. Through the negotiated processes involved in both the Planned Development and Critical Area Growth Allocation processes, Town officials will seek to ensure the master development plan for this area accomplishes the following objectives to maximum extent possible:

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- provide appropriate transitions to adjacent residential neighborhoods, safety and maintaining pedestrian access with links to neighborhoods, and other commercial developments where feasible;
- allow for new commercial development that is compatible with and contributes to the character of the Town through use of appropriate building materials, architectural detail, color range, massing, lighting, and landscaping criteria to soften the visual impact of commercial building sites and parking areas and to accentuate the relationship to streets and pedestrian ways;
- discourage typical strip forms of development;
- provide landscape buffers and appropriate transitions between commercial uses and arterial highways to improve the visual character along the highway corridor; and
- permit design flexibility in order to achieve an appropriate integration of more intense commercial uses into the community and minimize its impact on adjacent areas.

Institutional

Institutional uses are primarily located in or near the Town Center and include three churches, the town hall, and the fire station. A primary objective for the Town Center is to add neighborhood commercial and service uses. Redevelopment of the fire station would support this objective. Moving the Volunteer Fire Department from its present location to a new facility would free up new commercial space downtown and operate as a catalyst for revitalization. Reuse of the Fire Station complex could add 6,500 square feet, would double the amount of retail, and help create a more viable critical mass of shops. New retail uses could fill the ground floor street front space and apartments or offices could use the second floor space and the building in the rear. A potential location for new “Queenstown Public Service and Safety Center” is the Dudley North site.

Utility

This land use area is the site of the Queenstown wastewater treatment plant. In addition to serving the community’s sewer waste treatment and disposal needs the site currently includes a small craft boat launch. The Town’s objectives for this site should include maintaining the existing boat launch site for community use while ensuring maximum protection from adverse impacts for adjacent residential areas. In addition, the Town should investigate the feasibility and desirability for the development of waterfront improvements that increase public access to and enjoyment of Queenstown Creek.

Open Space

Nearly half of the incorporated area of the Queenstown (+/-644 acres) is within this land use area. The portion zone Queenstown Countryside constitutes over 88 percent of this land use area and all of the area under tidal waters. It is the Town's intent that this area continue to be predominantly characterized by open space, golf courses and very low-density uses with significant associated open space and that sensitive natural resource located here are protected.

Small areas of open space at the water's edge are located at the end of Second Avenue and Old Wharf Lane Street. A two acre town park with tot lot is located near the intersection of Main Street and Old Wharf Lane. This latter facility has ample room for additional improvements.

The Town will require preservation/creation of open space in new residential developments. Open space should be located and designed to add to the visual amenities of neighborhoods and to the surrounding area. Where appropriate, greenbelt open space should be designated to provide buffers and to protect scenic views as seen from existing roadways and from public parks. Civic greens or squares should be distributed throughout new neighborhood so as to be located within 1,500 feet of ninety (90) percent of all residential units.

Planned Annexation

The Planned Annexation area represents the Town's first priorities for incorporation. This planning area encompasses the approximately 212 acre Dudley North property, 351 acre Dudley Home Farm as well as existing highway commercial uses (Friel Lumber) located south of US 301 between Greenspring Road to the east and Friel Road to the south.

The Dudley North property was envisioned as 130 residential units of a Town-like mix of types and lot sizes including town homes, live work units, duplexes, and single-family in the 2010 Community Plan. The mix of uses included approximately 25,000 square feet of office and retail uses and approximately 22 acres of preserved land. This development program is not intended to limit or define a specific pattern for development of the property but simply to gauge potential capacity within the context of this plan's goal and objectives. In this case, if developed as envisioned, the property will accommodate the Town's projected housing needs through 2040 of either population growth scenario considered (see projections in Section 4: Municipal Growth).

The Dudley Home Farm and other properties owned by Salthouse, LLC, allows for the continued expansion of the Town on the north side of US 301. With approximately 113 acres fronting on Salthouse Cove these properties present a unique opportunity to increase access to navigable portions of Queenstown Creek and develop a mix of public and private uses along the shoreline, including a waterfront park, water oriented resort commercial and residential living.

Long Range Growth

Queenstown’s opportunities for significant growth and new development beyond the 2040 planning horizon are limited to properties located to the east including the Dudley South property and the Callahan Farm. This is described as a long range growth planning area for Queenstown that the Town does not expect to annex within the planning period. The Long Range Growth Area encompasses approximately 597 acres. For the purpose of gauging potential capacity the 2010 Community Plan suggested a build out development scenario for these properties of approximately 370 residential units and over one half a million square feet of retail and office use (see Table 2-5).

Until major improvements at the Greenspring Road intersection with US 301 are installed, specifically a highway overpass that accommodates vehicles, bikes and pedestrians as envisioned in the 2010 Community Plan, these properties should not be considered as priority annexation areas.

Of greatest concern is these properties will be developed under County zoning therein preventing future growth of the Town when and should the need occur. The Town would like Queen Anne’s County to discourage premature subdivision of these properties by designating them Tier II properties under the terms of the Sustainable Growth and Agricultural Preservation Act of 2012.

Table 2-5: Growth Summary

Parcels	Dwelling Units	Commercial/Office (sq. ft.)
Current Town Area		
Infill	30	
Golf Resort	0	185,000
Town Center	0	15,000
Wheatlands Farm		500,000
Town Sub-Total	30	700,000
Growth Areas		
Annexation Areas		
Dudley North	130	25,000
Dudley Home Farm	290	0
Long Range Growth Areas		
Callahan	240	0
Dudley South	130	550,000
Growth Areas sub-total	790	575,000
Town & Growth Areas total	820	1,275,000

Source: Peter Johnston & Associates, LLC

SECTION 3: COMMUNITY FACILITIES AND SERVICES

Introduction

Community facilities and services are provided by the Queenstown and other government agencies to ensure the health, safety and welfare of existing and future populations. This is the primary responsibility of local government (see Map 3-1). To be effective, the Town must anticipate demand to the extent possible in order to insure that adequate community facilities and services are available when needed.

Preparation of a Community Facilities element in the Comprehensive Plan is a preliminary step in addressing supply and demand for community facilities and services including education and recreation facilities, police and emergency services, and water and sewer services. Facilities related to transportation are discussed in Section 5 Transportation. Section 3, Municipal Growth addresses demand for facilities and services associated with potential growth scenarios in an attempt to identify when and how much additional facility and service capacity may be required.

Goal, Objective and Policies

Goal

Provide adequate public facilities and services to ensure the health, safety and welfare of Town residents.

Objectives

- Objective: Ensure that all current residences and businesses have adequate public services and facilities necessary to protect the public health, safety, and welfare to promote an attractive environment in which to live and work.
- Objective: Plan for the appropriate expansion of the Town's facilities and services to accommodate population and economic growth.

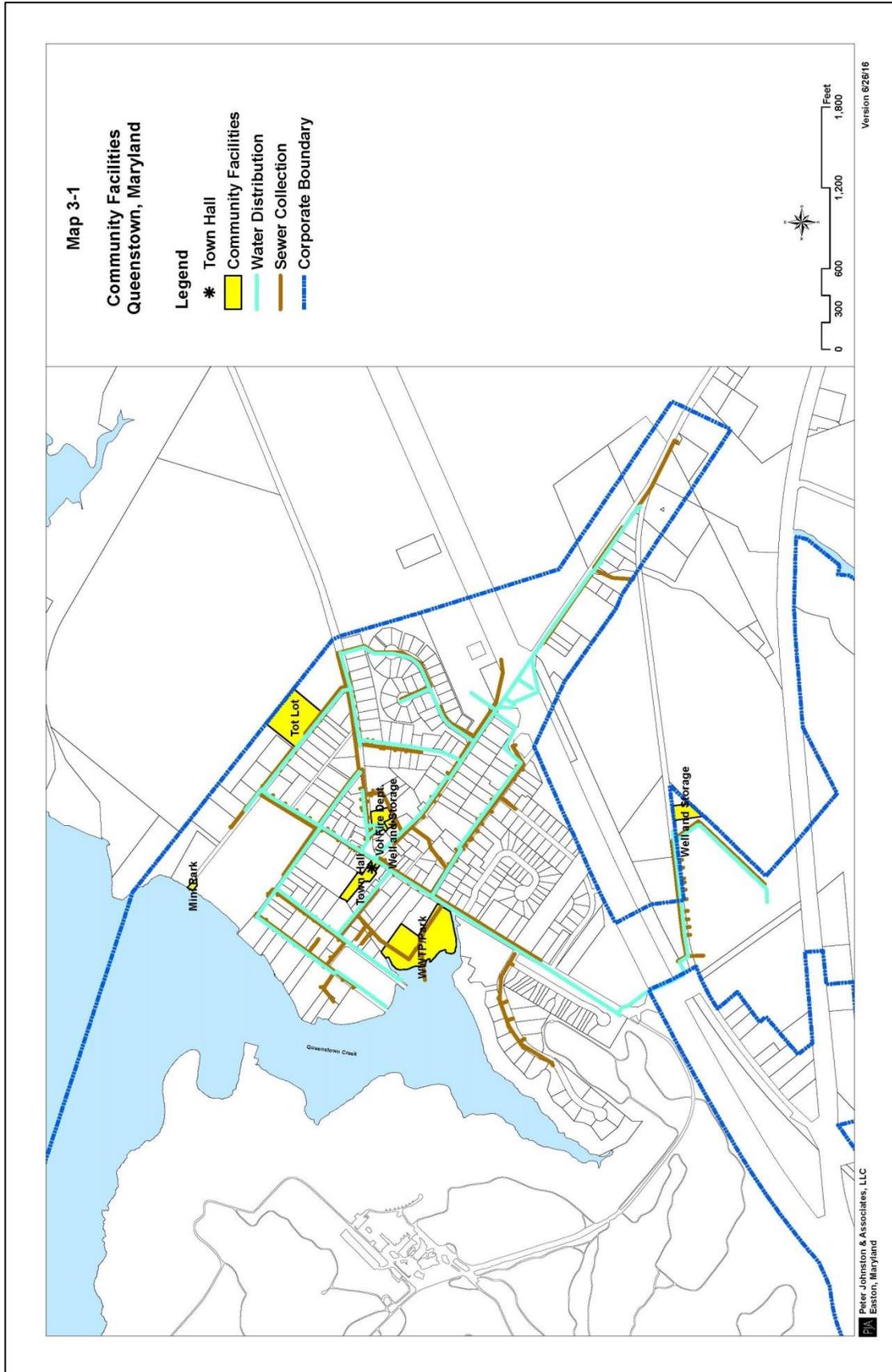
Policies

- The Town will encourage and facilitate development in existing water and sewer service areas and on vacant and underutilized parcels through regulatory innovation, flexibility and streamlining.

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- Redevelopment and re-use of vacant buildings will be encouraged and facilitated.
- New development and economic growth will be directed to lands served by or programmed for water and sewer service.
- The location, timing and pace of new development shall be compatible with the Town's ability to secure and program capital funds to maintain and provide sewer, water, transportation and community services.
- Subdivision applications and other development requests will be reviewed for adequacy of sewer and water infrastructure. Approvals may be deferred, phased in, or conditioned upon the availability of adequate infrastructure and treatment capacity.
- Developer-constructed infrastructure shall meet Town standards and be inspected and approved by the Town prior to final acceptance.

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Town Government

Queenstown is governed by three elected Commissioners who hold office for a term of three (3) years or until the succeeding Commissioner takes office. Official town business is conducted at town offices located at 7013 Main Street. The 3,120 square foot facility built in 2002 includes meeting space and offices for town staff and officials.

Public Safety

Fire and Rescue

The Queenstown Volunteer Fire Department is Station 3 of the Queen Anne's County Fire Departments serves the Town and surrounding areas. The Fire Department facilities are located at 7110 Main Street in a 6,249 square foot building. The current facility level of service is approximately 9 square feet per capita. There are seven line officers, 57 volunteers, and four administrative officers. Equipment includes two 1,000 pumper engines, a heavy duty rescue truck, a brush truck, chief's truck, ambulance, 3,000 gallon tanker truck and boat. Station 3's service area encompasses 1,245 properties, an estimated 773 dwelling units with a population of approximately 1,900. The 2010 level of service was 3.3 square feet of building per capita and one volunteer per 0.032 volunteers per capita.

The 2010 Community Plan recommended that the fire department facilities be relocated to a new larger facility with better access to US 50 and US 301. A recommended relocation site was the eastern end of the Dudley North site where ten acres could be set aside for a "Queenstown Public Service and Safety Center". The Plan suggested the existing structure could be preserved for adaptive reuse. Alternative uses for the building included retail or a community center available for use by local youth organizations and other non-profit groups.

Emergency Medical

Shore Regional Health's Emergency Services are provided at the UM Shore Emergency Center at Queenstown located at Shoreway Drive off Nesbit Road. This facility is equipped to handle nearly any emergency situation, and is staffed by Board-certified doctors, nurses and technicians who have received advanced training in emergency care for patients with a wide array of serious injuries and illnesses. On occasion when a patient's condition is so critical as to warrant more advanced, tertiary care they are transferred to another larger hospital, such as the University of Maryland, once the initial stabilization and management of life threatening emergencies has occurred.

Law Enforcement

Police matters in the Queenstown currently handled by the County Sheriff's Department and the Maryland State Police. The Queen Anne's County Sheriff's Department includes 54 sworn officers and five command positions.

Library Facilities

There are no library facilities in Queenstown. Residents may use the two public libraries in Queen Anne's County: the Centreville Branch and the Kent Island Branch. The library system is governed by a Board of Library Trustees composed of twelve members who address the educational, informational and learning-recreational needs of County residents.

Parks and Recreation

The Town maintains a launching ramp on the wastewater treatment site and has a small public waterfront access at the end of Old Wharf Lane. Plans for improvements at this location are currently under consideration. In addition the Town has an approximately two acre park with tot lot facilities located on the northeast side of Old Wharf Lane.

Public Water Supply

Currently, approximately 670 residents in 272 occupied households are served by the water system. Another 105 non-residential allocations are served, including the Queenstown Outlet Mall.

The Town has three operating wells – two drilled into the Aquia aquifer (300 feet below ground surface) and one into the Matawan aquifer (650 feet below ground surface). One of the Aquia aquifer wells is located on Del Rhodes Avenue (MDE Permit ID – QA79G010) and was installed in 1932. Its capacity is 85,000 gallons/day. The other Aquia aquifer well is located at the Outlet Mall (MDE Permit ID – QA71G007) and was installed in 1988. Its capacity is 150,000 gallons/day. Both wells have occasional problems with arsenic concentrations. To provide for future drinking water demand and fire service, the Town installed a new well in the Matawan aquifer at the Del Rhodes Avenue well. The established Matawan aquifer well is located at the Outlet Mall (Outlet Mall Well #2, MDE Permit ID – QA2008G018-01) and was installed in 2009. Its capacity is 70,000 to 100,000 gallons/day.

Two elevated storage tanks provide storage and pressure for the water system. One 50,000 gallon tank is in Town on Wall Street. The other is a 100,000 gallon tank located at the Outlet Mall. Water is disinfected with sodium hypochlorite (bleach) before discharge to the system

Wastewater Disposal

The Town's new WWTP was constructed in 2015 to meet Chesapeake Bay nitrogen and phosphorus discharge limitations. The new plant can reduce nutrient loadings significantly and increase the plant's treatment capacity from 85,000 gallons/day to as much as 350,000 gallons/day. The new WWTP is bio-reactor plant that contains the latest equipment and technology and has a capacity of 200,000 gallons a day. The facility was approved by the Maryland Department of the Environment under the terms of NPDES discharge permit number MD0023370.

The facility utilizes two wet wells, primary clarifier, two rotating biological contactors, two secondary clarifiers, sludge digester, and two chlorine contact tanks to treat about 0.0784 mgd of wastewater. Sludge is dried on 4 beds and hauled to Pennsylvania for disposal. With the increase in flow from 0.085 mgd to 0.200 mgd an emergency holding pond for at least 0.200 mgd capacity was be required.

Special requirements for the plant include an 85 percent reduction in Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) and enhanced nutrient removal (ENR). Based on an annual average flow of 0.200 million gallons per day (mgd) the NPDES permit limits the plants annual loading to 183 pounds of total phosphorus (P) and 2,435 pounds of total nitrogen (N).

SECTION 4: MUNICIPAL GROWTH

Introduction

The Land Use Article of the Annotated Code of Maryland requires all municipalities to:

- Include a Municipal Growth Element (MGE) in their Comprehensive Plans that specifies where the municipality intends to grow, including areas outside its existing corporate limits;
- Complete an analysis of land capacity available for development including infill and redevelopment and an analysis of the land area needed to satisfy demand for development at densities consistent with its land use plan; and
- Share with other planning agencies an annexation plan that is consistent with any proposed growth element in the comprehensive plan.

Queenstown's Municipal Growth Element (MGE) examines the interrelationships among land use, anticipated population and housing growth and the related impacts on public facilities and services. The intent of preparing this element of the Comprehensive Plan is to give Queenstown officials a sound basis for setting land use and growth management policies through a better understanding of the multi-dimensional implications of anticipated growth.

The MGE is based on projections and assumptions concerning population and housing growth which may or may not occur at the rate and in the exact year anticipated. The Town recognizes this possibility. When new or significant trends or events are counter to basic assumptions underlying the conclusions of the MGE, e.g., population growth exceeding capacity and requiring new growth strategies, the Town will revise the Comprehensive Plan as necessary and appropriate. With this caveat in mind, the overall objectives of the MGE are to:

- Evaluate potential growth in Queenstown;
- Assess the impacts of this growth on Town services, facilities, and infrastructure;
- Identify strategies to address projected facility and/or service needs;
- Improve inter-jurisdictional coordination with Queen Anne's County; and
- Recommend policies, processes, and regulations to encourage appropriate infill and redevelopment.

Goal and Objectives

Goal

Ensure development is consistent with the overall growth goals, objectives and policies of the Comprehensive Plan.

Objectives

- Grow the Town in accordance with the adopted Comprehensive Plan, particularly with regards to plans for municipal annexation and implementation.
- Promote controlled and compact development patterns that reflect good design practices, make efficient use of available land, and locate development where public facilities, services, and amenities can be provided in the most efficient manner.
- Analyze the impacts of growth and development on Town services and facilities and insure a positive return on any public investment.
- Maintain good inter-jurisdictional coordination and cooperation with Queen Anne's County.
- Update the Town's development regulations as required to implement recommendations of this Plan.

Projections

Population projections are a best guess estimate of future conditions. Projections provide a theoretical basis to evaluate future demand for land and the demand for services for town residents. The 2010 Community Plan assumed the Town's population could increase from 617 in 2000 to a low value of 933 and high value of 1,075. The low value was derived from the "historic average annual [growth] rate" between 1960 and 2000 of 1.39%. The high value was based on a historic "average share" of county population, about 1.74%.

The population and household projections for Queenstown for this plan are similar to those predicted in the 2010 Community Plan except extended out ten years to reflect a slowing regional growth trend. The two population projections for 2040 are characterized as a high and a low growth scenario. These scenarios incorporate assumptions concerning household size trends, as anticipated households are used as a surrogate for housing units when estimating new dwelling units, growth capacity and impacts (see Table 4-1).

Table 4-1: Projected Average Household Size

	Census						
	2010	2015	2020	2025	2030	2035	2040
Maryland	2.61	2.61	2.57	2.54	2.51	2.49	2.48
Queen Anne's County	2.63	2.60	2.55	2.52	2.50	2.47	2.47
Queenstown	2.45	2.43	2.40	2.38	2.36	2.34	2.31

Source: Maryland Department of Planning, Planning Data Services, PJA, LLC

The two development scenarios summarized in Table 4-2 are described as follows:

- Scenario 1, Low Value – Assumes Queenstown’s population will grow at the 0.74 percent annual rate experienced in the period 2000 to 2010.
- Scenario 2, High Value – Assumes Queenstown’s population growth will maintain pace with that of Queens Anne’s County and remain at about 1.39 percent of the County total.

Table 4-2: Population and Households Projections – Queenstown, Maryland

	2010	2015	2020	2025	2030	2035	2040	Chg.	% Chg.
Population									
Scenario 1	664	689	715	742	769	798	828	164	24.70%
Scenario 2	664	697	745	797	838	877	913	249	37.60%
Households/Dwelling Units									
Scenario 1	271	284	297	312	326	342	358	87	32.07%
Scenario 2	271	287	310	335	355	375	395	124	45.62%

Source: Maryland Department of Planning, PJA, LLC

Development Capacity

Development capacity examines in simple terms the relationship between projected population growth and resulting housing demand. It asks does the Town have or will the Town have adequate developable land for new housing to accommodate expected population increase and housing need? This assessment first examines infill and redevelopment capacity within the current corporate limits to determine if there is enough developable land to accommodate projected population increases and housing demand. It then assesses the capacity of planned annexation areas.

Infill and Redevelopment

A key factor for the short term population growth is Queenstown’s infill and redevelopment capacity summarized in Table 4-3. The 22 duplex units recently approved (Steamboat Village subdivision) is an example of infill development on vacant, underutilized land. Infill potential includes two vacant lots and room for 4 to 6 townhouse units in Queenstown Harbor and six vacant lots scattered throughout the Town. Infill development on these sites could accommodate up to nine addition dwelling units. Projects approved at 7001 Marin Street and 310 and 312 Del Rhodes Avenue are examples of redevelopment that increases housing stock, and the capacity for population increase. Assuming all of these properties builds-out during the planning period and vacancy rates remain at approximately 13 percent, as many as 73 new residents could be accommodated within the existing corporate area.

