

Larry Hogan, Governor Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary **Horacio Tablada**. Deputy Secretary

November 11, 2019

The Honorable Thomas Mason President, Kent County Commissioners Kent County Government Center 400 High Street Chestertown, MD 21620

Dear President Mason:

The Maryland Department of the Environment (MDE) has completed its review of the **2018 Update to the Kent County Comprehensive Water and Sewer Plan (Plan Update)**. The County Commissioners of Kent County adopted the Plan Update on June 18, 2019 through Resolution 2019-06.

During MDE's initial review of the Plan, it was determined that more time was required for the County to submit supplemental material pertaining to water and sewer service areas, text changes and data updates. The initial review period, set to expire on September 27, 2019, was extended by an additional 45 days, to November 11, 2019.

During MDE's review, the Maryland Department of Planning (MDP) advised MDE that the Plan is generally consistent with the 2018 Kent County Comprehensive Plan (see enclosed comments).

It is noted that data associated with COMAR 26.03.01.06.1 pertaining to the Pump Stations Flow Data was omitted due to insufficient data. MDE encourages Kent County and its Towns to continue evaluating and recording flow data. This section should be included in the next Plan update.

Subsequent to the submittal of the adopted Water and Sewer Plan Update, the County submitted supplemental information that MDE incorporated into the Plan as modifications.

Therefore, in accordance with §9-507(a) of the Environment Article, Annotated Code of Maryland, MDE hereby approves the Plan in part and modifies the Plan in part (see enclosed modifications).

Specifically, MDE approves the following portions of the Plan in full, as set forth below:

- Chapter 1 Goals, Organization, Policy and Procedures
- Chapter 2 Background and Planning
 - Except for P. 2-4, Section 2.3.2 Water Plant Analysis
 - Except for Table 2-2 Water Supply Evaluation
- Chapter 3 Water
 - Except for P. 3-2, Table 3-1 Source Water Assessment Report Data
 - Except for P. 3-6 to 3-7, Section 3.5.2 Rock Hall
 - Except for Figure 3-1, Town of Chestertown Water Treatment Plant
 (WTP) and Water Service Area
 - Except for Figure 3-5, Town of Millington Water Treatment Plant and
 Water Service Area
- Chapter 4 <u>Sewerage</u>
 - Except for P. 4-11, Section 4.5.5 Millington
 - Except for P. 4-18, Section 4.5.12 Bayshore Campground LLC and
 4.6.2 Little Neck
 - Except for Figure 4-1, Town of Chestertown Wastewater Treatment
 Plant (WWTP) and Wastewater Service Area
 - Except for Figure 4-5, Town of Millington Wastewater Treatment Plant
 and Wastewater Service Area

MDE modifies the following portions of the Plan, as set forth below (see enclosed modifications):

• P. 2-4, Section 2.3.2: Water Plant Analysis

MDE is modifying P. 2-4 to update the number of wells in the Chestertown water system.

Table 2-2: Water Supply Evaluation

MDE is modifying Table 2-2 to note that a separate water system analysis may be included in the next Plan Update.

• P. 3-2, Table 3-1: Source Water Assessment Report Data

MDE is modifying P. 3-2, Table 3-1, to include the Millington Wellhead Protection Area, which should be updated when the information is available.

• P. 3-6 & 3-7, Section 3.5.2: Rock Hall

MDE is modifying P. 3-6 and 3-7, Section 3.5.2, Rock Hall to include the eight (8) Haven Harbor EDU's and to note the drilling of a replacement well.

• Figure 3-1: Town of Chestertown WTP and Water Service Area

MDE is modifying Figure 3-1, Town of Chestertown Water Treatment Plant and Water Service Area to note that the added existing and planned service areas do not currently generate any additional flow. Projected flow numbers in the Plan do not incorporate flow from these areas.

• Figure 3-5: Town of Millington WTP and Water Service Area

MDE is modifying Figure 3-5, Town of Millington Water Treatment Plant and Water Service Area to note that the added existing and planned service areas do not currently generate any additional flow. Projected flow numbers in the Plan do not incorporate flow from these areas.

• P. 4-11, Section 4.5.5: Millington

MDE is modifying P. 4-11, Section 4.5.5, Millington, to clarify the total number of EDU's served by the Millington WWTP.

• P. 4-18, Section 4.5.12: Bayshore Campground LLC

MDE is modifying P. 4-18, Section 4.5.12, Bayshore Campground LLC to clarify that this project is not approved in this Plan

• P. 4-18, Section 4.6.2: Little Neck

MDE is modifying P. 4-18, Section 4.6.2, Little Neck to add explanatory text.