Nonresidential development capacity is more than sufficient to meet the needs of future population. The Wheatlands site is expected to develop as a mix of retail and office uses. Conceptual plans for the Queenstown Harbor Resort include a number of resort cottages, event center and restaurant.

Table 4-3: Development Capacity – Infill and Redevelopment

Use Description	Dwelling Units	Gross Floor Area
Vacant lots	17	
Steamboat Village subdivision	22	
Queenstown Harbor Resort	0	185,000
Wheatlands Planned Regional Commercial	NA	500,000
Total Capacity	39	685,000

Source: Peter Johnston & Associates, LLC

Development Impacts

Growth of the Town will impact demand for public services and facilities provided by Queenstown, Queen Anne’s County and others. Impacts include increased demand for municipal water and sewer service provided by the Town and other public facilities and services such as schools, libraries, police, and parks as well emergency services provided by the volunteer fire department.

The following impact estimates are derived using multipliers (service measures) that represent assumptions about the level of service that will be provided in the future. New households or new population are the “service units” representing demand. Projected households are used as a surrogate for dwelling units in the analysis. Service measures for measuring an anticipated level of service are summarized in Table 4-4.

Table 4-4: Level of Service Measures

Facility/service	Multiplier	Service unit
Elementary School		
- Students	0.22	Per Household
- Teachers	1:14	Student Teacher Ratio
Middle School		
- Students	0.11	Per Household
- Teachers	1:14	Student Teacher Ratio
High School		
- Students	0.15	Per Household
- Teachers	1:15	Student Teacher Ratio
Town administration/meeting		
- Personnel	3.00	Per 1,000 population
- Facilities Gross Floor Area (GFA)	4.70	Per Capita
Police (sworn officers)	1.10	Per 1000 population
Recreation land (acres)	30.00	Acres per 1,000 pop.
Fire & rescue		
- Personnel	0.032	Per Capita
- Facilities (GFA)	5	Per Capita
Water & Sewer - Residential		
- Sewer	250	Gallon per day (gpd) per dwelling unit
- Water	250	gpd per dwelling unit
Water & Sewer – Commercial		Gross Floor Area
- Sewer	180	gpd per 1,000 sq. ft.
- Water	180	gpd per 1,000 sq. ft.

Source: Peter Johnston & Associates, LLC

Development Impacts - Town Services

Town Administration - The current facility level of service for building space is approximately 4.7 square feet per capita. Staff including public works personnel is approximately three persons per 1,000 residents. In order to maintain the current level of service approximately 400 square feet of additional building space would be required. No additional personnel would be needed.

Sewer and Water - Estimating impacts on Queenstown water and sewer systems through the planning period takes into account projected demand from residential and nonresidential uses. Projected residential demand is based on household (surrogate for housing units) projections through 2040 and a multiplier of 250 gpd per dwelling unit. Nonresidential demand is based on a multiplier for nonresidential of 0.1575 gpd per gross square foot.

Queenstown’s three operating well have a total allowable withdrawal of approximately 305,000 gallons/day. The town’s two elevated storage tanks have a total capacity of 150,000 gallons. Queenstown’s new WWTP has a capacity of 200,000 gallons a day. Current average daily water usage and flow at the WWTP is estimated to be 78,400 gpd.

Based on these estimates of existing conditions Queenstown has adequate water supply to meet projected demand in either growth scenario. Additional storage of approximately 60,000 gallons will be required to meet demand through the end of the planning period (see Table 5-5).

As shown in Table 5-6 Queenstown will not have adequate WWTP capacity to meet demand from either growth scenario with existing capacity. However, as per MDE policy, planning for additional capacity will need to commence when demand reaches 85 percent of capacity which is expected in the planning period. The WWTP capacity can be increased to 0.4 million gallons per day (mgd) which will be more than adequate to meet demand through 2040.

Table 5-5: Existing and projected water supply and storage needs thru 2040

Water Supply and Storage Demand (gpd)	Scenario 1	Scenario 2
Existing Average Daily Flows	78,400	78,400
New Dwelling Units	21,725	30,911
New Non-residential Floor Area	110,250	110,250
Total Demand	210,375	219,561
Capacity		
Supply	305,000	305,000
Storage	150,000	150,000
Surplus/Deficiency		
Supply	94,625	85,439
Storage	-60,375	-69,561

Source: Peter Johnston & Associates, LLC

Table 5-6: Existing and projected sewer treatment needs thru 20240

Sewer Demand Sources (gpd)	Scenario 1	Scenario 2
Existing Average Daily Flows	78,400	78,400
New Dwelling Units	21,725	30,911
New Retail Commercial Floor Area	110,250	110,250
Total Demand	210,375	219,561
Capacity	200,000	200,000
Surplus/Deficiency	-10,375	-19,561

Source: Peter Johnston & Associates, LLC

Parks and Open Space - Providing parks and open space and related facilities and services to town residents is a responsibility shared between the Town and Queen Anne’s County. Maryland’s Program Open Space (POS) land goal for each county is 30.0 acres of local recreation acreage for every 1,000 County residents. According to the Queen Anne’s County Comprehensive Plan 2010 the County provides 35.13 acres/1,000 persons for the County’s 2008 population of 47,091. The County calculations include the two acre Queenstown Park. The County plan goes on to state that this acreage will continue to exceed the POS goal for the County’s projected population through 2010, but when the County’s population exceeds 49,620 additional eligible acreage may need to be acquired. Current population estimates put Queen Anne’s County’s population at approximately 48,904¹¹.

The projected population growth in the two scenarios outlined in the section will require an additional three to four acres in order to meet the POS land goal of 30 acres per 1,000 population. Queenstown will require new residential developments dedicate land for park and recreation facilities. Where appropriate, these land set asides will be developed as public park facilities and developers will be required to install improvements and facilities.

Development Impacts - County Services

Schools - School impacts as a result of projected growth in Queenstown are summarized in Table 4-7. Based on current information concerning public school capacity, student enrollment increases associated with both of Queenstown’s population growth scenarios can be accommodated without having to add facility capacity or staff (see Table 4-8). Teacher impacts are based maintaining student teacher ratios of one teacher per 20 students in grades K-3 and one teacher per 25 students in grades 4-12.

Consideration of school capacity must be caveated by noting that population growth impacts related to school facility capacity and teacher staffing are only for Queenstown and do not take into account other growth in the school districts that may result in additional students and teacher demand.

Table 4-7: School Impacts

Additional facility/service demand	Scenario 1	Scenario 2
Elementary School		
- New Students	19	27
- Additional Teachers	1	2
Middle School		
- New Students	9	13

¹¹ <http://www.census.gov/quickfacts/table/PST045215/24035,00>

Table 4-7: School Impacts

Additional facility/service demand	Scenario 1	Scenario 2
- Additional Teachers High School	1	1
- Students	13	19
- Teachers	1	1

Source: Peter Johnston & Associates, LLC

Table 4-8: Public School Impacts

School Facility	State Rated Capacity	Current Conditions		Growth Impacts Percent of Excess Capacity	
		Enrollment 2014	Excess Capacity	Scenario 1	Scenario 2
Centreville Elementary	550	515	35	26%	38%
Kennard Elementary	595	513	82	11%	16%
Centreville Middle	659	537	122	8%	11%
Queen Anne's County High	1263	1104	159	8%	12%

Source: Educational Facilities Master Plan, Queen Anne’s County Board of Education 2015, Peter Johnston & Associates, LLC

Police - Police matters in the Town are primarily handled by the County Sheriff’s Department with some addressed by the Maryland State Police. The Queen Anne’s County Sheriff’s Department current consists of approximately 48 sworn officers and five command officers. Collectively, the level of service is 1.1 personnel per 1,000 population. Neither growth scenario will have a significant impact of police services, requiring less than one sworn officer.

Other Services and Facilities

Fire and Rescue - Both scenarios considered in the section will not have a significant impact on fire and rescue service. Although additional personnel and facility space are indicated based in current local level of service measures, the impacts are small enough that they can likely be accommodated with existing facilities and volunteer numbers when one considers that current personnel and facility levels of service are well above national standards.¹²

¹² International City Council Management Association multiplier for demand for fire personnel; and National Planning Standard square footage multiplier for need for firehouse facilities.

Funding Strategies

Growth will require the Town and County fund the public facilities and services necessary to serve new residents and businesses. Revenues from property and income taxes will not likely be sufficient to meet all expenditures for public services and goods. In some instances, State and/or Federal grants and loans may be available to assist local governments.

Impact fees may be negotiated in an annexation agreement and/or when a developer's rights and responsibilities agreement is executed upon approval of a planned development. For example, in the annexation agreement for the Wheatland property, the owner agreed to impose an emergency service fees for fire and ambulance service for each unit of residential and commercial use. The owner also agreed to conduct a fiscal impact study and be responsible for the cost of all additional facilities and/or services required to be provided by the Town as a result of the development.

Queen Anne's County imposes a development impact fees on new residential and nonresidential development. These fees are intended to insure new residential and nonresidential development contribute their fair and proportionate share towards the costs of capital improvements reasonably necessitated by such new development and provide a means of financing public facilities needed to accommodate new development in a safe and timely manner. Impact fees are imposed to offset the capital costs of schools, fire service and parks and recreation facilities. The County's fee schedule could be used as the basis for negotiating impact offsets with developers of large-scale projects approved through the floating zone process.

Other forms of revenue to address growth impacts may need to be considered (see Table 4-9 for examples). Funding mechanisms the Town may want to consider include:

Adequate Public Facilities Ordinance (APFO) – The Town could adopt an APFO. An APFO ties development approvals to the existing and planned capacity of infrastructure based on quantifiable levels of service for public facilities and services. APFO level of service standards also can be used when negotiating a developer responsibilities in an annexation agreement or a Developers Rights and Responsibility Agreement (DRRA) as well.

Fiscal Impacts/Impact Fees - Major development projects should be required to identify and address fiscal impacts to the Town. These impacts could be addressed in a DRRA executed prior to development approval. As an alternative the Town can adopt an impact fee ordinance. Impact fees, also known as exactions, extractions, contributions, and proffers, are the financial responsibilities which a municipality places upon a developer to provide some or all of the physical improvements (from sewers and streets to parks and schools) necessitated by the development. Impact fees are levied as a condition for the approval of plat or building plans and subsequent permission to proceed with development. They are direct contributions by developers and may include dedication of land, construction of facilities, or payment of fees in lieu of these

facilities. They can be levied through written provisions in ordinances or through negotiations.¹³ For example, a fee could be levied to offset the cost of additional Town administration and meeting space, land can be dedicated for parks or schools and trails can be constructed to satisfy recreation land requirements.

Municipal Priority Funding Area - The Town should ensure that annexation areas are included within its municipal Priority Funding Area (PFA) so that these areas are eligible for State assistance for funding of infrastructure. In order to satisfy the requirements for “certification” annexed areas (for residential development) must be zoned to permit an average density of at least 3.5 dwelling units per acre and the area must be served or planned for service by public or community sewer. In addition, the Queen Anne’s County Master Water and Sewer Plan must be amended to reflect any proposed new service areas.

The County is the appropriate level of government to adopt some of these funding mechanisms, e.g., school impact fees or excise tax.

Table 4-9: Potential Funding Source to Address Municipal Growth Impacts

Facility/Service	Potential Funding Sources
School Facilities	Property tax, Excise Tax, Impact Fee, Federal/State School Construction Funds
Administration	
- Facilities	Property Tax, DRRA, Impact fee, grants and loans
- Personnel	Property tax, Service fees (e.g., zoning certificate fee, inspection fees), grants
Public Works	
- Facilities	DRRA, Impact fee, Connection fees, User fees, Public works agreement, grants, loans
- Personnel	Property tax, service fees (e.g., water and sewer charges)
Library Facilities	Property tax, excise tax, impact fee, Grants and loans
Police	
- Facilities	Property tax, DRRA, Impact fee
- Personnel	Property tax, fines and fees
Recreation Land	DRRA, Land dedication, State Program Open Space (POS)
Fire and Rescue - Nonprofit	
- Facilities	DRRA, grant, public and private contributions

¹³ Miles, Mike E., Emil E. Malizia, Marc A. Weiss, Gayle L. Berens, and Ginger Travis. 1991. *Real Estate Development: Principles and Process*. Washington, D.C.: Urban Land Institute.

County-Provided Fire and Rescue

- Facilities Property tax, excise tax, impact fee, special tax (e.g., fire districts tax), grants
- Personnel Property tax, special tax (e.g., fire district tax)

Water and Sewer Facilities DRRA, Public Works Agreements, connection fees, user charges

Annexation Plan

Infill and redevelopment within the Town could accommodate projected growth late into the planning period in either growth scenario considered in this section. Additional land zoned for residential development would have to be added to accommodate the buildout of either scenario.

The 2010 Community Plan envisioned population and economic growth would take place in a number of adjoining properties that would be annexed with the following build-out scenario:

- Callahan: Approximately 240 dwelling units including apartments, townhomes, duplexes, and single-family units on lots ranging from 2000 sq. ft. to 1.5 acres. Approximately 174 acres of land preservation.
- Dudley Home Farm: Approximately 290 residential units including town homes, duplexes, and single-family units. 209 acres in agricultural and open space preservation.
- Dudley North: Approximately 130 residential units of a Town-like mix of types and lot sizes including town homes, live work units, duplexes, and single-family. Approximately 25,000 sq. ft. of office and retail uses. Approximately 22 acres of preserved land.
- Dudley South: Approximately 150,000 sq. ft. office space. Approximately 400,000 sq. ft. retail space. Approximately 130 residential units including apartments, town homes, and live work units. Approximately 73 acres of land preservation.

Although important to long range growth of Queenstown, the population and household projections in Table 4-2 indicate that there will be no need to annex all of these properties during the planning period. Servicing land on the other side of US 301, i.e., Dudley South and the Callahan Farm is feasible, albeit with significant and costly upgrades to increase water and sewer service capacity.

From a community design perspective, making areas south of US 301 truly “connected” and a part of the physical and social fabric of the Town will be challenging. Without major intersection improvements at Cherry Lane the US 301 corridor presents a formidable physical barrier for convenient vehicle connection and an almost absolute barrier to pedestrian and bike connection.

Maintaining Queenstown's unique character and small-town atmosphere is difficult when islands of new residential neighborhoods are physically cut off from the existing Queenstown neighborhoods and town center by a major highway.

The land use concept for the Dudley South property in the 2010 Community Plan is for a mix of 550,000 square feet of commercial (400,000 square feet) and office use (150,000 square feet). Retail uses would have to compete for market share with the existing Prime Retail outlets and any regional commercial uses that might be built on the Wheatland site. A regional shopping center (300,000 to 750,000 square feet of the retail) requires a population of 100,000 to 250,000 within a range of 8 to 15 miles to support it.¹⁴ A trade area of approximately eight to ten miles surrounding Queenstown had a 2000 population of approximately 26,500, well below the threshold requirement for a regional center.

Considering the challenges and limitations for servicing properties south of US 301 and integrating their uses into the community fabric, the Town's priority is for annexation and phased build-out of the Dudley North site. This site presents the best opportunity to create a "connected" neighborhood. Next to Queenstown Harbor golf course, this site may be the easiest and most cost effective for expansion of the water and sewer systems. Either population growth scenario could be accommodated on the Dudley North property in a development with the 130 dwelling units as was envisioned on the 2010 Community Plan or developed to its estimated maximum capacity of 190 units.

Long Range Growth

The areas shown as "Long Range Growth" on the Land Use Plan area is not planned for annexation but could be important expansion areas for the Town in the future. These properties represent opportunities for significant Town growth beyond the 2040 planning horizon. This land use category includes 490 acres on properties identified as the Dudley Home Farm, Dudley South and the Callahan Farm in the 2010 Community Plan and planned for approximately 530 residential units and over half a million square feet of retail and office use. The long term development of these properties at higher densities is a preferable smart growth alternative for both the Town and County. Consequently, planning for the future of these properties should reflect closely coordinated Town and County policies.

Growth Summary

Build out of Queenstown envisioned in this Plan would result in an increase of approximately 820 residential units and over 1.2 million square feet of nonresidential land uses (see Table 4-10).

¹⁴ Creating Walkable Neighborhood Business Districts - An exploration of the demographic and physical characteristics needed to support local retail services, Gregory Easton and John Owen, June 2009

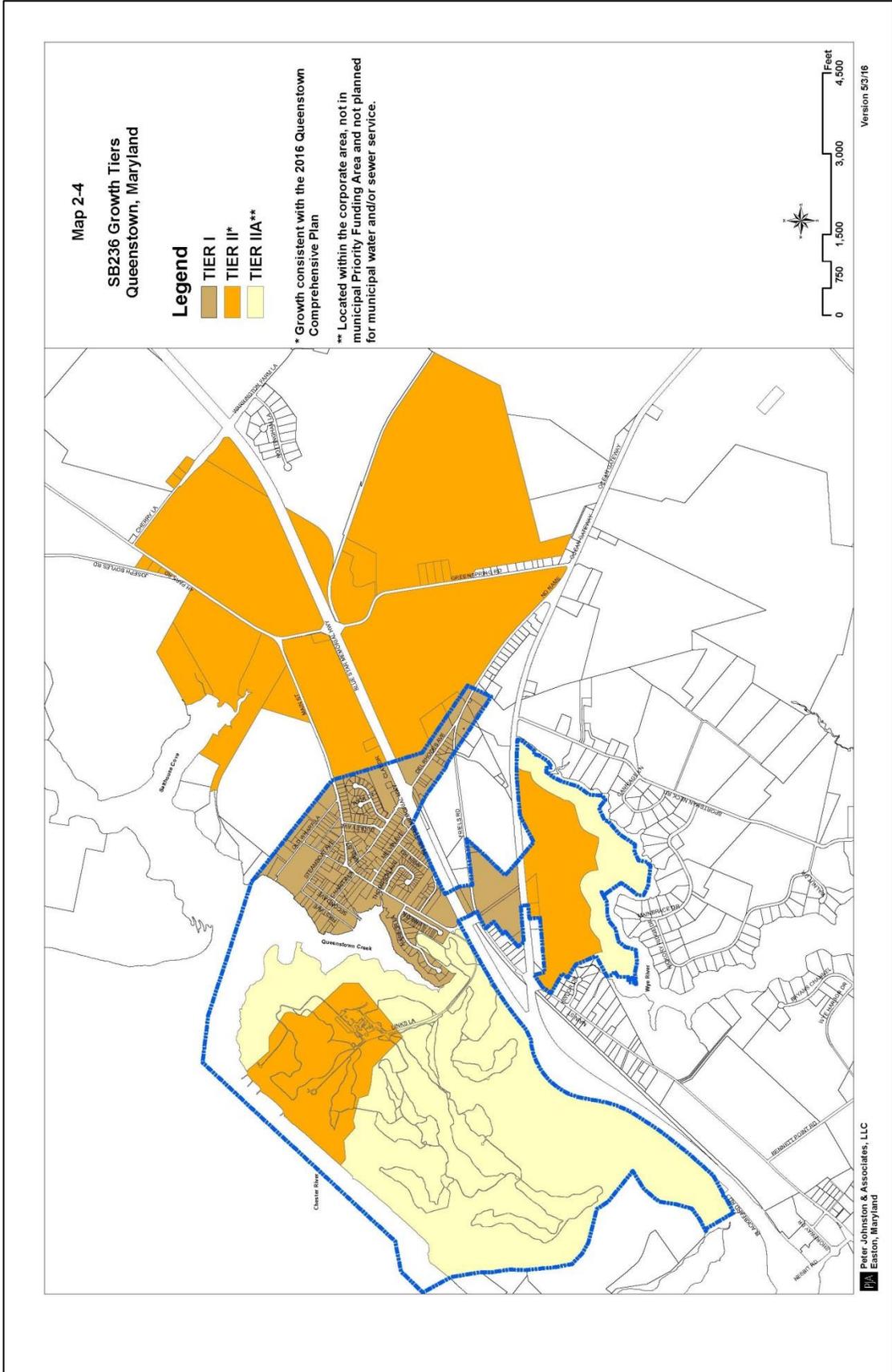
Table 4-10: Growth Summary

	Dwelling Units	Commercial/Office (sq. ft.)
Town		
Infill	30	
Golf Resort	0	185,000
Town Center	0	15,000
Wheatlands Farm		500,000
Town Sub-Total	30	700,000
Growth Areas		
Annexation		
Dudley North	130	25,000
Long Range Growth		
Callahan	240	0
Dudley Home Farm	290	0
Dudley South	130	550,000
Growth Sub-total	790	575,000
Town & Growth Areas Total	820	1,275,000

Source: Peter Johnston & Associates, LLC

SB 236 Growth Tiers

Title I, Subtitle 5 of the Land Use Article ("LU") of the Annotated Code of Maryland established the standards for designating growth tiers. Queenstown prepared its first Growth Tiers map in 2013 with revisions adopted in 2014. The Tier I and II designations shown on Map 4-1 reflect Queenstown's current planned growth including priority areas planned for annexation and long range growth areas where annexation is not currently anticipated but expected at some point in the future. As required by LU § 1-505 of the Annotated Code Map 4-1 is hereby incorporated as an element of the comprehensive plan.



Rural Buffer

The rural buffer shown on Map 2-3 encompasses approximately 1,575 acres of land. Most is zoned either Agriculture or Countryside under the Queen Anne's County zoning system. The one exception is the Rhodes Farm which is zoned Suburban Estate. The Agriculture and Countryside zoning classifications only permit very low density residential development permitted with substantial open space requirements.

In addition to limits on development density and significant open space requirements, Queen Anne's County zoning establishes resource protection standards for the floodplain, streams, wetlands, steep slopes, erosion hazard areas, and woodlands. Significantly, the County requires 100-foot buffer from all perennial streams and a 50-foot from all intermittent streams. Disturbance to woodlands is limited to 40 percent under the County Zoning Code. Under the Forest Conservation Ordinance the conservation threshold is 50 percent of existing forest. Sites with less than 20 percent forest must be afforested up to this level. In addition the Queen Anne's County Zoning Ordinance provides that no disturbance of the habitat of threatened and endangered species is allowed except as permitted by U.S. Fish and Wildlife Services or Maryland Department of the Environment or Maryland Department of Natural Resources.

Queen Anne's County's zoning performance standards help to insure that land use in the rural buffer is consistent with the objective of maintaining a distinct rural transect around the Town and sensitive features that help define the character of this area are regulated to require best management practices.

Interjurisdictional Coordination

The Economic Development, Planning and Resource Protection Act of 1992, as well as recent updates, directs local governments and the State to coordinate their planning and development efforts to achieve the State's "Visions." Under the Act, local governments must adopt comprehensive plans which include the twelve "Visions". Zoning and other planning implementation mechanisms must be consistent with these plans. Local comprehensive plans must include recommendations for improving planning and development processes to encourage economic expansion and to direct future growth to appropriate areas. Such development and economic growth often have inter-jurisdictional impacts, including impacts on transportation, infrastructure, environment, and other areas of concern. For this reason, it is necessary for planning, growth strategies, and policies to promote and encourage cooperation among adjacent jurisdictions.

SECTION 5: NATURAL RESOURCE CONSERVATION

Introduction

Three of the State's Vision statements are relevant to the discussion of natural resource conservation. These are:

- Environmental Protection – Land and water resources, including the Chesapeake Bay and Coastal Bays, are carefully managed to restore and maintain healthy air and water, natural systems and living resources.
- Resource Conservation – Waterways, forest, agricultural areas, open space, natural systems and scenic areas are conserved.
- Stewardship – Government, business entities, and residents are responsible for the creation of sustainable communities by collaborating to balance efficient growth with resource protection.

Concern for the conservation of agriculture land, forest and mineral resources and protection of sensitive environmental areas transcends arbitrary boundaries. Issues such as the loss of forest, sedimentation of streams, degradation of receiving waters and loss of wildlife habitat in the surrounding watersheds and beyond are of concern for all levels of government. Queenstown and Queen Anne's County share responsibility for conserving natural resources and protecting sensitive environmental areas and must be mindful of potential negative impacts on sensitive and important natural features when planning for future growth, redevelopment and infill.

Goal, Objectives and Policies

Goal

Preserve and protect natural resources and sensitive environmental areas from the adverse impacts of land use change.

Objectives

- Minimize adverse impacts on water quality in receiving waters.
- Work with Queen Anne's County and the State of Maryland to develop appropriate strategies for the enhancement and protection of green infrastructure in order to conserve fish, wildlife, and plant habitats.

Policies

- Queenstown will require development design be done in a manner that will maximize preservation of significant natural features and protect sensitive environmental areas.
- Land use changes in Queenstown will result in a no net loss of wetlands, forests, and stream buffers to the maximum extent practical.

Sensitive Areas Element

The *Maryland Economic Growth, Resource Protection and Planning Act of 1992* added a requirement to the Land Use Article that comprehensive plans contain a Sensitive Areas Element. In 2006 the Maryland Legislature passed House Bill 1141 expanded the list of sensitive areas to be addressed in comprehensive plans, adding wetlands, agricultural lands, and forest resource protection/conservation areas. As a result, sensitive areas now include the following:

- Streams and stream buffers,
- 100-year floodplain,
- Endangered species habitats,
- Steep slopes,
- Other sensitive areas, such as wetlands or forested areas, that a jurisdiction wants to protect from the adverse impacts of development; and
- Agriculture and forest lands intended for resource protection or conservation

How these features are managed affects the quality of fish and wildlife habitat, biodiversity and water quality in the Chesapeake Bay and its tributaries. Land use and growth scenarios should be judged on their potential impact on these areas and development standards should require avoidance or minimization of adverse impacts.

Plan Assessment

Watersheds

Parts of Queenstown's corporate area are located in the Lower Chester River and Wye River sub-watersheds both of which are part of the Chester River Watershed (See Map 5-1). Potential impacts on natural resources including sensitive environmental areas implied in this plan are assessed based on how planned land use changes may result in the loss of or disturbance to resource lands and sensitive environmental areas in the context of these surrounding sub-watersheds.

The Lower Chester River sub-watershed encompasses approximately 82,245 acres, 17,509 acres or about 21 percent of which are uplands and the balance tidal water. The Queenstown portion (+/-790 acres) is about 4.5 percent of the land area of this sub-watershed. The Planned

Annexation area shown on Map 1-3 would increase the percentage of town land in the sub-watershed to slightly less than five percent of the total. Annexation of the Long Range Growth areas shown on Map 1-3 would increase the town land in the sub-watershed to about six percent of the land area of the Lower Chester River sub-watershed.

The Wye River sub-watershed is 75,706 acres, approximately 50,252 of which is uplands and the balance tidal water. Approximately 261 acres or about one half of one percent of the Queenstown incorporated area is located in the Wye River sub-watershed. The Planned Annexation area shown on Map 1-3 would increase the percentage of town land in the sub-watershed to slightly more than one half percent of the total land area. Annexation of the Long Range Growth areas shown on Map 1-3 would increase the town land in the sub-watershed to slightly more than 1.5 percent of the total land area.

Sensitive Areas

The Maryland Department of Natural Resources (DNR) has developed several GIS data bases that cover priority resource conservation and habitat protection areas (See Map 5-2). The Queenstown annexation and long range growth plan was overlain on these sensitive areas coverages in order to evaluate how land use changes in Queenstown may affect sensitive habitats. Changes in land use that result in the loss of resource land, i.e., forest, agriculture land, and mineral resources are assessed because of their potential effect on stormwater runoff characteristics and water quality in receiving waters. A more specific assessment of the impacts of Queenstown's growth plan on water quality in receiving waters is addressed in Section 6, the Water Resources Element.

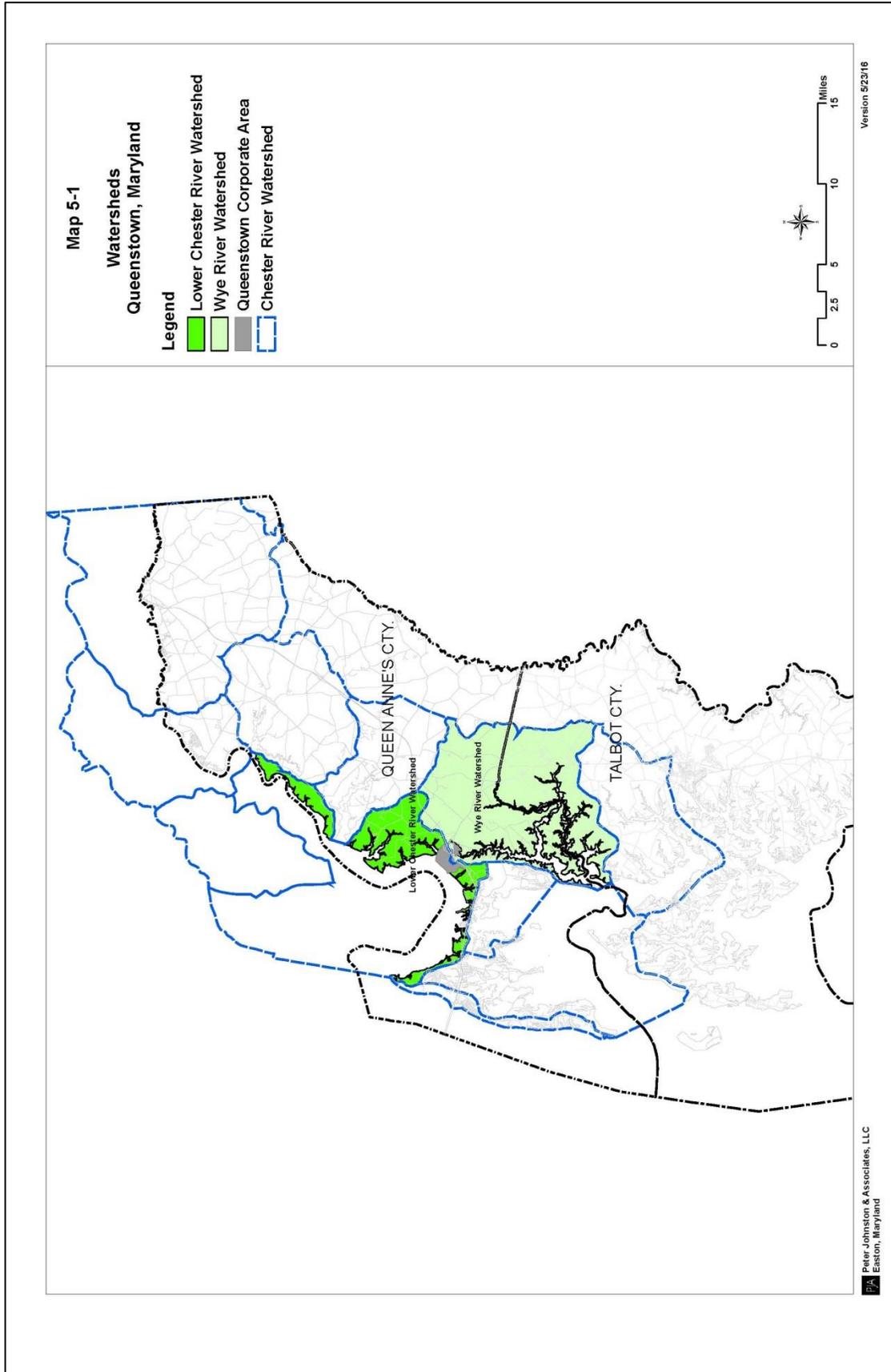
Coverages used to assess potential impacts of Queenstown's growth plans on natural resources and sensitive areas include Maryland DNR's Green Infrastructure, Biodiversity Assessment Network (BioNet), Sensitive Species Project Review Areas (SSPRA), Forest Interior Dwelling Bird Species (FIDS) habitat, and Targeted Ecological Areas (TEAs). The areas included in these coverages have been combined to create a comprehensive layer depicting what are here termed "targeted habitat protection areas" (see Map 5-2). The geographic extent of this combined coverage encompasses most sensitive environmental areas, including nontidal wetlands, streams and stream buffers, the habitat of rare, threaten and endangered species and species in need of conservation, forest interior dwelling bird species and the majority of the 100-year floodplain. Layer characteristics and purpose of each of these components are briefly described as follows:

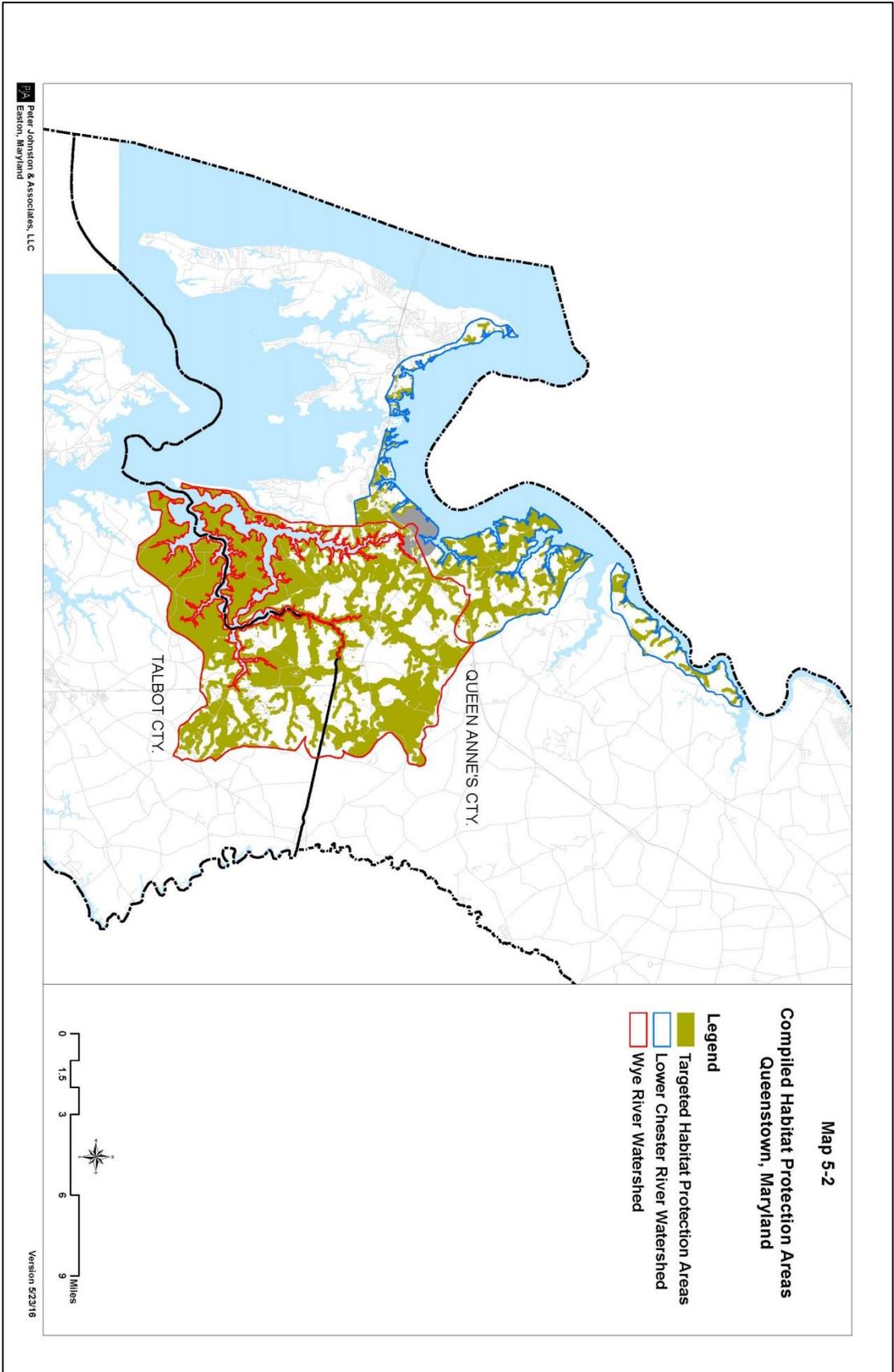
Green Infrastructure: Maryland's green infrastructure is a network of undeveloped lands that provide the bulk of the state's natural support system. "Ecosystem services, such as cleaning the air, filtering water, storing and cycling nutrients, conserving soils, regulating climate, and maintaining hydrologic function, are all provided by the existing expanses of forests, wetlands, and other natural lands. These ecologically valuable lands also provide marketable goods and services, like forest products, fish and wildlife, and

recreation. The Green Infrastructure serves as vital habitat for wild species and contributes in many ways to the health and quality of life for Maryland residents.”¹⁵

DRAFT

¹⁵ <http://dnrweb.dnr.state.md.us/gis/data/data.asp>





Biodiversity Conservation Network (BioNet): “The BioNet of Maryland layer systematically identifies and prioritizes ecologically important lands to conserve Maryland’s biodiversity (i.e., plants, animals, habitats, and landscapes). This dataset aggregates numerous separate data layers hierarchically according to the BioNet Criteria Matrix. These data were needed to maximize the influence and effectiveness of public and private conservation investments; promote shared responsibilities for land conservation between public and private sectors; and guide and encourage compatible land uses and land management practices.”¹⁶

Sensitive Species Project Review Areas (SSPRA): “The statewide vector file shows buffered areas that primarily contain habitat for rare, threatened, and endangered species and rare natural community types. It was created over USGS 7.5 minute topographic quadrangle maps and it generally includes, but does not specifically delineate, such regulated areas as Natural Heritage Areas, Wetlands of Special State Concern, Colonial Waterbird Colonies, and Habitat Protection Areas. This data layer was originally created to provide information to local jurisdictions and state agencies to assist with assessing environmental impacts and reviewing potential development projects or land use changes.”¹⁷

Forest Interior Dwelling Bird Species (FIDS) Habitat: Potential habitat layer for Forest Interior Dwelling Species in the State of Maryland. These data are only the results of a model depicting where FIDS habitat might occur based on certain criteria.

This file was created for the purposes of planning and analysis for the conservation of a group of species, called Forest Interior Dwelling Species (FIDS), known to require habitat conditions in the interior of forests for optimal reproduction and survival.

Targeted Ecological Areas (TEAs): “TEAs are lands and watersheds of high ecological value that have been identified as conservation priorities by the Maryland Department of Natural Resources (DNR) for natural resource protection. These areas represent the most ecologically valuable areas in the State: they are the "best of the best". TEAs are preferred for conservation funding through Stateside Program Open Space.

The first component is the updated Green Infrastructure Assessment (circa 2010) which identifies large, contiguous blocks (hubs) of significant forests and wetlands and their connecting corridors. The Green Infrastructure’s hub and corridor network of habitat allows plant and animal migration, reduces forest fragmentation if protected, and provides important ecosystem services, such as biodiversity, cleaning air and water, storing nutrients, and protecting areas against storm and flood damage.

¹⁶ Ibid

¹⁷ Ibid

The rare species and wildlife habitat component identifies areas that support Rare, Threatened, and Endangered Species, rare plant and animal communities, species of Greatest Conservation Need, and wildlife concentrations.

The aquatic life hotspots component identifies watersheds supporting freshwater stream ecosystems where conservation is needed to protect and restore areas of high aquatic biodiversity, Tier II regulated streams, and brook trout streams.

The water quality protection component identifies sensitive lands such as forests, wetlands, and steep slopes where preservation is important for water quality.

The coastal ecosystems component identifies Blue Infrastructure shoreline and watershed protection priorities. These are areas important for sustaining coastal and tidal ecosystems and also identify land areas important for sustaining spawning and nursery areas for important commercial and recreational fisheries.

The climate change adaptation component identifies areas important for sustaining wetlands ecosystems that are changing and moving landward in response to sea level rise.

The purpose of TEAs is to define areas that present opportunities for multiple land conservation efforts to work together by leveraging Stateside Program Open Space (POS) resources. Land trusts, conservancy organizations and other government programs can use this map to identify cooperative projects that meet Stateside POS ecological criteria. TEAs can help local governments identify areas suitable for resource conservation that support state land conservation investments and complement these designations with suitable zoning. Since TEAs represent the most ecologically valuable areas in the state, additional consideration should be given to avoiding environmental impacts within these areas.”¹⁸

The existing Town boundary includes three protected habitats, the Great Blue Heron rookery, a bald eagle nesting site, and Delmarva Fox Squirrel habitat, all on the golf course property. Steep slopes, one of the legislated sensitive areas, are not an important issue in the watershed which is relatively flat. Some localized important steep slopes are found adjacent to streams which are captured in stream buffers within the Targeted Habitat Protection Area overlay shown on Map 5-2.

Resource Land

Agriculture and forest land use dominate in the Lower Chester River and Wye River watersheds (see Table 5-1 and Map 5-3). Retaining or increasing forest cover in the watersheds is basic to the State’s vision for environmental protection, resource conservation and stewardship as is

¹⁸ Ibid

protection for sensitive environmental areas and water quality in the receiving streams and conservation of wildlife habitat. Land conversion from vegetated or forested conditions can result in a reduction of functioning soils resources which increases rates of stormwater run-off. At a comprehensive planning level growth scenarios are evaluated based on the extent forest lands are converted to less protective uses. At the site development level, regulations require best management practices that include environmental site design and mitigation to minimize adverse impacts of land use changes to sensitive areas and receiving streams.

Minimizing conversion of agriculture land by concentrating growth is central to Queen Anne’s County’s vision which is to “protect and sustain a primarily agricultural, forested and maritime community within the limits of natural resources by concentrated future growth in existing towns and population centers, and preserves the County’s natural beauty and resources for future generations.”¹⁹ At a comprehensive planning level growth scenarios are evaluated based on the extent land use changes results in the loss of productive agriculture lands in the watersheds keeping in mind that Queenstown’s role as a growth center takes precedence.