• Figure 4-1: Town of Chestertown WWTP and Water Service Area

MDE is modifying Figure 4-1, Town of Chestertown Wastewater Treatment Plant and Wastewater Service Area to note that the added existing and planned service areas do not currently generate any additional flow. Projected flow numbers in the Plan do not incorporate flow from these areas.

Figure 4-5: Town of Millington WWTP and Water Service Area
 MDE is modifying Figure 4-5, Town of Millington Wastewater Treatment Plant and Wastewater Service Area to note that the added existing and planned service areas do not currently generate any additional flow. Projected flow numbers in the Plan do not incorporate flow from these areas

This action completes MDE's review, as required by §9-507 of the Environment Article, Annotated Code of Maryland. If you need further assistance on these matters, please contact Heather Barthel, Acting Deputy Director, at (410) 537-3512, toll-free at (800) 633-6101, or by e-mail at heather.barthel@maryland.gov.

Sincerely.

D) Lee Currey, Director

Water and Science Administration

Enclosures

CC:

Charles Boyd, Director, Planning Coordination, MDP Heather Barthel, Deputy Director, WSA, MDE Michael S. Moulds, Director of Public Works, Kent County the towns to comply with the state's water resource planning mandates. Also, policies addressing unincorporated portions of the County are listed in this element, while water resources policies for the incorporated municipalities are set forth in each town's Comprehensive Plan and its own Water Resources Element.

The WRE was developed in response to Enhanced Nutrient Removal (ENR) Strategy for the Chesapeake Bay. The WRE was designed to examine the combined nutrient loading of point and non-point sources and provide guidance for future land use and development decisions. Under the WRE, comprehensive plans must evaluate the capacity of the water and wastewater treatment plants under present conditions and projected 2048 conditions. The water plants will be evaluated based on hydraulic capacity; wastewater treatment plants will be evaluated based on hydraulic capacity and nutrient caps established by the ENR Strategy. The ENR Strategy is the specific WWTP strategy established by the Maryland's Chesapeake Bay Statewide Tributary Strategy Implementation Plan. The nitrogen and phosphorus non-point loadings under current and projected 2020 conditions were also examined and are detailed in Chapter 5.

2.3.2. Water Plant Analysis

The main source of municipal and private water supply in Kent County is groundwater drawn from the Aquia Greensand Aquifer. The water supply analysis is based solely on the yield performance of the wells in the region. Where data is available, demand was compared to capacity. Well tests were performed at four of the water treatment plants: Betterton, Kennedyville, Millington and Worton. Results of the water analysis are shown in Table 2-2. As shown in Table 2-2, these plants have adequate supply to meet their demand. Engineering judgment suggests that the rest of the water treatment plants in Kent County will have adequate supply. The Chestertown water system consists of 6 wells in the Aquia formation and 2 wells in the Magothy formation. MDE required cleanup for two leaking underground storage tanks in the late 1980s; since that time, treatment has been in use for oil recovery and MDE monitors the Chestertown water system annually for VOCs. The water service areas currently have no planned extensions and demand is not expected to increase significantly. Based on a projected 2048 population increase of 1,246 EDU's there is a sufficient number (2,074) of EDU's County wide in available water supply capacity. No water supply problems are anticipated in the 2048 planning horizon.

Decades of increased pumping have caused groundwater levels in parts of the Maryland Coastal Plain to decline. Continued decline could affect the long term sustainability of this resource in Coastal Plain communities and the agricultural industry of the Eastern Shore. Based on a recommendation from the Advisory Committee on the Management and Protection of the State's Water Resources, the Maryland and U.S. Geological Survey in 2007 developed a Science Plan for a Comprehensive Regional Assessment of the Atlantic Coastal Plain Aquifer System. The study area encompasses all of the Maryland and Delaware Coastal Plain as well as portions of Virginia. Information from the Assessment will provide the basis of allocation ground water in the Coastal Plain in the future. Information from this effort will be incorporated in the future Water and Sewer Plan Upgrades as it becomes available.

2.3.3. Wastewater Treatment Plant Analysis

2.3.3.1. Purpose of Wastewater Treatment Plant Analysis

The purpose of the Wastewater Treatment Plant (WWTP) Analysis is to examine the available capacity of each WWTP and evaluate the potential for growth. The available capacity is evaluated based on flows

Table 2-2 Water Supply Evaluation

Water Supply Plant	Permitted Flow	Permit No.	Current Demand	Year	Available Capacity*
	(GPD)	h	(GPD)		,
Chestertown	975,000	K.E1970G004-05	709,000*	2015	242,000
		K.E1992G011-02			
Rock Hall	230,000	K.E1971G004	168,000	2017	62,000
Galena	90,000	K.E1971G003-07	45,907	2017	44,093
Betterton	50,000	KE1979G002	30,000	2017	20,000
Millington	137,000	K.E2003G001-01	72,374	2017	52,363
Kennedyville	51,800	K.E1967G008-06	17,000	2017	34,800
Worton-Butlertown	125,000	KE1979G105-03	61,000	2017	64,000
Fairlee	146,000	K.E1979G104-03	43,000	2017	103,000
Total County	1,804,800		437,281		622,256
* Based on Well Production	uction				