Table 5-1: Agriculture and Forest Land – Lower Chester River and Wye River Sub-watersheds

	Acres	Percent of Total
Lower Chester River Watershed land Area	17,509	100%
Agriculture Land	9,691	55%
Forest	4,889	28%
Percent of Watershed	14,580	83%
Wye River Watershed land Area	50,252	100%
Agriculture Land	32,341	64%
Forest	12,568	25%
Percent of Watershed	44,909	89%

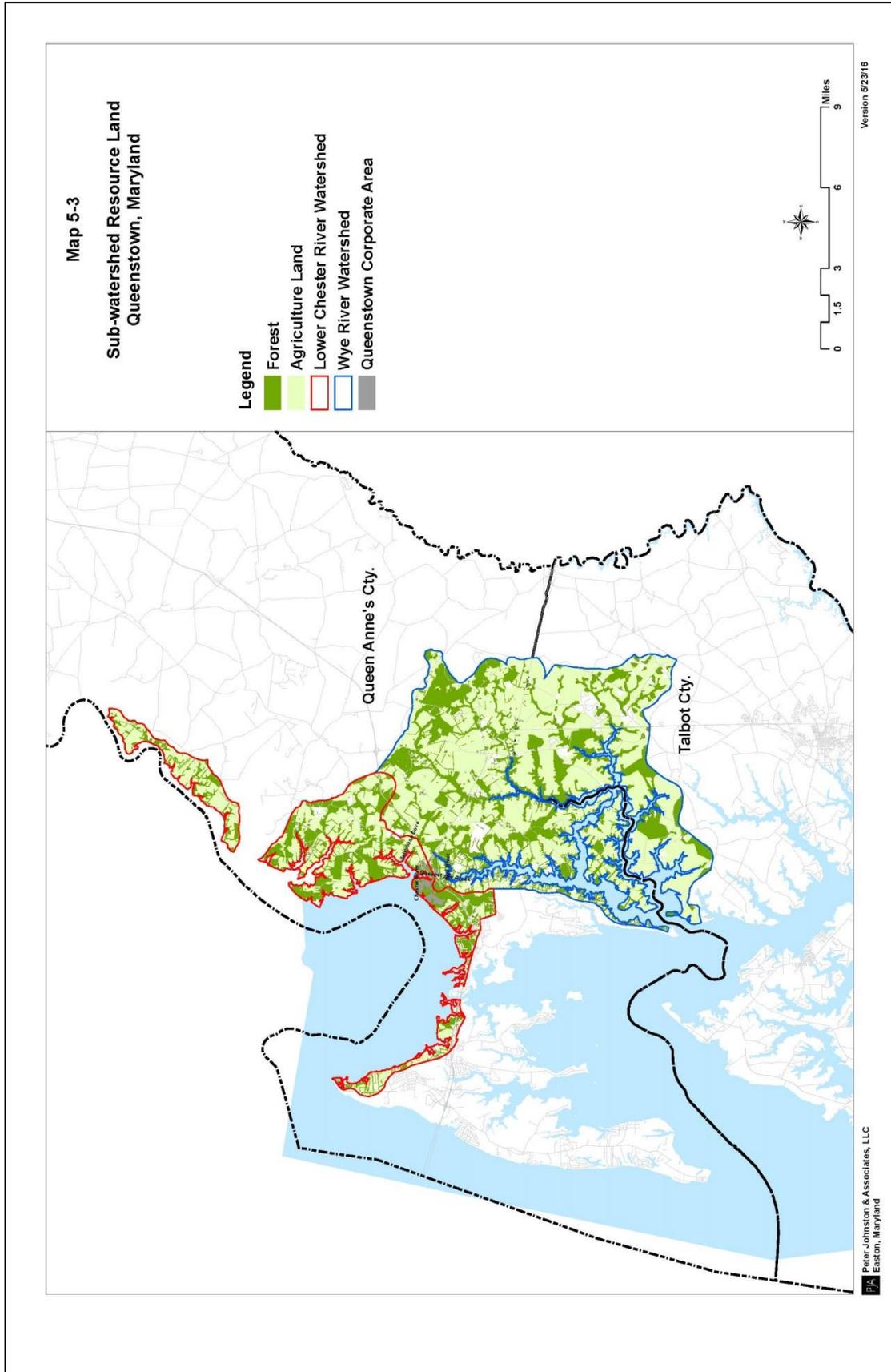
Source: 2010 Land Use Land Cover, Maryland Department of Planning, Peter Johnston & Associates, LLC

Mineral Resources

According to the Queens Anne’s County Comprehensive Plan 2010 potential areas of sand and gravel deposits in the County are found in the QU Upland Deposits (Eastern Shore) as shown on Map ESA-7. As concerns Queenstown, mineral resources extraction is not permitted in the corporate limits. The Town’s planned growth areas will not substantially reduce the area of potential mineral resources which the County concluded are located outside of the Lower Chester River and Wye River sub-watersheds.²⁰

¹⁹ Queen Anne’s County Comprehensive Plan 2010, Section 1-0 Land Use, pg. 1-5

²⁰ Queen Anne’s County Comprehensive Plan 2010, Section 2.9.2 Map ESA-7: Potential Mineral Resource Areas, pg. 2-23.



Protected Land

Map 5-4 shows portions of the sub-watersheds that are already afforded some level of protection under existing programs designed to conserve natural resources and protect sensitive environmental area. Collectively these programs encompass approximately 14,174 acres and include slightly more than a fifth of the agriculture and a fifth of the forest resource land in the Lower Chester River and Wye River watersheds. These programs include the following:

Maryland Environmental Trust Land: The Maryland Environmental Trust (MET) is a statewide local land trust governed by a citizen Board of Trustees. Since its creation by the General Assembly in 1967, MET's main goal is the preservation of open land, such as farmland, forest land, and significant natural resources. The primary tool for doing this is the conservation easement, a voluntary agreement between a landowner and the MET Board of Trustees. MET Conservation Easements promote growth management, the protection of significant natural resources and rural areas, and discourage sprawling development patterns. A Conservation Easement is a perpetual legal agreement between a landowner (grantor) and the Trust (grantee) ensuring that a property shall not be developed beyond a limit agreed upon by both parties. The land is thereby protected and preserved without detriment to the rights of ownership, occupancy, or privacy, while the agreement provides for significant income, estate, and property tax benefits.

Department of Natural Resources Land: Land owned by the Maryland Department of Natural Resources and lands that are generally thought to be protected from development pressures.

Agriculture Easements: The Maryland Agricultural Land Preservation Foundation (MALPF), housed within the Maryland Department of Agriculture (MDA), protects agricultural lands through the use of perpetual easements. The purpose of the program is to preserve productive agricultural land and woodland in Maryland to provide for the continued production of food and fiber, curb the extent of random urban development, and protect these lands as open space.

Growth Plan Impacts

Conversion of agriculture and forest resource lands to urban use and potential encroachment on priority habitat areas associated with Queenstown's growth plan (See Map 1-3) are summarized in the following tables (see Table 5-2, 5-3 and 5-4). Land conversion from agriculture and forest use associated with the Annexation areas outlined in the Land Use Plan is minimal across all features (agriculture land, forest and targeted habitat protection areas), less than one percent. Encroachments into habitat protection areas, also minimal, do not directly impact critical buffers or listed sensitive environmental areas. Although low, impacts associated with the Long Range

Growth areas in the Land Use Plan are more substantial. This is especially an issue where development could result in the loss of important wildlife corridors, stream or shoreline buffers.

Table 5-2: Growth Plan Impacts – Forest Land Converted to Urban Use

	Total (Acres)	Lower Chester River Watershed (Acres)	Wye River Watershed (Acres)
Forest	17,458	4,889	12,568
Forest Land Converted			
- Annexation	15	7	8
- Long Range Growth	161	26	135
Land Use Change	Percent Converted		
- Annexation	0.09%	0.14%	0.07%
- Long Range Growth	0.92%	0.53%	1.07%

Source: Peter Johnston & Associates, LLC

Table 5-3: Growth Plan Impacts – Agriculture Land Converted to Urban Use

	Total Area (Acres)	Lower Chester River Watershed (Acres)	Wye River Watershed (Acres)
Agriculture Land	42,032	9,691	32,341
Agriculture Land Converted			
- Annexation	59	59	0
- Long Range Growth	493	199	294
Land Use Change	Percent Converted		
- Annexation	0.14%	0.60%	0.00%
- Long Range Growth	1.17%	2.05%	0.91%

Source: Peter Johnston & Associates, LLC

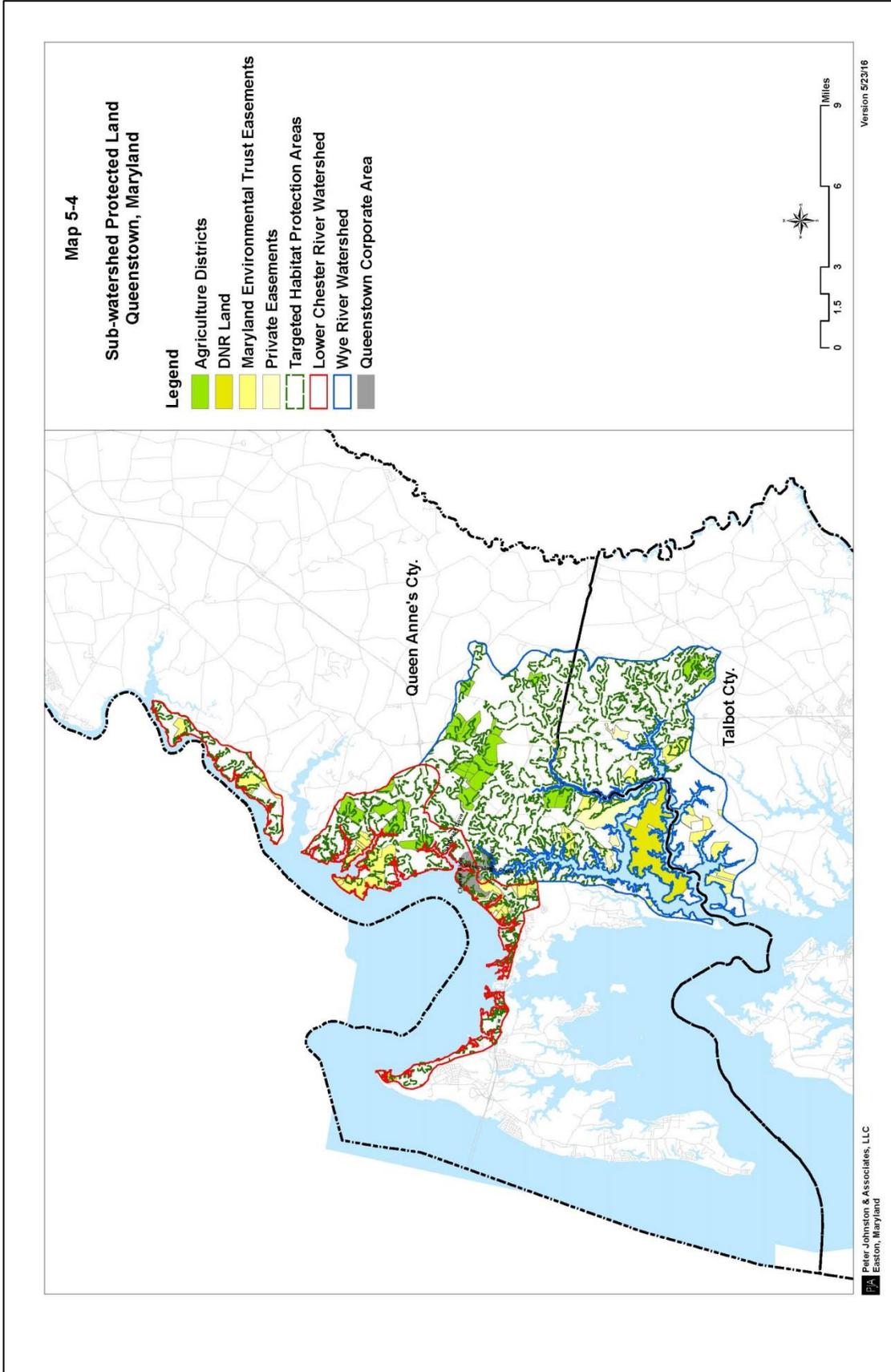


Table 5-4: Growth Plan Impacts – Targeted Habitat Protection Areas Disturbed

	Total Area (Acres)	Lower Chester River Watershed (Acres)	Wye River Watershed (Acres)
Targeted Habitat Protection	39,321	8,249	31,072
Habitat Disturbed			
- Annexation	16	11	5
- Long Range Growth	399	93	306
Land Use Change	Percent Converted		
- Annexation	0.04%	0.14%	0.02%
- Long Range Growth	1.02%	1.13%	0.98%

Source: Peter Johnston & Associates, LLC

Existing Protection Measures

Regardless of location, all future development in Queenstown is subject to minimum performance standards for environmental protection. Existing regulations establish minimum performance standards that limit the allowable area of disturbance on sites in order to minimize impacts on sensitive areas and require appropriate buffers for sensitive environmental features.

Queenstown Zoning Code

The Queenstown Zoning Code requires a minimum three-hundred natural buffer from the Wye River and perennial streams feeding the Wye River. A one-hundred foot natural buffer is required from all other perennial streams. Stormwater and/or sediment control devices are not permitted in these stream buffers. Stream buffers may be reduced to no less than seventy-five feet for required road crossings and public or community facilities if disturbance is minimized. Queenstown requires these buffers be established in woody or wetland vegetation when a change in land use occurs.

Where the one-hundred foot perennial stream buffer includes contiguous 100 year floodplain and nontidal wetlands it must be expanded to include hydric soils, highly erodible soils and soils on slopes greater than fifteen percent (15%) that are contiguous with the perennial stream, any 100 year flood plain adjacent to the stream, or any nontidal wetlands adjacent to the stream to a maximum distance of three hundred (300) feet.

A minimum fifty foot buffer is required from all intermittent streams. Permanent or temporary stormwater management and sediment control devices are not be permitted in this buffer. Road crossings and public or community facilities may be permitted if disturbance is minimized. Buffers must be established in woody or wetland vegetation when a change in land use occurs.

A minimum twenty-five foot setback from all non-tidal wetlands is required for all development around the extent of the delineated nontidal wetland except as permitted by the U.S. Army Corp of Engineers and the State of Maryland, Department of Natural Resources, Non-tidal Wetland Division.

Grading, removal of vegetative cover and trees, and paving are not permitted on any land in excess of fifteen (15) percent slope.

Applicants for a development activity, redevelopment activity or change in land use must identify all applicable Habitat Protection Areas including Federal or State threatened or endangered species or species in need of conservation, forest areas utilized as breeding areas by interior forest dwelling birds, and designated Natural Heritage Areas. If the development site is in or near a Habitat Protection Area the applicant must request review by the Department of Natural Resources Wildlife and Heritage Service for comment and technical advice. Based on the Department's recommendations, additional research and site analysis may be required to identify the specific location of the Habitat Protection Area on or near the site. If the presence of a Habitat Protection Area is confirmed by the Department of Natural Resources, the applicant must develop a Habitat Protection Plan in coordination with the Department of Natural Resource. The applicant must obtain approval of the Habitat Protection Plan from the Planning Commission or the appropriate designated approving authority. The specific protection and conservation measures included in the Plan will be considered conditions of approval of the project.

Queenstown Critical Area

Queenstown adopted a Critical Area Program a few years after the Maryland General Assembly adopted the Chesapeake Bay Critical Area Protection Program (Natural Resources Article 8-181-8-1816) in 1984. Queenstown's Critical Area Program is embodied in a series of implementing provisions contained in the Zoning Ordinance and Subdivision Regulations. The policies and goals included in the Queenstown Critical Area Program are aligned with those of the Natural Resource Article, namely:

- to conserve fish, wildlife, and plant habitats; and
- to establish land use policies for development in the Critical Area which accommodate growth and address the fact that even if pollution is controlled, the number, movement, and activities of persons in that area can create adverse environmental impacts.

The Critical Area includes the Chesapeake Bay, its tributaries to the head of tide, tidal wetlands, plus all land and water within 1,000 feet beyond the landward boundary of these waters and wetlands. Slightly more than sixty percent of Queenstown's upland area is within the Critical Area.

Development standards in the Zoning Ordinance include requirements for identifying and protecting environmental and sensitive features located within the Critical Area, including but not limited to plant and wildlife habitat, forests and woodlands, hydric and highly erodible soils, steep slopes, streams, wetlands and shorelines. Minimum buffer widths and vegetation requirements are applicable to tidal shoreline areas and along perennial and intermittent streams. These buffer requirements have been incorporated into the sensitive area protection standards applicable to land outside the Critical Area.

Queenstown Floodplain Ordinance

Queenstown adopted an updated Floodplain Ordinance in 2015. This ordinance was based on the Maryland Model Floodplain Ordinance. It incorporates the Flood Insurance Rate Maps (FIRMs) recently updated by the State of Maryland in conjunction with the Federal Emergency Management Agency (FEMA).

The Floodplain Ordinance requires development and new construction in the floodplain meet certain flood protection measures including construction of the lowest floor two foot or above the base flood elevation and utilization of certified flood-proof construction techniques. Construction in the floodplain is prohibited unless an applicant can prove hardship (other than economic). Improvements that are not substantial are required to be constructed to minimize damage during flooding or be elevated to the greatest extent possible. Proposed floodplain subdivisions must submit plans for maintenance of forest cover, flood protection setbacks, re-vegetation, accommodation of stormwater runoff, and prevention of erosion.

Queenstown Stormwater Management Ordinance

Queenstown adopted an updates Stormwater Management Ordinance in 2010. The stated purpose of this Ordinance is to protect, maintain, and enhance the public health, safety, and general welfare by establishing minimum requirements and procedures that control the adverse impacts associated with increased stormwater runoff. Queenstown's goal is to manage stormwater by using environmental site design (ESD) to the maximum extent practicable (MEP) to maintain after development as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding, and use appropriate structural best management practices (BMPs) only when necessary. This will restore, enhance, and maintain the chemical, physical, and biological integrity of streams, minimize damage to public and private property, and reduce the impacts of land development. The Stormwater Management Ordinance adopts by reference the following guidance documents:

- The 2000 Maryland Stormwater Design Manual , Volumes I & II (Maryland Department of the Environment, April 2000), and all subsequent revisions serves as the official guide for storm water management principle , methods, and practices.

- USDA Natural Resources Conservation Service Maryland Conservation Practice Standard Pond Code 378 (January 2000).

Forest Conservation Ordinance

Queenstown adopted a Forest Conservation Ordinance that is applicable to all land outside of the Chesapeake Bay Critical Area. Anyone making applications for subdivision, grading permit or sediment control plan for a tract of 40,000 square feet or more is subject to the requirements of the Forest Conservation Ordinance. Applications for these activities must include a forest stand delineation and forest conservation plan. Forest conservation thresholds by land use categories apply. Priority planting areas include buffers for streams, corridors to connect existing forests, buffers between differing land uses and expansion of existing forests. The use of native plant materials is encouraged.

DRAFT

SECTION 6: WATER RESOURCES

Introduction

Queenstown's "Water Resources Element" (WRE) satisfies a basic planning requirement mandated by Maryland House Bill 1141 (HB 1141). The purpose of the WRE is to assess water resource capacity to meet current and future needs. Specifically, the statutory requirements are to:

- Identify drinking water and other water resources that will be adequate for the needs of existing and future development proposed in the land use element of the plan, considering available data provided by the Maryland Department of the Environment (MDE).
- Identify suitable receiving waters and land areas to meet the storm water management and wastewater treatment and disposal needs of existing and future development proposed in the land use element of the plan, considering available data provided by MDE.
- Adopt a WRE in the comprehensive plan on or before October 1, 2009, unless extensions are granted by Maryland Department of Planning (MDP) pursuant to law.

The findings of the WRE influence other Plan elements including: 1) the Land Use Plan; 2) Municipal Growth; 3) Community Facilities; and 4) Natural Resources. The WRE evaluates water resource capacity limits and their potential implications for facilitates development and growth management strategies.

Goal, Objectives and Policies

Goal

Manage water resources for sustainability.

Objectives

- Maintain a safe and adequate drinking water supply to accommodate the needs of the current Queenstown population as well as future generations.
- Invest in sewer infrastructure that will provide adequate treatment capacity for projected demand and reduce pollutant loading to the Chesapeake Bay and its tributaries in the Queenstown Planning Area.

- Require the application of best management practices to protect and enhance the quality of surface water and groundwater resources including wetlands, the Chesapeake Bay, and its tributaries.
- Promote coordinated planning between jurisdictions and agencies responsible for drinking water, wastewater, and stormwater management.
- Engage the public in watershed conservation and promote a stewardship ethic.

Policies

- Design of development on farmland converted to urban use will repair and restore essential functions of the natural resource base where needed and enhance water quality over the long term.
- Existing woodlands will be preserved to the maximum extent practical and expanded to connect with nearby woodlands.
- Stream protective corridors and buffers will be enhanced or restored.
- Tributaries of Queenstown Creek and the Wye River will be protected.
- All development will reflect conservation and environmental site design principals

Hydrogeologic Setting

The following discussion provides an overview of Queenstown's regional hydrogeologic setting and its linkages with local water resources in the Queenstown Planning Area.

Geology

Queenstown is located within the Atlantic Coastal Plain physiographic province, which extends from New York, across Florida, and through the Gulf Coast. The region is characterized by nearly flat surface topography superimposed on deep, unconsolidated (loose) layers of sand, silt, and clay. The sediments accumulated under varying depositional environments imposed by fluctuations in mean sea level which controlled the pattern in distribution and texture of materials deposited across the region. The resulting interbedded geologic layers impose a strong influence on current water resources in the Queenstown Area.

The Atlantic Coastal Plain aquifer system in Maryland consists of an alternating series of aquifers and confining units that descend and widen as they extend toward the Atlantic Ocean.

The major aquifers in the Coastal Plain system are the Patuxent, Patapsco, Magothy, Aquia and Piney Point Formations, and the Chesapeake Group (see Figure 7-1).

In the mid-Atlantic region, the Coastal Plain wedge of sediments increases in thickness from a featheredge near the Piedmont Fall Zone to more than 2.5 miles thick under the continental shelf. The sediments rest on an eroded surface of metamorphic, crystalline rock formed more than 230 million years ago.²¹ The oldest and deepest overlying sediments include Cretaceous clay, sand, and gravel stripped from the Appalachian Mountains and deposited in deltas to the newly formed Atlantic Ocean basin approximately 100 million years ago. These vastly thick (as much as 4,500 feet), ancient deposits were able to form because the Delmarva Peninsula occurred along an extremely active continental plate boundary. Approximately 35 million years ago, a large meteorite interrupted this deposition pattern, creating a crater more than 55 miles in diameter in the southern portion of the Chesapeake Bay. Since its impact, more than 1,000 feet of additional sediment accumulated, mostly during warm interglacial periods and high sea level conditions similar to today's climate. Across the Atlantic Coastal Plain, the long-term geologic history continues to control the effects of climate fluctuations on surficial features, such as shorelines, waterways, and wetlands.

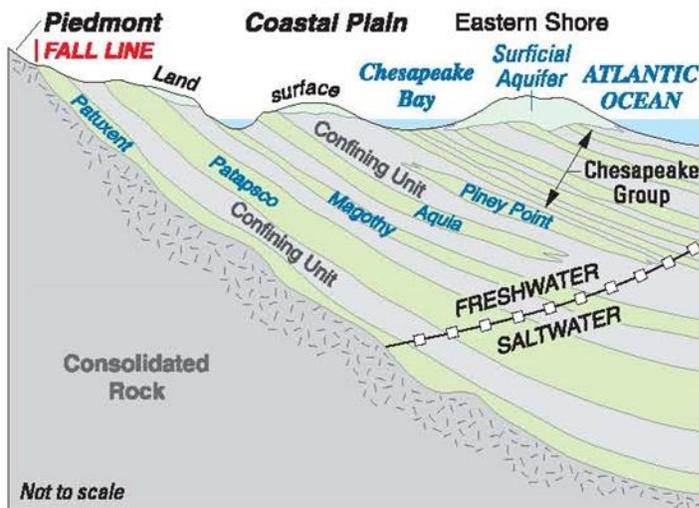


Figure 7-1: Atlantic Coastal Plain

Ground Water Resources

The sand, silt, and clay sediments across the Atlantic Plain form a layered aquifer system which provides water supply across the Delmarva Peninsula. Near Queenstown, five major aquifer systems have potential to supply municipal and residential water demands, including the shallow,

²¹ Sheridan, R.E. and J.A. Grow, Eds. 1988. The Atlantic Continental Margin: U.S. Geological Society of America, Boulder, CO, 1988. x, 610 pp

unconfined Columbia aquifer, the Aquia, Matawan, and Magothy aquifers, and the Potomac Group confined aquifers.²² Bedrock underlying the Coastal Plain sediments is not considered a potential water supply. The following highlights the most significant features of the aquifer system, especially with regard to providing water supply to the Queenstown Planning Area.

- The Columbia aquifer is a surficial, unconfined (i.e., water table) aquifer which generally occurs within ten feet of the land surface in sediments from the Pliocene/Pleistocene Series (i.e., deposited 10,000 to five million years ago). Recharge to the aquifer is through direct infiltration of rainwater. Groundwater discharge from the aquifer occurs primarily to local tributaries, wetlands, and the Chesapeake Bay. Only three percent of the surficial aquifer recharges deeper, confined aquifers.²³ The water supply is heavily relied upon for irrigation of nursery stock and farms, as well as for domestic and small commercial supplies. Because of its vulnerability to surface contamination and dewatering during droughts, however, use of these deposits is now rare.²⁴
- The shallowest confined aquifer is the Aquia, which supplies most of the County's water demand and a portion of Queenstown's current municipal supply. The formation includes fine to coarse glauconitic quartz sand with varying amount of clay, typically within 110 feet of the land surface. These sediments are part of the Eocene Series deposited 35 to 56 million years ago. Recharge to the Aquia occurs where the formation outcrops in a belt from the District of Columbia to the mouth of the Magothy River. Some exposures also are found in Kent County, near the Sassafras River.²⁵ Since 1980, water levels in the Aquia have declined with usage at a rate of approximately six inches per year. As a result salt water intrusion has increased, especially along the Chesapeake Bay shoreline of Kent Island and further allocations are limited. In addition to quantity, the naturally occurring arsenic (10 to 15 ug/L) and iron (0.3 ug/L) present challenges to its use as a domestic water supply.²⁶
- The Matawan aquifer underlies the Aquia aquifer in western Queen Anne's County and possibly elsewhere. It occurs approximately 610 to 650 feet below the land surface in an upper Cretaceous marine deposits formed 65 to 100 million years ago. The Matawan Formation is composed mainly of silt and clay, but pockets of sand provide enough water to supply wells on Kent Island and in the Queenstown area. As a result, in some

²² Drummond, D.D. 2001. Hydrogeology of the Coastal Plain Aquifer System in Queen Anne's and Talbot Counties, Maryland, with emphasis on water-supply potential and brackish-water intrusion in the Aquia Aquifer. Report of Investigations No. 72. Maryland Geological Survey.

²³ Ator, S.W., Denver, J.M., Krantz, D.E., Newell, W.L., and Martucci, S.K., 2005, A surficial hydrogeologic framework for the Mid-Atlantic Coastal Plain: U.S. Geological Survey Professional Paper 1680, 44 p.

²⁴ Drummond, D. D., 1988, Hydrogeology, brackish-water occurrence, and simulation of flow and brackish-water movement in the Aquia aquifer in the Kent Island area, Maryland: Maryland Geological Survey Report of Investigations No. 51, 131 p.

²⁵ Vokes, H. E. and J. J. Edwards. 1974. Geography and Geology of Maryland. Maryland Geological Survey.

²⁶ Whitman, Requardt & Associates, LLP. 2007. Town of Queenstown, Maryland: Evaluation of alternatives to reduce arsenic levels in the public water supply (report provided to Queenstown, August 28, 2007). 12 pp.

locations the Matawan aquifer is indistinguishable from the underlying Magothy aquifer.²⁷ Withdrawal at the Queenstown Harbor Golf Course averages 72,000 gallons per day; the maximum yield has been as high as 336,000 gallons per day. Water tests indicate low iron and arsenic concentrations and generally excellent water quality.²⁸

- The Magothy Aquifer occurs approximately 900 to 950 feet below the land surface, and includes a broad lateral distribution of mixed materials including organic material, pyrite, marcasite, and finely banded white sands.²⁹ These sediments are older than the Matawan deposits but were also deposited during the upper Cretaceous, 65 to 100 million years ago. Water quality of this aquifer is generally good except for its high iron content, which ranges between 12 and 19 parts per million (ppm). Iron concentrations exceeding the state 0.3 mg/l drinking water limit can cause red, brown, or yellow staining of laundry, glassware, and household plumbing fixtures. Recharge to the aquifer primarily occurs along northern Anne Arundel County, along the Patapsco sub-estuary.³⁰
- The Potomac Group includes the Patapsco, Arundel, and Patuxent Formations, part of the Lower Cretaceous Series formed 100 to 145 million years ago. Sediments consist of interbedded sand, silt, and clay deposits. It is the deepest aquifer with potential for providing municipal water supply. The Upper Patapsco aquifer underlies the Magothy aquifer and supplies water for domestic, commercial, and municipal uses on Kent Island and eastward to Grasonville. The Upper Patapsco aquifer is very productive but has severely elevated iron and manganese concentrations (28 and 0.4 mg/L, respectively).³¹ The water quality issues become less severe to the east and south. In Talbot County, iron concentrations do not pose a treatment problem, and the aquifer is used as a municipal supply without any treatment. The Lower Patapsco aquifer underlies the Upper Patapsco aquifer on Kent Island, and probably elsewhere in the study area. It has been used for part of the public supply system on Kent Island since late 1999, but nowhere else on the Eastern Shore of Maryland south of Cecil County. Although water from the Lower Patapsco aquifer requires treatment for iron, concentrations are much lower than in the Magothy and Upper Patapsco aquifers. Recharge to the Patapsco aquifer occurs in a broad area along the Piedmont fall line, from Washington, DC, across northern Anne

²⁷ Drummond, D.D. 2001. Hydrogeology of the Coastal Plain Aquifer System in Queen Anne's and Talbot Counties, Maryland, with emphasis on water-supply potential and brackish-water intrusion in the Aquia Aquifer. Report of Investigations No. 72. Maryland Geological Survey.

²⁸ Ibid

²⁹ Ibid

³⁰ Klohe C.A. and R.T. Kay 2006. Hydrogeology of the Piney Point-Nanjemoy, Aquia, and Upper Patapsco Aquifers, Naval Air Station Patuxent River and Webster Outlying Field, St. Marys County, Maryland,. USGS Report SIR 2006-5266. 36 p

³¹ Drummond, D.D. 2001. Hydrogeology of the Coastal Plain Aquifer System in Queen Anne's and Talbot Counties, Maryland, with emphasis on water-supply potential and brackish-water intrusion in the Aquia Aquifer. Report of Investigations No. 72. Maryland Geological Survey.

Arundel County and Baltimore Harbor, up into Harford County.³² Aquifer tests have shown that the Lower Patapsco aquifer is very productive, and provides an excellent alternative to shallower aquifers, in spite of its great depth (1,445 feet below sea level at Stevensville). The deeper Middle Patapsco and Patuxent aquifers are potential groundwater sources, but have not been tested thoroughly for use for water supply in Queen Anne's County.

In south-eastern Queen Anne's County, the Miocene and Piney Point Aquifers occur between the surficial Columbian aquifer and the Aquia aquifer. Local drilling logs, however, reinforce reports indicating that these sources do not exist in the Queenstown Planning Area.³³

Water Resource Assessment Assumptions

The assessment of water resources in the following sections is based on the growth implied in the Land Use Plan (see Section 2). It examines the supply and demand implications of population, dwelling unit and nonresidential floor area growth and changes in run-off characteristics associated land use changes. These aspects of growth and land use change are quantified for the 2040 projections and at build-out of the annexation and long range growth area discussed in Land Use Plan and shown on Map 2-2. In this case, projected population and dwelling unit increases through 2040 are based on the dwelling units and nonresidential floor area depicted in the development concepts for these properties described in the 2010 Community Plan and summarized in the Table 4-10 (Dudley North).

Water Supply and Demand

Current Water Supply and Demands

The Charter of the Town of Queenstown requires all developed properties within the Town limits be served by a public water system owned and operated by the Town of Queenstown. In addition, the Town provides water service to Friel's Lumber Company and the Queen Anne's County Animal Control Facility which are located outside the corporate limits of the Town. The Town presently serves water to approximately 620 units plus commercial uses.

The Town currently has a permitted water appropriation of 77,000 gallons per day. Water is drawn from two production wells in the Aquia aquifer and one recently permitted well in the Matawan aquifer. Between 2002 and 2006, demand exceeded the permitted rate by as much as

³² Klohe C.A. and R.T. Kay 2006. Hydrogeology of the Piney Point-Nanjemoy, Aquia, and Upper Patapsco Aquifers, Naval Air Station Patuxent River and Webster Outlying Field, St. Marys County, Maryland,. USGS Report SIR 2006-5266. 36 p

³³ Drummond, D.D. 2001. Hydrogeology of the Coastal Plain Aquifer System in Queen Anne's and Talbot Counties, Maryland, with emphasis on water-supply potential and brackish-water intrusion in the Aquia Aquifer. Report of Investigations No. 72. Maryland Geological Survey.

40 to 80 percent (30 to 60 thousand gallons per day).³⁴ The relatively high average of 177 gallons per capita per day was due to a large commercial area (Queenstown Outlet Center) used by many visitors as a rest stop. The Town recently completed construction of a municipal supply well in the Matawan aquifer and obtained a permit from MDE to withdraw 70,000 gallons per day. Pump tests indicate higher yield capacity. The Town currently is seeking a permit to sustain withdrawal of 154,000 gallons per day. This supply will provide current residents but the withdrawal rate will not provide for additional development associated with the Long Range Growth area shown on Map 2-3.

Descriptions of the well locations, approximate capacities, installation dates, and current status are summarized in Table 7-1. Map 3-1 shows the approximate location of the municipal supply wells including a schematic of the water distribution system.

The town has two elevated water storage tanks. The water tower at Wall Street is reported as a 50,000 gallon tank, although its dimensions (30 feet diameter, 35 feet height) suggest a capacity of 185,000.³⁵ Water treatment consists of disinfection by the addition of sodium hypochlorite. The water tower at the Outlet well site is a 100,000-gallon tank. Water treatment consists of disinfection by the injection of a chlorine solution using chlorine gas. To ensure adequate fire flow, the Maryland Department of the Environment recommends a total storage of 432,000 gallons for municipalities with a population of less than 1,000. A fire flow modeling analysis based on the water tank volumes, pipe distribution network, storage status, however, indicated that the existing water distribution system is adequately serving the Town's current population.³⁶ Water storage volume for future development, however, should be close in size to the expected average daily demand.

A mix of residential and commercial land uses are proposed on lands adjacent to the Town and within the Queenstown growth area. If any of these lands were to be annexed, the Town will provide water and sewer service per the Town's charter. Additional water service of 300,000 to 527,000 gallons per day will be required to serve full build-out of the proposed Queenstown growth area.

Table 7-1. Summary of existing municipal wells in Queenstown

MDE Well Permit ID	Location	Date Installed	Aquifer (Depth)	Capacity in gallons/day	Current Status
QA79G010	Del Rhodes Avenue	1932	Aquia (220 to 320 ft below land surface)	85,000	Requires management of elevated arsenic concentrations

³⁴ Whitman, Requardt & Associates, LLP. 2007. Town of Queenstown, Maryland: Evaluation of alternatives to reduce arsenic levels in the public water supply (report provided to Queenstown, August 28, 2007).

³⁵ URS Corporation. 2001. Evaluation of selected water and wastewater system components in Queenstown, MD (draft report presented to Town of Queenstown).

³⁶ Ibid

Table 7-1. Summary of existing municipal wells in Queenstown

MDE Well Permit ID	Location	Date Installed	Aquifer (Depth)	Capacity in gallons/day	Current Status
	Wall Street	1932	Aquia (290 ft bls)	> 150,000	Well taken off-line in 1998 due to hydrocarbon contamination
QA71G007	Outlet Mall	1988	Aquia (245 to 285 ft bls)	150,000	Requires management of elevated arsenic concentrations
	Outlet Mall Observation well	1993			
QA2008G018-01	Outlet Mall Well #2	2009	Matawan (625 to 650 ft bls)	70,000 to >100,000	Main water supply. Current permitted capacity limited by wastewater treatment capacity.

Additional information describing all wells non-municipal wells and municipal well construction (total depth, casing, and pump test results) are summarized by Whitman, Requardt & Associates, LLP (2007).

Future water supplies

Pump tests indicated the capacity of the newest municipal well supplied by the Matawan aquifer can be increased to supplement the current combined yield and sustain the full build-out demand summarized in Table 7-2. The combined yield of the existing municipal supply wells is more than 300,000 gallons per day. To supplement and ensure future high quality water supply and capacity, the Town also is investigating the feasibility of constructing a second well in the Matawan aquifer. This would enable the Town to abandon the Aquia aquifer supply entirely. To enhance the public water supply, current withdrawal from the Mattawan aquifer by the Queenstown Golf Course, used mainly for irrigation, could be reduced by the use of reclaimed wastewater.

Table 7-2: Existing, Committed and Projected Water Demand

	Residential GPD	Nonresidential GPD	Total GPD
EXISTING AND COMMITTED			
Existing	78,400	--	78,400
Vacant	4,250	0	4,250
Town Center	0	2,363	2,363
Steamboat Village	5,500	0	5,500
Queenstown Harbor Resort	0	29,138	29,138
Wheatlands	0	78,750	78,750
Total	88,150	110,250	198,400
FUTURE			

Annexation	32,500	3,938	36,438
Long Range Growth	165,000	86,625	251,625
Subtotal	197,500	90,563	288,063
Total	285,650	200,813	486,463

Source: Peter Johnston & Associates, LLC

The Aquia aquifer has no potential for meeting future demands of the Queenstown community.³⁷ Strict limitations on groundwater withdrawal have been emplaced by MDE because of increased salt water intrusion, especially along the Chesapeake Bay shoreline of Kent Island. Any additional water supplies must be provided from deeper aquifers potentially including the Matawan, Magothy, or Patapsco aquifers. A review of hydrogeology reports and currently permitted wells in the vicinity of the Queenstown Planning Area suggest the confined aquifer system can provide adequate municipal water supplies in the future. Most wells permitted for more than 100,000 gallons per day are used for agriculture and irrigation and provide two to five times more water than the current supply and demand in Queenstown (Table 7-3). Elevated iron, manganese, and arsenic concentrations, however, will require treatment.

Table 7-3. Summary of water appropriations permits (greater than 100,000 gallons per day) within 50 square miles of the Queenstown Planning Area (MD Department of the Environment, Water Rights Division 2000, summarized by URS Corporation 2001).	
Aquifer/Location	Average/Maximum Daily Yield (x1000 gallons per day)
COLUMBIA (SURFICIAL) AQUIFER	
Central Sod Farms of Maryland (irrigation)	100 / 400
Ball & Burlap Nursery, Inc. (irrigation)	135 / 450
McClyment, David. B (irrigation)	114 / 690
AQUIA FORMATION	
Armour Swift Eckrich (chicken processing)	100 / 125
S.E.W. Friel (food processing)	123 / 1,000
Central Sod Farms of MD (irrigation)	100 / 400
Ball & Burlap Nursery, Inc. (irrigation)	135 / 450
Schaefer, Louis (aquaculture/irrigation)	200 / 1,200
Queen Anne's County Sanitary District	88 / 175
Rhodes, Jr., Temple (irrigation)	247 / 1,498
Rhodes, Jr., Temple (irrigation)	97 / 587
Rhodes, Jr., Temple (irrigation)	109 / 659
Central Sod Farms of Maryland, Inc (irrigation)	411 / 720
J.L. Carroll (irrigation)	197 / 1,198
MAGOTHY FORMATION	
U.S. Fish & Wildlife Service	18 / 220
Queen Anne's County Sanitary District	98 / 144
Washington Brick & Terra Cotta Company	72 / 336

³⁷ Drummond, D.D. 2001. Hydrogeology of the Coastal Plain Aquifer System in Queen Anne's and Talbot Counties, Maryland, with emphasis on water-supply potential and brackish-water intrusion in the Aquia Aquifer. Report of Investigations No. 72. Maryland Geological Survey.

Table 7-3. Summary of water appropriations permits (greater than 100,000 gallons per day) within 50 square miles of the Queenstown Planning Area (MD Department of the Environment, Water Rights Division 2000, summarized by URS Corporation 2001).

Aquifer/Location	Average/Maximum Daily Yield (x1000 gallons per day)
Queen Anne's County Sanitary District	342 / 513
PATAPSCO FORMATION Hunters Oak, LLC	62 / 285

Wastewater

Map 3-1 shows the approximate location of the treatment plant and collection system. The WWTP was constructed in 2015 to meet Chesapeake Bay nitrogen and phosphorus discharge limitations. The WWTP is bio-reactor plant that contains the latest equipment and technology and currently has a capacity of 200,000 gallons a day. The facility was approved by the Maryland Department of the Environment under the terms of NPDES discharge permit number MD0023370.

To protect Little Queenstown Creek, the Chester River, and the Chesapeake Bay, the Maryland Department of the Environment has limited the total annual nutrient loads from a point source to Little Queenstown Creek to 3,266 pounds of total nitrogen (TN) per year and 411 pounds of total phosphorus (TP) per year. The new WWTP plant can reduce nutrient loadings significantly and increase the plant's treatment capacity to as much as 350,000 gallons/day within these limits.

Special requirements for the plant include an 85 percent reduction in Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) and enhanced nutrient removal (ENR). Based on an annual average flow of 0.200 million gallons per day (mgd) the NPDES permit limits the plants annual loading to 183 pounds of total phosphorus (P) and 2,435 pounds of total nitrogen (N).

Table 7-4: Existing, Committed and Projected Sewer Demand

	Residential GPD	Nonresidential GPD	Total GPD
EXISTING AND COMMITTED			
Existing	78,400	--	78,400
Vacant	4,250	0	4,250
Town Center	0	2,363	2,363
Steamboat Village	5,500	0	5,500
Queenstown Harbor Resort	0	29,138	29,138
Wheatlands	0	78,750	78,750
Total	88,150	110,250	198,400

Table 7-4: Existing, Committed and Projected Sewer Demand

	Residential GPD	Nonresidential GPD	Total GPD
FUTURE			
Annexation	32,500	3,938	36,438
Long Range Growth	165,000	86,625	251,625
Subtotal	197,500	90,563	288,063
Total	285,650	200,813	486,463

Source: Peter Johnston & Associates, LLC

The maximum 350,000 gpd capacity of the Queenstown WWTP will not be adequate to service the full build out scenario shown on Map 2-3 and summarized in Table 7-4. A number of variables such as actual versus design flow assumptions and real development programs versus assumed build out number will affect this conclusion. As these outcomes are not expected to occur within the planning period (2040) consideration of alternative strategies to address facility capacity limitations is left to future planning processes.