Based on Well Production

Equivalent available capacity is 2,074 EDU's@ 300 gpd/EDU.

with the largest source removed from service. If necessary, a separate water source analysis may be included in the next Plan Update. It is noted that in order to evaluate water supplies (from a water source perspective), well production capacity should be evaluated

- b. Source Water Assessment for the Kennedyville Water System in Kent County, Maryland (MDE, July 2001)
- c. Source Water Assessment for the Worton Water Supply in Kent County, Maryland (MDE, July 2001)
- d. Source Water Assessment for the Town of Betterton in Kent County, Maryland (MDE, July 2001)
- e. Source Water Assessment for the Edesville Water System in Kent County, Maryland (MDE, July 2001)
- f. Source Water Assessment for the Town of Chestertown in Kent County, Maryland (MDE, December 2003)
- g. Source Water Assessment for the Town of Galena in Kent County, Maryland (MDE, July 2001)
- h. Source Water Assessment for the Town of Rock Hall in Kent County, Maryland (MDE, February 2000)

Table 3-1. Source Water Assessment Report Data

Wellhead Protection Area	Source from Confmed Aquifer?	WHPA determined to be susceptible to contaminants?	Specific Recommendations (see below for general recommendations included in all reports)
Fairlee	yes	no	
Millington	**	**	**
Kennedyville	yes	no	Raw water bacteriological sampling for Well No.2 should be considered
Worton	no* (old shallow wells) / yes (new deeper wells)	old shallow wells: yes – volatile organic compounds* I new deeper wells – not part of 2001 assessment	Ensure that any new development within the WHPA is limited and sewered to protect the ground water against microbiological contaminants, excessive nitrates and chemicals from household wastes.
Betterton	no	yes, Susceptible to land use activities in the wellhead protection area	Continued routine monitoring
Edesville	yes	no	
Chestertown	No (six wells Nos. 2-7 supply fromAquia aquifer)/ Yes (new deeper well No.1)	Yes Volatile organic compounds, radionuclides, nitrates	Continued monitoring, wellhead protection ordinance and easements.
Galena	yes	no	
Rock Hall	yes	no no	

^{*} Two (2) deeper wells have replaced four (4) shallower wells on which source water assessment was based. The two (2) new wells are in a confined aquifer. **A water source assessment was also conducted for the Millington area. Details of this assessment will be included in the next Plan update.

Kent County Comprehensive Water & Sewerage Plan

3.5.1. Chestertown

The incorporated Town of Chestertown owns and operates a water supply system. The Chestertown Water Treatment Plant serves Chestertown within the town limits and an area outside of the town limits on MD. Route. 291. A map of the service areas is included at the end of this chapter.

Table 3.5.1 in Appendix 3-F describes the water system supply sources, service area, flows, storage, treatment and distribution system. The water system is permitted for an average daily flow of 975,000 gpd and a maximum daily average of 1,300,000 gpd during the month of highest use. Average daily flow and maximum daily average flow during the month of highest use for 2015 were 713,000 gpd and 1,100,000 gpd, respectively. The Chestertown water service area includes approximately 2,100 connections (EDUs).

System History and Upgrades:

The town upgraded its water supply system with a second, deep water well in the Magothy formation, a second treatment facility with green sand filters, a cover for the storage reservoir and an additional covered reservoir.

In 2016, the Town of Chestertown annexed 79.67 acres of vacant land to the northeast of Chestertown located along Washington Avenue and Scheeler Road. Lands identified on Tax Map 37 to include Parcels 10,486, 172 (Lot 1), and 20, as well as a 1.02-acre unidentified parcel/right of way are included in the planned Town service area.

In 1999, the town replaced the water system aerat6rs.

In 1997, the town revised the Town Charter to its original language prohibiting out of town water extensions without annexation.

The Annual Drinking Water Quality Report for 2016 is included in Appendix 3-G.

3.5.2. Rock Hall

The incorporated Town of Rock Hall owns and operates a water supply system. The Rock Hall water treatment plant serves the Rock Hall and Gratitude area, and the Edesville and Wesley Chapel Corridor County service areas. A map of the service areas is included at the end of this chapter. The service area has been corrected to include existing service to the Haven Harbor South marina (former Sailing Emporium). There are 8 EDU's associated with this development at this time.