Stormwater and Non-Point Source Assessment

Development, industry, transportation, and agriculture can all increase non-point source pollution to the Chesapeake Bay and its tributaries. Although residential and commercial development can decrease nutrient and sediment delivery to adjacent surface water bodies, increased storm runoff has been linked with higher rates of stream bank erosion and delivery of toxins. Agriculture, especially corn and soybean row crops, has been linked with elevated nitrogen and phosphorus loads and deteriorated water quality.

Non-point source (NPS) pollution comes from many diffuse sources including excess fertilizers and pesticides from agriculture and development (e.g. residential lawn fertilizer), oil, grease, and toxins from development, sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks, and bacteria and nutrients from livestock, pet wastes, and septic systems. The NPS pollution is delivered to lakes, rivers, wetlands and coastal waters by groundwater discharge and surface water runoff. Excess loading rates have been linked with harmful effects on drinking water supplies, recreation, fisheries, and wildlife. In particular, elevated plant nutrient loads, including total nitrogen (TN) and phosphorus (TP) cause excessive algal blooms which ultimately can result in a reduction in dissolved oxygen concentrations. Ground water discharged from the surficial aquifer is the primary source of water and nitrate; whereas, sediment, phosphorus, and pesticides are delivered by runoff during storm events.³⁸

³⁸ Staver, L. W., K. W. Staver, and J. C. Stevenson. 1996. Nutrient inputs to the Choptank River estuary: Implications for watershed management. *Estuaries* 19:342-358.

The U.S. Environmental Protection Agency is working closely with state agencies, including the Maryland Department of the Environment, to establish Total Maximum Daily Load (TMDL) standards for managing human activities and improving surface water quality of impaired and threatened waters across the Chesapeake Bay watershed. A TMDL is a calculated amount of a pollutant that a specific stream, lake, estuary or other waterbody can receive without violating state water quality standards. The TMDL allocates the load to point sources and nonpoint sources, which include both anthropogenic and natural background sources of the pollutant.

Pollution controls must outweigh impacts from development and also agriculture. In the Lower Chester River and tidal portions of the Wye River, designated uses (fisheries and recreation) are impaired from sediments, nutrients, and fecal coliform. Shellfish harvesting has been restricted mainly due to excessive fecal coliform derived from manure spreading, direct deposition from pets, livestock and wildlife, failing septic systems and associated drain fields, and discharge from recreational boaters.

Nutrient TMDLs for the Lower Chester River, however, have been challenging to derive because of the difficulty in modeling the strong influence imposed by the Chesapeake Bay tides on water quality across the sub-estuary. TMDLs for the Lower Chester River are pending. TMDLs will not be set specifically for the Queenstown Harbor because of its small watershed area. The Queenstown Planning Area and its watershed occupy one percent of the of the entire Chester River watershed, for which TMDLs are being developed. Similarly, sediment and nutrient TMDL's will not be developed specifically for the Upper Wye River, a sub-basin which occupies six percent of the Wye River watershed. For the Wye River, a TMDL only for fecal coliform has been released; and TMDL's for nutrient and sediment will be released in the future.

This evaluation of how growth and changes on land cover/land use may affect nutrient loadings to the Queenstown Creek and Upper Wye River updates an analysis of land use change in the Queenstown Planning area in terms of nutrient loadings (Total Nitrogen (TN) and Total Phosphorus (TP) included in the Queen Anne's County Comprehensive Plan 2010. The County's analysis was done based on data provided by Maryland Department of the Environment that incorporates impervious surface by land use type factors from the Center for Watershed Protection and nitrogen and phosphorus loading rates by land use from the Chesapeake Bay Program model. The County's analysis focused on the Queenstown Planning Area and evaluated loading changes based on the 2030 Preferred Land Use Plan outlined in the 2010 Community Plan. The results showed that that the build out of the Queenstown Planning Area would reduce nitrogen and phosphorus loading to receiving waters.

The update of the County's analysis results reflects the revised land use plan outlined in Section 2. The "2040" scenario accounts for land use and cover changes associated with development of the Dudley North, Wheatlands and Queenstown Resort properties. The "Build Out" scenario accounts for cumulative land use and cover changes associated build out of the Long Range Growth areas. Point source loading was held constant at 3,266 pounds of total nitrogen (TN) per

year and 411 pounds of total phosphorus (TP) per year which likely overstates loading for the 2040 scenario.

The results of this analysis, summarized in Appendix A, are very similar to those of the County³⁹ and demonstrate that with the application of best management practices there is adequate capacity in receiving waters to accept the stormwater runoff associated with the Land Use Plan outlined in Section 2.

Modelling of nutrient loading assumes implementation of the Maryland Chesapeake Bay Tributary Strategies. Of particular importance to Queenstown are the point source and stormwater tributary strategy. The point source strategy assumes upgrading WWTPs to use Enhanced Nutrient Removal (ENR) technology to meet nutrient loading caps. Queenstown has implemented this strategy. Stormwater tributary strategies promoting erosion and sediment control measures and adoption and enforcement of stormwater management ordinances to minimize the water quality impacts on local waterways. The Stormwater Tributary Strategy supports implementation of the approaches to stormwater management identified in the Maryland Stormwater Design Manual. Queenstown's Stormwater Management Ordinances implements these strategies.

Conclusions

Drinking Water

Groundwater supplies are believed to be sufficient for existing and projected demand however, groundwater withdrawal from the Aquia aquifer is expected to be limited.

Suitable Receiving Waters and Land Areas

Wastewater treatment capacity is adequate to accommodate growth late into the planning period and have effluent discharge quality remain within the point source TMDL caps established for the Queenstown WWTP. Capacity will need to be increased to fully service the build out of the planned annexation areas and long range growth areas. There will be insufficient capacity in the WWTP to accommodate the full projected development associated with the build out of the long range growth areas.

Nutrient loadings associated with projected land use changes associated with the Land Use Plan will not increase deposition to receiving waters assuming adherence to applicable tributary strategies and rigorous application of stormwater best management practices to limit sediment and other pollutants from reaching receiving waters.

³⁹ Queens Anne's County Comprehensive Plan 2010, Appendix 3: Water Resources Analysis and Best Management Practices Toolkit, pg. 151-155.

Water Resources Recommendations

The Water Resources Element summarizes potential impacts from human activities across the Planning Area under current conditions, for development through 2040 and full build-out. It also highlights potential constraints that will limit development in the Planning Area. Specifically, the Town will need additional water supplies in the short term and increase WWTP capacity in the latter part of the planning period. To address these issues the following actions are recommended.

Water Supply

Hydrogeology investigations (e.g., Drummond 2001) together with the high production rates of irrigation wells completed in the Magothy aquifer indicate strong potential for Queenstown to accommodate future water demands. The Town should pursue plans to increase capacity of municipal wells to 300,000 gallons per day. Develop an additional municipal well in the Matawan, Magothy, or Patapsco Formations to supply projected demand of approximately 300,000 gallons per day. Developing additional municipal supply wells will require pursuit of additional or expanded groundwater appropriation permits.

Wastewater Treatment

The modernized wastewater treatment plant will meet approximately seventy percent of the total discharge anticipated with full build-out scenario. Spray irrigation and other approved non-potable uses for the remaining discharge volume are viable, especially if the wastewater is treated first. Ideally, spray irrigation should occur in the eastern portion of the Planning Area, where silty soils slow infiltration and allow great opportunity for further biodegradation of contaminants prior to discharging in local waterways and the Chesapeake Bay. Also the Town should work with MDE to explore the development of a “purple pipe system” to reclaim wastewater for non-potable uses as appropriate under MDE regulations to boost capacity.

Stormwater Management

Cooperate with Queen Anne’s County in the development of Watershed Management Plans for the Lower Chester River and Wye River watersheds and balancing the impacts of land use patterns across all landscapes (i.e. natural, agricultural, rural residential, suburban and town/village) by facilitating infill development within the Town and Planning Area.

Missing Data

When the Water Resources Element is updated, additional information about the local groundwater system, wastewater treatment options, and response of aquatic ecosystems to

watershed activities and anthropogenic influences will improve the basis for future policy decisions.

Water Supply Issues and Uncertainty: Additional information describing groundwater resources in the Queenstown Planning Area will provide a stronger basis for planning sustainable growth. In particular, a synthesis of historic boring logs recorded during well explorations or development would provide a more accurate description of the local groundwater resources. Results would provide invaluable information for future well explorations. More specific description of the contamination from petroleum derivatives (benzene, toluene, ethylbenzene, and xylenes, or BTEX chemicals), including the source and extent also would be helpful for maintaining the current water system and locating future wells. In addition, the community is concerned with impacts from an existing landfill adjacent to the Town Planning Area and immediately up-gradient of Queenstown Creek. Information describing the near-surface hydrogeology of the site would be useful for evaluating impacts on surface water and shallow groundwater quality.

A 2001 report identified several outstanding data gaps in Queenstown's water supply infrastructure.⁴⁰ There remains conflicting information about the Del Rhodes water tank size. Resolving the discrepancy will be critical to ensuring access to adequate water supply during emergency situations. The Town also would benefit from locating leaks in the distribution network.

⁴⁰ URS Corporation. 2001. Evaluation of selected water and wastewater system components in Queenstown, MD (draft report presented to Town of Queenstown).

SECTION 7: TRANSPORTATION

Introduction

Efficient and effective movement of people and goods is an important concern in any community's plan. Providing a safe and efficient transportation network with minimal disruption is a challenge in light of the divided responsibilities for infrastructure and systems. For its part it requires that Queenstown's transportation plan be closely coordinated with other elements of the Comprehensive Plan to assure that local transportation plans and policies complement and support those of other sections. As the control of transportation systems is divided among State, the County, and Queenstown agencies managing transportation facilities at the beyond local streets to ensure adequate capacity will require coordination and cooperation among the various levels of government.

Goal, Objective and Policies

Goal

Provide a safe and efficient transportation system.

Objectives

- Maintain a functional road and street system for the safe, convenient and efficient movement of people, goods and services.
- Create a connected street network tying together all parts of Queenstown without the use of US 301 or US 50 for access.
- Work with State and County officials to promote transportation system improvements that address local as well as regional travel issues.
- Improve pedestrian and bicycle opportunities insuring that pedestrian and bicycle facilities are an integral part of new project design.
- Insure new streets connect to the overall Town system in a way that promotes safe and efficient movement of vehicles and pedestrians.
- Maintain the existing systems to maximize the effective lifespan of transportation investments.

Policies

- New development will be designed so as to contribute to improvements in safety and traffic flow in and near the Queenstown Planning Area to the maximum extent reasonable.
- Subdivision applications and other development approvals will be reviewed for adequacy of streets and roadways. Approvals may be deferred, phased in, or conditioned upon the availability of adequate capacity.
- Vehicular, biking, and pedestrian access to community facilities within the Town and to major activity centers beyond the Town shall be encouraged.
- New development abutting existing neighborhoods shall provide continuity for vehicular and pedestrian movement by maximizing connectivity to the extent consistent with good site planning.

Highway System

The Maryland State Highway Administration (SHA) maintains a functional classification of roads and highways (see Map 7-1). The classification is an approach to organizing and prioritizing the role of each major highway segment in the statewide network. SHA's functional classification system in the Queenstown area includes the following:

Principal Arterials - Arterial highways are intended to carry large volumes of regional traffic at relatively high speeds between activity centers. SHA has classified US 50 and US 301 as principal arterial highways.

Collectors - Collectors gather traffic from local roads and funneling them to the Arterial network. SHA has classified MD 18 as a Major Collector and MD 456, Del Rhodes Avenue, as Minor Collectors.

Local – Local road and streets serve primarily to provide access to adjacent land. Most of the County and municipal systems in the Planning Area are classified as local roads.

Issues

Of most concern to Queenstown is the adverse effect US 50 and US 301 have on local traffic circulation. That the State Highway Administration capital improvement plans and needs inventory includes no projects that address this issue adds to this concern.

US 50, traffic volume exceeds capacity during peak travel times. For example, US 50 between Outlet Center Drive and Sportsman’s Neck Road carried approximately 40,000 vehicles per day on average in 2014, indicating that this section of highway is at or above its design capacity. During peak summer travel times capacity is stretched further with a seasonal estimated average daily traffic peak of 128 percent of yearly average—in July. Surprisingly, in 2000 the same section of highway carried 46,212 vehicles per day a nearly 15 percent decrease from 2014 annual average daily volume.

It is anticipated that the capacity of US 50 and US 301 will be seriously exceeded over the next decade. Small disruptions in the flow of traffic - minor accidents, breakdowns, etc.—will cause substantial congestion in the study area and beyond on normal travel days. While improvements are being designed for the US 50 corridor, no funding commitments have yet been made for construction.

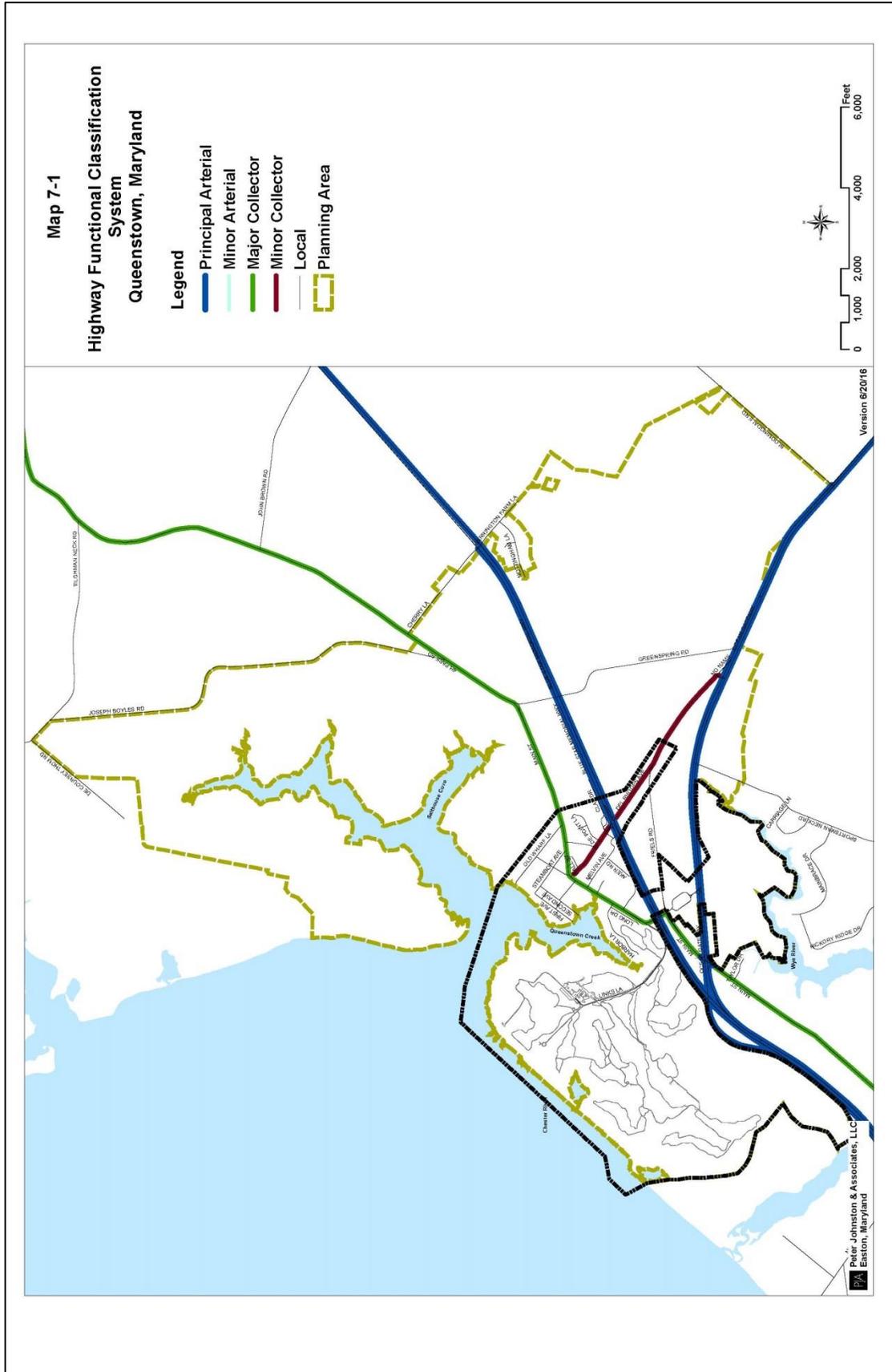
Several intersections along US 301 have been restricted in an attempt to safely manage access to the highways and facilitate the unimpeded movement of regional traffic. The conflict between turning vehicles and through traffic however cannot be eliminated altogether through at-grade intersection improvements and median crossovers. As traffic continues to increase, the viability of at-grade intersections will be weakened. Areas where traffic conflicts occur between high-speed through traffic and slower merging and crossing local traffic include:

- Outlet Center Drive and US 301
- Outlet Center Drive and US 50
- Del Rhodes Avenue and US 301
- MD 18 and US. 50
- Sportsman Neck Road and US 50

The planned improvements to the US 50 corridor are outlined in Table 7-1. The State Highway Administration has prioritized these improvements based on input provided by the Queen Anne’s County Board of County Commissioners.

Table 7-1: MD State Highway Administration Priorities for US 50/Ocean Gateway Corridor Improvements

Project Description	Priority	Status
Carmichael Road Overpass	1	Funded for Design
Sportsman's Neck Road Overpass	2	Funded for Design
MD 404 Interchange	3	Funded for Design
MD 213 Interchange	4	Funded for Design
MD 18 Overpass	5	Funded for Design
US 50 Widening to 6 Lanes:	6	Funded for Design US 301 - MD 404



Currently, the MD SHA's two highest priorities include overpasses at Carmichael Road and Sportsman's Neck Road. Carmichael Road leads to the Wye Island Natural Resource Management Area and is sparsely populated. Sportsman's Neck consists of low-density residential and agricultural land uses. Given the high density of residents and increasingly heavier traffic volumes within the Queenstown municipality, the SHA priority list does not reflect local circulation needs nor does it adequately address the access needs of Queenstown with respect to MD 18.

In summary, the primary transportation issues center on:

- lack of access to the Town to and from the US 50 corridor;
- inadequacy of the intersection configurations in light of projected traffic increases and seasonal peaks;
- conflict between slower moving/turning traffic especially on US 50 near the Outlets and the higher speed traffic on US 50; and
- properly adjusting SHA improvement priorities to reflect the needs of the traveling public in the US 50 corridor and the needs for improved accessibility in the Queenstown area.

In particular, SHA plans consist of replacing at-grade intersections with overpass interchanges without considering alternative road layouts which could improve traffic flow from communities adjacent to US 301 and US 50. SHA's focus remains on improving traffic flow to ocean beaches rather than improving safety for the area residents who use these roads for local travel. Current plans call for five overpasses along the US 50 corridor and its expansion to a six-lane highway, but no improvements to US 301. Yet traffic flow has increased and tends to be more consistent on US 301. This will only be intensified when US 301 is connected to the I-95 northeast corridor via a limited access highway.

Responsible Agencies

The responsibility for transportation facilities and services fall to a number of State and local agencies. They include the following:

Highways, Road and Streets

Responsibility for planning and maintenance of the street and highway systems in the planning area are shared among the State, Queen Anne's County and Queenstown. Of particular importance to Queenstown is the State highway system.

State Highway Administration (SHA) – SHA is responsible for State-owned, managed and maintained transportation facilities including highway, transit, maritime and aviation facilities. Planned improvements to State transportation systems including highways are outlined in the

Maryland's Consolidated Transportation Program (CTP) which is a six-year capital budget for transportation projects. The CTP contains projects and programs across the Department, including the Maryland Aviation Administration, the Motor Vehicle Administration, the Maryland Transit Administration, the Washington Metropolitan Area Transit Authority, the Maryland State Highway Administration, the Maryland Port Administration, and the Maryland Transportation Authority. The CTP includes capital projects that are generally new, expanded or significantly improved facility or service that may involve planning, environmental studies, design, right-of-way acquisition, construction or the purchase of essential equipment related to the facility or service. An expanded description is shown for each major project, along with a list of minor capital projects.

At the project level SHA's role in the process is technically limited to granting or not granting a permit for access to SHA owned facilities. The size and scope of the project is agreed upon by the local planning authority and the developer. Following that determination, SHA's role is to ensure that planned improvements to the transportation network can accommodate the proposed development's traffic impacts in a safe and efficient manner. If necessary, SHA can require additional improvements as a condition of an access permit. To make these determinations SHA works through the Traffic Impact Study process, in coordination with the local planning authority and the developer, which is based on the proposed improvements agreed upon by the local planning authority and the developer.

Queen Anne's County Department of Public Works, Roads Division –The Queen Anne's County Roads Division is responsible for traffic engineering along with the maintenance of over 549 miles of County Roads and 32 bridges. Normal duties include but are not limited to road building, bridge maintenance, patching of roads, resurfacing of roads, guard rails, mowing right-of-ways, inspection of new roads and bridges, striping, snow removal, installation and maintenance of drainage pipes and culverts, fabricating as well as installing and maintaining road signs, maintaining shoulders, removing trash from roadsides, entrance permits, tree trimming, maintenance of gravel roads and acquisition and maintenance of equipment.

Queenstown – Queenstown is responsible for maintaining approximately 30 miles of municipal streets. Streets are maintained under contracts with private firms.

Airport

Queenstown is served by the Bay Bridge Airport located approximately 11 miles from the Town, near the Chesapeake Bay Bridge just south of the US 50/301 and Route 8 interchange in Stevensville. The airport provides chartered flights, pilot training services, helicopter academy and access to community-based door-to-door passenger services.

Transit and Bus Service

County Ride – County Ride is a public transit system for the County and is operated under the Department of Aging. County Ride operates 3 deviated fixed routes, Route 1 (Kent Island & Grasonville to Easton), Route 2 (Centreville to Stevensville) and Route 3 (Annapolis). Deviated-fixed routes operate on a time schedule. Drivers may deviate off the route for any rider if the deviation is within 3/4 of a mile. Route 2 picks up passengers at the Queenstown Premium Outlets.

Maryland Upper Shore Transit (MUST) – MUST is a fixed route service offered through a collaborative effort between Delmarva Community Transit in Dorchester County, USTAR in Kent, Caroline and Talbot Counties and Queen Anne’s County, County Ride. Special services are available for persons unable to use the regional fixed routes.

Private Bus Services – Private bus service is provided by a contractor with Maryland Transportation Authority (MDTA) providing daily service to the business and government employment centers of both Washington D.C. and Baltimore, MD.

Pedestrian and Bicycle Facilities

The County is primarily responsible for developing and maintaining a variety of pedestrian and bicycle facilities across the County. The following describes existing facilities:

Cross Island Trail Park – The Cross Island Trail is a linear park in Queen Anne’s County offering an avenue of safe non-motorized transportation for citizens. The trail was initiated in 1998 and completed in September 2001. The Cross Island Trail spans Kent Island west and east from Terrapin Nature Park on the shores of the Chesapeake Bay to the Kent Narrows. The trail is a 10 foot wide paved surface approximately stretching six miles in length through open fields, woodlands and over wetlands.

Kent Narrows Pathways – The Kent Narrows Pathways are an existing network of trails that connect the four quadrants of the Kent Narrows. This network of pathways provide pedestrian and bicycle access throughout the Kent Narrows.

Kent Island South Trail (Matapeake Greenways) – The Kent Island South Trail is a 6 mile paved trail system that parallels Route 8 from Matapeake State Park to the Romancoke Pier.

Queen Anne’s County Water Trail

In 1999, Queen Anne’s County began planning a recreational water trail route that would skirt the county’s shoreline from the upper reaches of the Chester River, encircle the southern end of Kent Island and loop up the Eastern Bay to Romancoke and Wye Island. This water trail includes a number of stops including Conquest Beach, the Chesapeake Exploration Center on Kent Island,

Matapeake State Park, Romancoke, Wye Island and Centreville Warf. A new waterfront park at the site of the Queenstown WWTP could be added a stop along this trail, attracting more recreational tourist to the Town.

Chesapeake Country National Scenic Byway

The Chesapeake Country National Scenic Byway links the Eastern Shore's unique resources along an 86 mile stretch of State designated scenic routes running through Queen Anne's, Kent and Cecil Counties. For well over two centuries, the corridor has provided connections among the region's homes, farmsteads, rural villages, market towns and county seats. The Byway includes MD Routes 18 through Queenstown and 213 from Kent Island to Chesapeake City, with an extension on MD Route 20 to Rock Hall and MD Route 445 to Eastern Neck National Wildlife Refuge.

Among others, the Byway features historic churches along the route, including St. Luke's Episcopal Church at 7208 Main Street, Queenstown, MD which is described as follows:

This "very neat and commodious frame edifice" was constructed in 1840-1841 and consecrated by Bishop William R. Whittingham in April 1842. The church was erected on land donated by the owners of nearby Bowlingly plantation. The building is a marvelous example of the small country churches built in villages of the mid-19th century.

The rectors of St. Paul's Parish served the congregations of both St. Luke's and old Wye until 1859, when Wye Parish was created. After 50 years of service and a fire of undetermined origin, St. Luke's Chapel was in need of repairs and renovation. In 1890, the building was reconstructed, and it is assumed that the stained glass windows were part of the renovation.

William H. D. Wright of Blakewood presented a bell to St. Luke's Chapel in 1894. The bell was immediately installed in the bell tower, and it has been sounding the call to worship for more than a hundred years. There have been no significant architectural changes, either exterior or interior, since 1890. In 1989, an adjoining Parish house was constructed, providing much needed space for Sunday school and congregational gatherings.⁴¹

Recommendations

The Long Range Growth areas shown on Map 2-3 includes a mix of residential, commercial and institutional development on the south side of US 301. It is essential that an overpass be

⁴¹ http://www.chesapeakebyway.org/churches_int.php

constructed to carry Greenspring Road over US 301 to avoid a feeling of two separate towns. This overpass should include facilities for pedestrians and bicycle uses.

Queenstown's proposed transportation plan is shown on Map 7-2. The plan concept is for a mix of overpasses and roadway improvements to solve current transportation shortcomings and serve the land uses recommended in this Plan. Of immediate importance, this transportation solution enables the Queenstown community to access US 50 and US 301 in either direction without entering an at-grade intersection.

Specific recommendations for vehicular traffic in the Planning Area are:

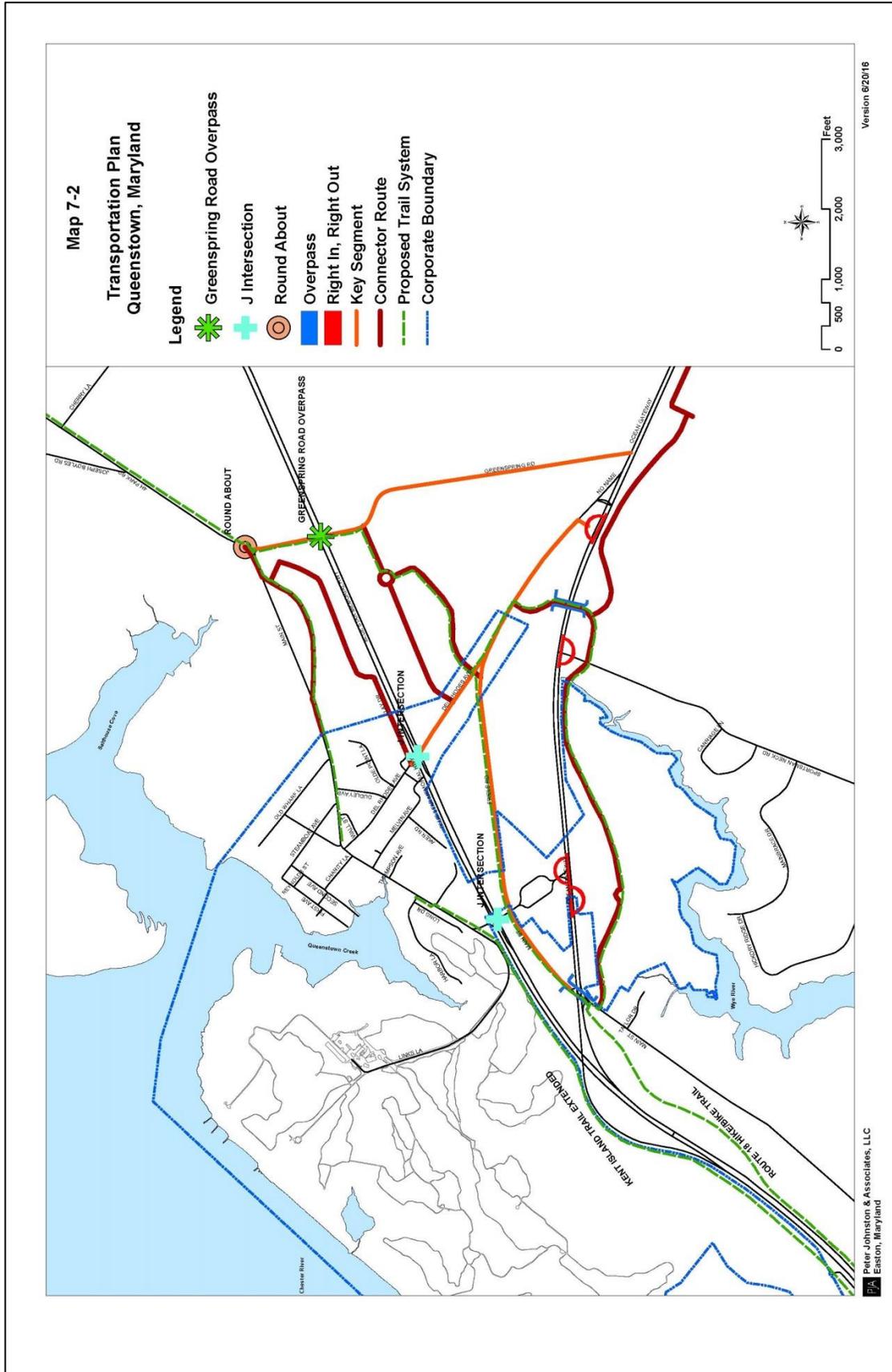
1. Move Greenspring Road into the State highway system. Combine public and private resources to prioritize an overpass on US 301 at Greenspring Road that includes pedestrian and bike facilities.
2. Create a roundabout Town gateway at the intersection of MD 18 and Greenspring Road.
3. Realign MD 18 from the roundabout to the current Town limit to create a double-sided Town-like street through the Dudley North property.
4. Designate the extended Greenspring Road link from US 301 to the planned US 50 right-in right-out on Del Rhodes as a collector and limit new curb cuts.
5. Link Del Rhodes to MD18 via Dudley north.

The Town supports increased movement by walking and bicycle as a quality of life issue. Residential, commercial and institutional area roads must include streets that are bicycle and pedestrian safe. In addition, all new developments must include a combination of roads and pathways that make travel by walking or biking attractive, practical and safe. A suggested network is shown on Map 7-2. Specific recommendations for non-vehicular movement in the Planning Area are:

1. Include hiker/biker lanes on all overpasses.
2. Support development of a hiker/biker lane on the existing US 50 overpass at Nesbit Rd. and through to the golf course property to tie Town Center to the regional trail network.
3. Work with State and County officials to create a second trail link along MD 18 (Route 18 Hiker/Biker Trail) and the old rail line to the County's trail network near Grasonville and back to the Wheatlands property.
4. Endorse a signed trail link through the Town Center along MD 18 to Centerville per the County plan.

5. Require developers of the Wheatlands property provide access for a trail link from the Nesbit Road area south of US 50/301 through the Wheatlands property connecting to the Dudley South property and then into the Town.

DRAFT



SECTION 8: IMPLEMENTATION

Municipal Growth and Land Use

Town Center

From Charity Lane along Main Street to Short Street and from Main Street to Wall Street on Del Rhodes Avenue is the natural and historic Town Center. The Town wants this area to continue as its civic heart and a viable commercial center. The Town Center currently serves four functions. Its largest role is as the daily civic center of Town. Townsfolk visit the Town Office, the post office, the bank and church, and staff the fire station. Second, a small group of businesses provide Queenstown residents with a modest array of daily goods and services. These businesses benefit from the traffic generated by the civic functions and immediate proximity of residents. Third, a small group of businesses and cultural attractions seek to attract visitors and tourists to Town. Fourth, the Town Center serves as community event venue as the Town and the fire department hold community events and fundraising activities. The Town Center anchors are the bank, Town Office, post office, and fire station. These draw people to the center during the work day. The Queenstown Pizzeria depends on this daily local traffic. The Bed and Breakfast and Museum both benefit from out-of-town traffic. Currently, most of the Town Center's commercial parking needs are met with on-street public parking and by informal shared use of parking lots owned by the bank.

Moving the Volunteer Fire Department from its present location to a new facility at the intersection of Greenspring Road and Main Street (on the Dudley North site) will free up new commercial space downtown and operate as a catalyst for revitalization (see Figure 8-1). Reuse of the Fire Station complex could add 6,500 square feet, would double the amount of retail, and help create a more viable critical mass of shops. New retail uses could fill the ground floor street front space and apartments or offices could use the second floor space and the building in the rear.

The Town Center must be revitalized and maintained as a traditional small town mixed-use area with historic and pedestrian-oriented character. Existing historic structures and sensitively designed infill development should accommodate a diverse mix of compatible residential, nonresidential, and public uses. Small-scale commercial businesses and services should be oriented to the needs of the community and to tourists. Recommended actions to increase the critical mass of commercial uses in Town Center include:

- Assist Town Center property owners to explore development opportunities and help with cooperative public/private solutions.
- Investigate using the Bank parking lot frontage for new commercial uses.
- Facilitate fire station conversion to commercial and office uses and help provide parking to support these new uses.

- Facilitate conversion or redevelopment of the house between the Fire Station and the pizza shop into shops.
- Encourage new business uses along Rte. 18 and Del Rhodes.
- Encourage cleanup of current business establishments along MD 18 and Del Rhodes Avenue.
- Encourage new retail along US 301 on the Dudley site near the former Bob's mini-mart with a new connecting street to the retail planned for Dudley North.

Annexation and Long Range Growth Areas

With implementation of many of the recommendations in the 2010 Community Plan, Queenstown has most of the tools in place necessary to accomplish their land use objectives. The primary regulatory tools for infill, redevelopment and growth management Queenstown has adopted are briefly described as follows.

CR Community Redevelopment Overlay District (CR) - The CR overlay district included in the Queenstown Zoning Ordinance promotes appropriate infill development and redevelopment. The stated intent of this zoning tool is to encourage and facilitate new development and redevelopment on vacant, bypassed and underutilized land by allowing the Planning Commission to vary standards and requirements when the design of a proposed infill and redevelopment project is found to be context sensitive.

PN Planned Neighborhood Development Floating Zone - Queenstown's objective of encouraging and providing for mixed-use development in annexed areas applies to the Planned Annexation and Long Range Growth areas shown on Map 2-3. It is in these location that the Town wants to achieve a variety of housing types, densities, nonresidential uses, open spaces, and recreational amenities that blend appropriately with existing land uses. The Planned Neighborhood Development (PN) and Planned Regional Commercial (PRC) floating zones included in the Queenstown Zoning Ordinance have been designed to achieve these ends.

The PN floating zone is applicable to large tracts of land of at least twenty-five (25) acres. Smaller tracts may be considered when the development of such land is found to be compatible with an adjacent, existing, or proposed PN type development and/or adjacent Town land uses.

The PN floating zone requires a minimum residential density of three and one-half (3 1/2) dwelling units per net tract acre and permits a maximum density of six dwelling units per acre. Additional density can be achieved through bonus density provisions that allow for transfer of development rights (TDR) from a designated TDR sending area.

The PN district requires a minimum of twenty percent (20%) of the gross site acreage be in open space. It also sets minimum and maximum percentages of types of residential units to insure that

the development has at least three (3) of the five (5) unit types; detached single family dwelling, two (2) family dwelling, townhouses, multi-family dwellings and apartments.

PN district standards allow for such things as setback, lot size, lot dimensions, lot coverage, minimum floor area, height, and yard requirements to be established according to an approved Master Development Plan. Because the PN district is a floating zone, the Town Commissioners are not required to grant approval until and unless they conclude the proposed development is consistent with the Queenstown Comprehensive Plan and that the design of the proposed development conforms to Queenstown's Planned Neighborhood Design Guidelines.

PRC Planned Regional Commercial Floating Zone - The PRC floating zone is intended to regulate large-scale mixed-use development projects including a wide range of commercial and retail trades and uses, as well as offices, business and personal service use. The standards for this district insure appropriate transitions to adjacent residential neighborhoods and safety. They allow for new commercial development that is compatible with and contributes to the character of the Town. The PRC floating zone was applied to the Wheatlands property in 2015.

All future development in the Planned Annexation and Long Range Growth areas shown on Map 2-3 should be required to develop under the provisions of the PN or PRC floating zone. This will insure that the Town has maximum control over development design and impact mitigation in order to achieve the objectives outlined in this Plan.

The Town should work with Queen Anne's County to define a County-to-municipality TDR sending area and develop tools to create incentive for and facilitate transfers. Ideally the sending area should be located within the Lower Chester River and/or Wye River watersheds and the development rights transferred come from resource lands and/or sensitive areas.

Flood Hazard Management

Like most coastal communities Queenstown is subject to some degree of higher water levels during storm events. Climate change and rising sea level have the potential to increase the frequency and intensity of flood events, potentially putting property and critical infrastructure at risk.

In 2008, the Maryland Commission on Climate Change reported the following:

“Sea level in Maryland rose by 1 foot in the 20th century, partially because the land is sinking as a result of slow adjustments of the Earth after the last Ice Age. Maryland coastal regions have been subsiding at about a rate of 6 inches per century and should continue at this rate during this century. Additionally, the average level of the sea in this region rose by about the same amount (6 inches) during the past century, resulting in the observed 1 foot of rise of the mean tidal level relative to the land. As a result, Maryland

has experienced considerable shoreline erosion and deterioration of coastal wetlands which are a critical component of its bays and estuaries.

Sea-level rise is very likely to accelerate, inundating hundreds of square miles of wetlands and land. Projections that include accelerating the melting of ice would increase the relative sea-level along Maryland's shorelines by more than 1 foot by mid-century and 3 feet by late century if greenhouse gas emissions continue to grow. If sea level rises by 3 feet, most tidal wetlands would be lost—about 200 square miles of land would be inundated. New tidal wetlands developed on newly flooded land would not offset the loss of existing wetlands and significant negative effects on living resources dependent on these wetlands would result. Moreover, if sea level were to rise by 3 or more feet, this would mean that rapid and probably uncontrollable melting of land-based ice was underway and that sea level would rise at an even greater rate during subsequent centuries.

Rains and winds from hurricanes are likely to increase, but changes in their frequency cannot now be predicted. The destructive potential of Atlantic tropical storms and hurricanes has increased since 1970 in association with warming sea surface temperatures. This trend is likely to continue as ocean waters warm. Whether Maryland will be confronted with more frequent or powerful storms depends on storm tracks that cannot yet be predicted. However, there is a greater likelihood that storms striking Maryland would be more powerful than those experienced during the 20th century and would be accompanied by higher storm surges—made worse because of higher mean sea level—and greater rainfall amounts.⁴²

Currently the Town regulates development in the 100-year Floodplain based on the Federal Emergency Management Agency's Flood Insurance Rate Maps (FIRM) and requires development delineate the base flood elevations and utilize flood proof construction methods. Queenstown adopted a revised Floodplain Management Ordinance based on the State's model ordinance in 2015.

It seems prudent to assume impacts from storm surge in Queenstown are likely to increase with climate change and sea level rise and that the FIRM maps do not delineate the potential extent of inundation in the Town associated with catastrophic storm events. It was reported in the 2010 Community Plan that, "currently, flood surges from major storms including Category I hurricanes range up to five feet above normal. In 2005, Hurricane Isabelle, a category II storm, caused a flood surge of nine feet. Models indicate that a Category III hurricane could cause a storm surge of 9 to 12 feet along Queen Anne's County shoreline, and a Category IV hurricane could surge 14 to 16 feet above normal. A Category V Hurricane, with winds greater than 155

⁴² Comprehensive Assessment of Climate Change in Maryland, Report of the Scientific and Technical Working Group Maryland Commission of Climate Change, July 2008, http://www.mde.state.md.us/programs/Air/ClimateChange/Documents/FINAL-Chapt%20%20Impacts_web.pdf

mile per hour could produce a storm surge of more than 18 feet above normal. From 1851 to 2005, five hurricanes passed within approximately ten miles of the Maryland state boundary; all of these storms were Category I or II (http://www.csc.noaa.gov/hez_tool/states/maryland.html; accessed 9/5/09).”

To accommodate the potential for higher storm surges, rising sea level, and climate change the Town should consider regulations that restrict substantial development in mapped flood zones up to and including category III storms and restrict development in areas less than 12 feet above current mean sea level (See Map 8-1). Application of such regulations to existing developed areas will be difficult but should fully apply to development located outside of the urban core, e.g., annexation areas, long range growth areas. In addition, the Town should evaluate the potential impact of a Category III event on critical Town infrastructure..

Community Design

Design Guidelines

Development guidelines applicable to PN Planned Neighborhood and PRC Planned Regional Commercial developments are referred to in the Zoning Ordinance but have not been prepared and formally adopted. The Planning Commission should develop design guidelines for each of these floating zone types and recommend them to the Town Commissioners for adoption.

Development Design Recommendations

The following outlines design recommendations for properties in the Annexation and Long Range Growth areas. These design recommendations support the land use, natural resource conservation and sensitive area protection, and transportation objectives of this Plan. They should be reflected in PN and PRC design guidelines and should influence consideration of proposed development master plans submitted under the provisions of the PN and/or PRC floating zones.

Dudley North – The Dudley North property is included in Queenstown’s Land Use plan as a priority annexation area. Design recommendations for this property are (see Figure 8-1):

1. A short mixed-use commercial street fronting US 301 on the 8 acre in-Town parcel connecting to MD 18 via the street network in the Dudley North parcel.
2. A double-loaded through street in place of MD 18 with routing through the center of the parcel and connection to a grid-like local street network with alleys serving most homes and businesses.
3. The roadbed of old MD 18 as part of the new street system.

4. A new Town gateway and roundabout at MD18 and Greenspring Rd.
5. A grade separated interchange at Greenspring Rd and US 301.
6. A hiker/biker trail link through the site.
7. A Town green visible from US 301 and faced by live work units and town homes.
8. A buffer to screen the homes from US 301 with berms and trees for visual protection and sound suppression.
9. Retain site area north of MD 18 as open space, preserve existing forest cover.

Dudley Home Farm - The Dudley Home Farm is included in the Queenstown's Long Range Growth plan. Design recommendations for this property are:

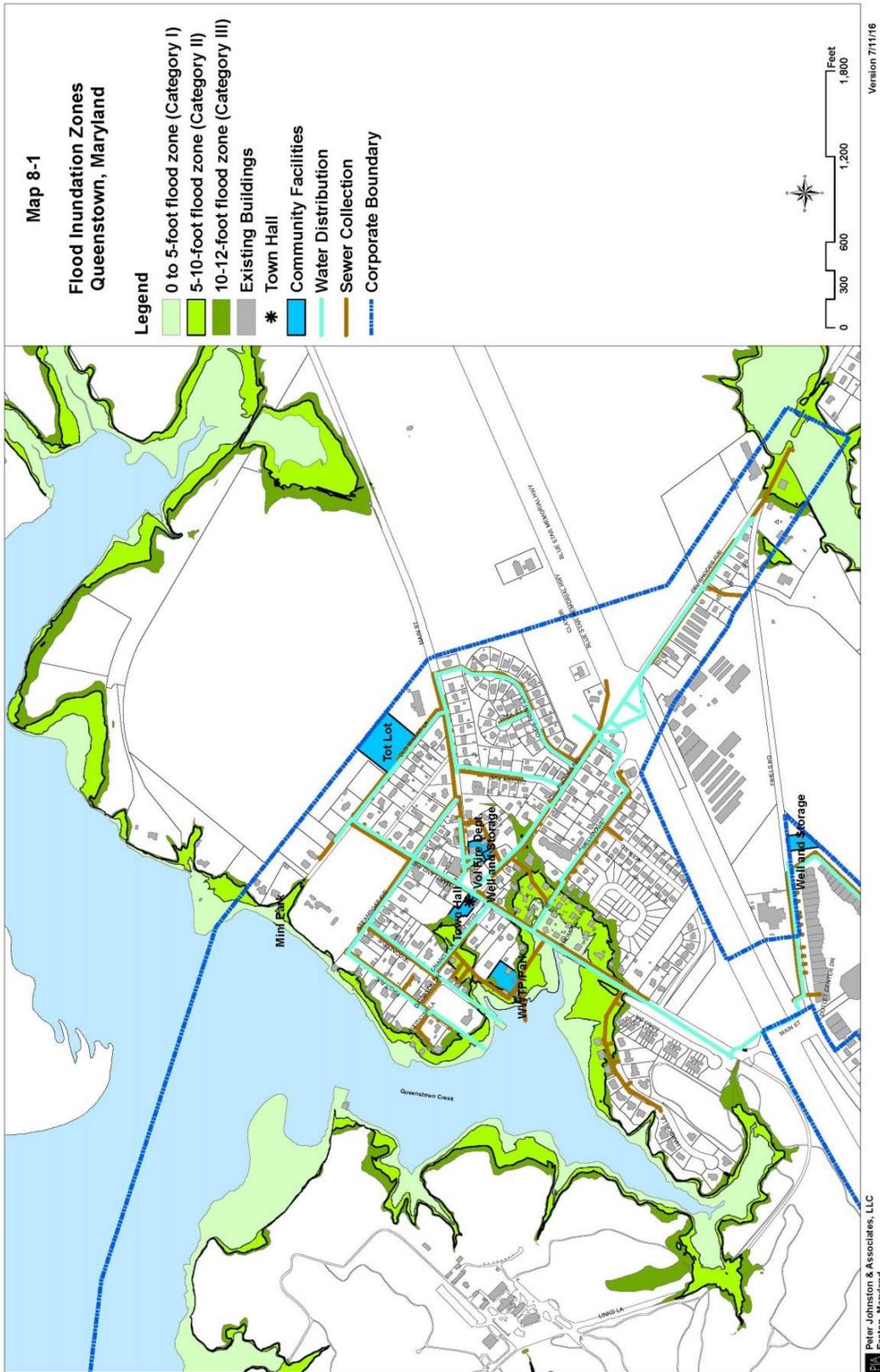
1. A Town-like street grid that connects to Cherry Lane and MD 18.
2. A Town-like frontage on one or both sides of MD 18 with alley loaded homes facing the street.
3. A grade separated interchange at Greenspring Road.
4. A hiker/biker trail link through the site along MD 18.
5. Buffering homes from US 301 with berms and trees for visual protection and sound suppression.
6. Town access to the water at Salt House Cove.

Dudley South - Dudley South is included in the Queenstown's Long Range Growth plan. Design recommendations for this property are:

1. Preservation of the woodland triangle bounded by Greenspring and Del Rhodes and treatment as a woodland park.
2. A Town hiker/biker link through the woodland park as a part of the Town loop connecting the Sportsman Overpass and the Greenspring overpass.
3. A street linking the Sportsmans Neck Overpass and Del Rhodes Ave. exit US 50 to Greenspring Road to connect the Town to US 50 westbound and eastbound.
4. A public street in the development area that connects Del Rhodes to Greenspring Road and has a Town-like streetscape along some segments.
5. A Town-like corner at Del Rhodes and US 301.

6. A Town-like streetscape/ frontage along Del Rhodes Ave.
7. A grade-separated interchange at Greenspring Road and US 301 with a Town-like streetscape along the Greenspring Road frontage.
8. A Town green visible from US 301 with mixed use development facing it.
9. Sound suppression must be considered for the areas of the site close to US 301.

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Callahan Farm - The Callahan Farm is included in the Queenstown's Long Range Growth plan. Design recommendations for this property are:

1. A residential neighborhood that feels like an addition to Town rather than a separate place and includes a mix of unit types and lot sizes.
2. A Town-like street front along Greenspring Road without driveway curb cuts.
3. An open space spine including the pond, wetland, and farm house tying to the St. Peter's Church and the adjoining woodland.
4. A hiker/biker trail that links to the Town and the American Discovery trail towards Tuckahoe Park.
5. An entrance on the planned US 50 frontage road with special treatment facing US 50 that blends with the character of St. Peter's Church.

Town Gateways

For Queenstown's Gateways –MD 18 at US 301, Del Rhodes Avenue at US 301, and MD 18 at the eastern end of Town are the principal gateways entering the community (See Figure 1-12). In addition, US 301, after the US 50 split serves as an attractive approach corridor to the Town from the west. Although the Town entrance on MD 456 from MD 50 is not in the Town proper, it is a heavily used entrance to the Town and the Town and County should cooperate to improve the appearance of this area.

1. MD 18 (Main Street) is the principal gateway into Queenstown. The Town will work with Queenstown Harbor Golf Course to landscape a distinctive gateway at the entrance from US 301 to introduce the character of the Town to visitors and provide an attractive welcome to residents.
2. Del Rhodes Avenue is the second of four Town gateways. It should continue to provide a transition to the Town Center with a mix of commercial and residential uses. As it approaches US 301 it should return to entirely commercial use. This entrance should also provide a welcoming gateway to Queenstown. Over time, the commercial establishments at the Del Rhodes Town entrance should be redesigned so that they present an attractive face to US 301 and Del Rhodes Avenue. For example, if both sites continue as gas stations, they should be remodeled to better match the character and style of the Town and provide screening for the pump islands from both the highway and Town side.
3. The third gateway is where Main Street meets MD 18 arriving from Centreville. Relocating the Fire Station to the southwest corner of this intersection affords the opportunity to provide another attractive, as well as functional, entry.

4. The final visual gateway is the forest that borders the approach to Queenstown along US 301 from the west. This forest is a desirable and attractive feature that must be protected and extended. Any development along US 301 as it approaches and passes through Queenstown must include a berm and plantings to extend the roadside woodlands as both a visual amenity and to provide noise buffering for adjacent uses.

Parks and Recreation

Queenstown has been evaluating the feasibility of developing a waterfront park at the site of the WWTP. If and when developed the Town should consider having this destination added to the Queen Anne's County Water Trail, a recreational water trail route that skirts the county's shoreline from the upper reaches of the Chester River, encircle the southern end of Kent Island and loop up the Eastern Bay to Romancoke and Wye Island. The water trail includes a number of stops including Conquest Beach, the Chesapeake Exploration Center on Kent Island, Matapeake State Park, Romancoke, Wye Island and Centreville Warf. Queenstown could be an added stop for recreational tourists in small craft.

Pedestrian access across the east end of Little Queenstown Creek should be improved in both directions to facilitate community access and neighborhood interactions. Ideally, the existing footbridge would link up with a footpath that skirts Queenstown Harbor development and facilitates access to the Queenstown Harbor Golf Course. Sidewalk and roadside improvements should also encourage pedestrian and bicycle thru-traffic to the playground park on the east side of Queenstown.

Water Resources

In December of 2010 the U.S. Environmental Protection Agency (EPA) set limits on the amount of nutrients and sediment that can enter the Chesapeake Bay, known as Total Maximum Daily Loads (TMDLs). EPA required the Bay watershed jurisdictions to develop statewide Watershed Implementation Plans (WIPs). WIPs are described as the first phase of a road map and accountability framework for restoration of the Chesapeake Bay and clean local streams. Maryland completed its Phase I WIP in December 2010 and subsequently developed a Phase II WIP in collaboration with local partners, including county government staff, soil conservation managers and other local decision makers.

Queens Anne's County prepared its Phase II WIP in 2011. The County's Phase II WIP includes an overview, strategies, 2013 milestones and a capacity analysis. Among other strategies, the County is seeking collaboration between the county and towns to create a program to plan and implement WIP strategies. Queenstown should cooperate with the County and State where it can to implement the WIP strategies.

Natural Resources Conservation and Sensitive Areas Protection

Queenstown already has most of the regulatory tools necessary to minimize impacts to natural resources and protect sensitive environmental areas. These are minimum standards. Their application in the context of a specific development design determines effectiveness. When reviewing development proposals the Town should consider how the design of the project affects the “targeted habitat protection areas” shown on Map 5-2. The “targeted habitat protection areas” coverage is more extensive than the minimum buffer requirements in the zoning code and includes consideration of wildlife corridor links, vegetative cover and drainage patterns. Although these areas may not be completely avoided, e.g., when providing necessary access to development areas on the property, development design should maintain these as natural areas to the maximum extent practical. In addition, these areas should be the preferred location for forest planting and wetland creations offsets when required. These objectives should be incorporated as design guidelines for PN and PRC developments.

Interjurisdictional Coordination

The Town, the Council of Governments of Queen Anne’s County and the County, with significant community input, should continue to work together to manage growth in the Planning Area consistent with both jurisdictions plan goals, objectives, and recommendations. The forum presents opportunities for the Town and County Planning Commissions to discuss issues relative to ongoing implementation of this Comprehensive Plan.

To insure on-going awareness and cooperation the Town and County should coordinate the development and review of amendments/updates to each jurisdiction's Zoning Ordinance and District Maps; Critical Area Program Ordinance and Maps; Infrastructure Improvement Plans for Sewer, Water, Roads, and Parks; and Capital Improvement Program and/or Annual Budget as they relate to mutual areas of interest. This coordination should ensure that these Plan implementation tools are consistent with this Comprehensive Plan and will serve to streamline the development application and review process within the Town and Planning Area as mandated by the State's 1992 Economic Development, Resource Protection and Planning Act.

The Town and County should establish an agreement to allow each jurisdiction the opportunity to formally comment during the development review process for any major development project within the Town and the Planning Area. These comments should be considered by the jurisdiction with approval authority during the decision-making process.

The land use and growth management strategies contained in this Plan are reflected in the 2010 Queen Anne’s County Comprehensive Plan. Therefore County should not oppose any proposed annexations by the Town which are consistent with this Plan and their own plans and should approve amendments to the County’s master water and sewer plan.

The County should contribute a proportional fair-share of the costs for public improvements recommended by this Plan to occur within the Town whenever those improvements are determined to have County-wide growth management benefits.

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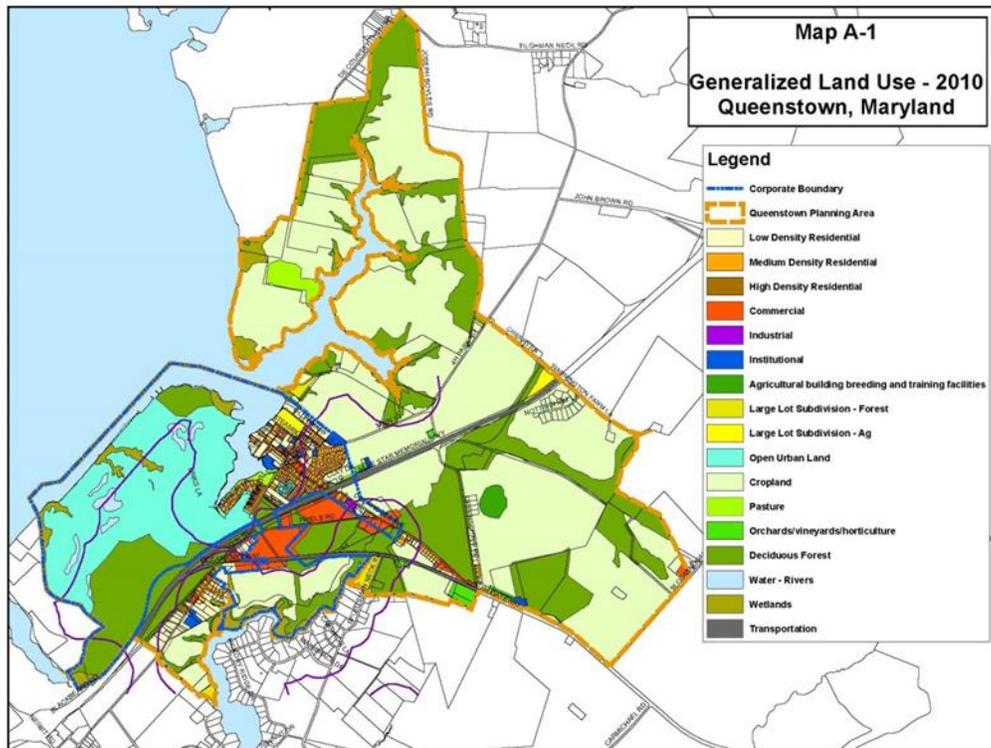
Figure 8-1 Dudley North Design Guidelines

APPENDIX A: Nutrient Loading Analysis - Summary Results

Table A-1 summarizes the land use inputs to the nutrient loading spreadsheet. It updates the Queens Anne's County assessment with 2010 versus 2008 land use (see Map A-1). The planned growth scenarios assessed include land use change within the planning period (2040). This scenario assumes:

- 30 residential units and 15,000 square feet of commercial as a result of infill and redevelopment within the Town;
- development of the Dudley North property with 130 dwelling units and 25,000 square feet of commercial land use;
- development of the Wheatlands property with 500,000 square feet of commercial land use;
- and development of the Queenstown Resort property with 185,000 square feet of commercial land use. In the case of the Queenstown Resort property "commercial" land use is used as a surrogate classification for mixed development that may include an event center, rental cottages and dining facilities/restaurants.

The "Build Out" scenario assumes additional development of the Long Range Growth areas shown on Map 2-3 inputted as 290 residential units on the Dudley Home Farm, 130 residential units and 550,000 square feet of commercial on the Dudley South property and 240 residential units on the Callahan property.



Update General Land Use Classes (2010)	2010 Land Use*		2040 Land Use			Build Out
	Acres	Percent of Total Acres	Acres	Percent of Total Acres		Percent of Total Acres
Low Density Residential (1 to 2 units per 5 acres)	107	2.7%	103	2.6%	103	2.6%
Medium Density Residential (2 to 8 units per acre)	91	2.3%	176	4.4%	756	19.0%
High Density Residential (8+ units per acre)	1	0.0%	2	0.0%	2	0.0%
Commercial	110	2.8%	274	6.9%	454	11.4%
Industrial	2	0.1%	2	0.0%	2	0.0%
Institutional	20	0.5%	20	0.5%	20	0.5%
Surface Mining	0	0.0%	0	0.0%	0	0.0%
Open Urban Land	449	11.3%	355	8.9%	355	8.9%
Large Lot	17	0.4%	17	0.4%	17	0.4%
Large Lot, forest	19	0.5%	19	0.5%	19	0.5%
Cropland	1,833	46.1%	1,679	42.2%	919	23.1%
Pasture	32	0.8%	32	0.8%	32	0.8%
Orchards/vineyards/horticulture	16	0.4%	16	0.4%	16	0.4%
Feeding operations	50	1.3%	50	1.3%	50	1.3%
Agricultural building breeding	0	0.0%	0	0.0%	0	0.0%
Row and garden crops	0	0.0%	0	0.0%	0	0.0%
Deciduous forest	1,040	26.1%	1,040	26.1%	1,040	26.1%
Evergreen forest	0	0.0%	0	0.0%	0	0.0%
Mixed forest	0	0.0%	0	0.0%	0	0.0%
Brush	0	0.0%	0	0.0%	0	0.0%
Water	44	1.1%	44	1.1%	44	1.1%
Wetlands	85	2.1%	85	2.1%	85	2.1%
Barren Land	0	0.0%	0	0.0%	0	0.0%
Transportation	63	1.6%	65	1.6%	65	1.6%
	3,979	100.0%	3,979	100.0%	3,979	100.0%

*Source: Land Use/ Land Cover for Maryland, 2010 Edition, Maryland Department of Planning

Table A-2 updates Table 11.17-4 Assessing Impacts of Nitrogen, Phosphorus and Impervious Surface Land Use and Septic Systems found in Appendix 3, Water Resources Analysis and Best Management Practices Toolkit of the Queen Anne’s County Comprehensive Plan 2010.¹ It reflects expected land use changes associated with growth during the planning period (2040) and at build out of the Planning Area in this Plan which differs slightly from those assessed by the County in the column titled “2030 Preferred Land Uses”. In comparison the results summarized in Table A-2 are slight higher than those of the

¹ Queens Anne’s County Comprehensive Plan 2010, Appendix 3: Water Resources Analysis and Best Management Practices Toolkit, pg. 151-155.

County. The increase can be attributed to key assumptions and added inputs that differ from those used in County’s analysis. These assumptions and inputs include:

1. an altered development program for the Wheatlands property;
2. inputting an estimate of residential septic systems in the planning area and assumptions concerning the percent of septic that will add denitrification; and
3. inputting a constant point source loading reflecting the Queenstown WWTP nutrient cap. Holding the point source loading at a constant probably overstates loadings in the 2040 scenario.

Table A-2: Assessing Impacts of Nitrogen, Phosphorus and Impervious Surface Land Use and Septic Systems				
Land Use and Septic Systems				
Queenstown Planning Area	2010LU, 2002 BMPs (Acres)	2010 LU, Trib Strat BMPs (Acres)	2040 Trib Strat BMPs (Acres)	Build Out Trib Strat BMPs (Acres)
Development	410	410	618	1,417
Agriculture	1,931	1,931	1,796	1,017
Forest and wetlands	1,125	1,125	1,149	1,125
Water	44	44	43	44
Other	469	469	373	375
Total Area	3,979	3,979	3,979	3,979
Residential Septic (EDUs)	108	108	108	108
Non-Residential Septic (EDUs)	0	0	0	0
Total Nitrogen Loading				
Queenstown Planning Area	2010LU, 2002 BMPs (Lbs/Yr)	2010 LU, Trib Strat BMPs (Lbs/Yr)	2040 Trib Strat BMPs (Lbs/Yr)	Build Out Trib Strat BMPs (Lbs/Yr)
Development NPS	3,489	2,337	3,675	8,459
Agriculture NPS	30,283	16,875	15,701	8,925
Forest NPS	1,669	1,605	1,609	1,575
Other Terrestrial NPS	4,176	2,835	2,264	2,278
Total Terrestrial Load	39,617	23,651	23,248	21,237
Residential Septic (EDUs)	1,084	1,084	1,006	503
Non-Residential Septic (EDUs)	0	0	0	0
Total Septic Load	1,084	1,084	1,006	503
Total NPS Nitrogen Load	40,702	24,736	24,254	21,740
Total PS Load	3,266	3,266	3,266	3,266
Total Nitrogen Load (NPS+PS)	43,968	28,002	27,520	25,006

Total Phosphorus Loading				
Queenstown Planning Area	2010LU, 2002 BMPs (Lbs/Yr)	2010 LU, Trib Strat BMPs (Lbs/Yr)	2040 Trib Strat BMPs (Lbs/Yr)	Build Out Trib Strat BMPs (Lbs/Yr)
Development NPS	389	157	247	569
Agriculture NPS	2,143	1,836	1,708	968
Forest NPS	25	23	23	23
Other Terrestrial NPS	575	191	152	153
Total Terrestrial Load	3,133	2,207	2,130	1,713
Total PS Load	411	411	411	411
Total Phosphorus Load (NPS+PS)	3,544	2,618	2,541	2,124
Impervious Cover and Open Space				
Queenstown Planning Area	2010LU, 2002 BMPs	2010 LU, Trib Strat BMPs	2040 Trib Strat BMPs	Build Out Trib Strat BMPs
Total Impervious Cover	230	230	358	657
Agriculture	1,881	1,881	1,746	967
Forest	1,040	1,060	1,063	1,040
Percent	5.8%	5.8%	9.0%	16.5%