Table 3.5.2 in Appendix 3-F describes the water supply system sources, service area, flows, storage, treatment and distribution system. The water system is permitted for an average daily flow of 230,000 gpd with a maximum daily average of 300,000 gpd during the month of highest use. The highest average daily flow for 2017 was 168,000 gpd.

The Rock Hall water service area includes 1,183 connections (EDUs).

The Annual Drinking Water Quality Report for 2017 is included in Appendix 3-G.

System History and Upgrades: In 2008, the town extended an 8-inch diameter water main to provide service to the County's Edesville area.

Kent County Comprehensive Water & Sewerage Plan

In 2016, the Town of Rock Hall upgraded its water treatment plant. The upgrade included a new clarifier, new generator and a new chemical pumps. In 2017, a replacement well was drilled for Rock Hall.

3.5.2.1. Edesville Water Service Area

The Kent County Department of Public Works owns and operates the Edesville water supply service area, which is supplied water by the Town of Rock Hall water supply system. A map of the service area is included at the end of this chapter.

The Edesville water service area includes 98 connections (EDUs) and approximately 245 persons.

The Annual Drinking Water Quality Report for 2017 is included in Appendix 3-G.

System History and Upgrades:

In 2008, the Edesville service area was connected to the Town of Rock Hall water systeln via an 8-inch diameter water main. A new 100,000-gallon elevated water storage tank was constructed in the County's Edesville Park to provide increased fire flow in Edesville.

Prior to the connection to Rock Hall, the Edesville water supply was obtained from one well located in the Magothy Formation. Storage was provided by a 30,000-gallon tank. Treatment processes included aeration, iron and manganese removal, by means of chemical addition, flocculation and sedimentation with pre- and post-chlorination. The old Edesville water supply well is currently being used by the Maryland Geologic Survey only as a monitoring and sampling point.

In 2010 an 8" water main and fire hydrants were installed along Lovers Lane to serve 11 lots which were declared to have /had failing septic systems.

3.5.2.2. Wesley Chapel Corridor Water Service Area

The Kent County Department of Public Works owns and operates the Wesley Chapel Corridor service area, which is supplied water by the Town of Rock Hall. A map of the service area is included at the end of this chapter.

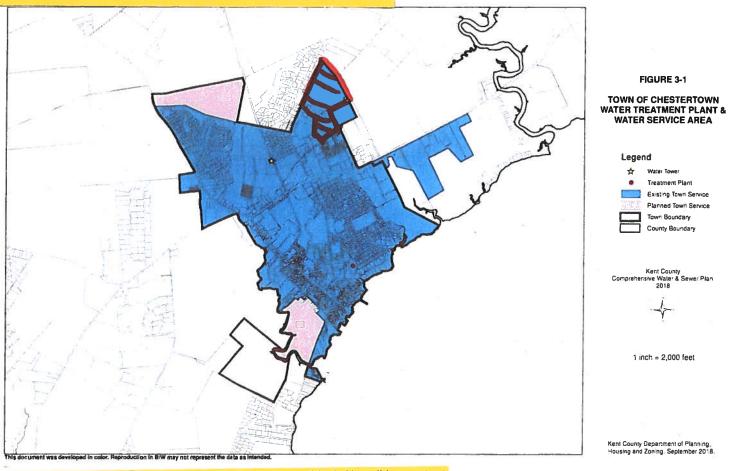
The Wesley Chapel Corridor water service area includes 2 connections (EDUs) and approximately 5 persons.

System History and Upgrades: The County reached an agreement with the town to extend the line from its termination point and connect it to the Edesville System. Construction was completed in 2006.

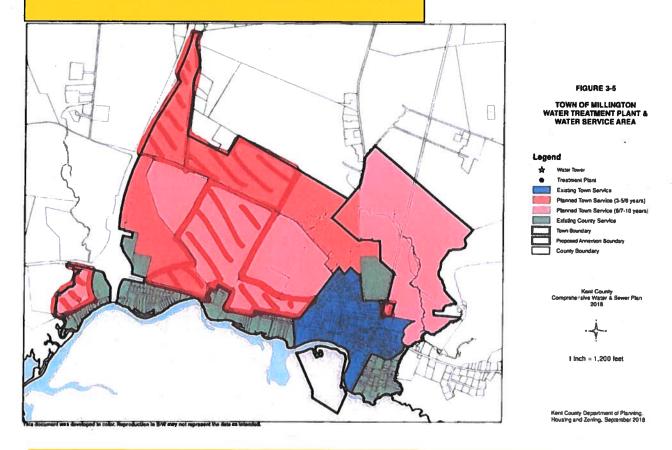
3.5.3. Galena

The incorporated Town of Galena owns and operates a water supply system that serves the town and a small area outside the town limits. A map of the service area is included at the end of this chapter.

Table 3.5.3 in Appendix 3-F describes the water supply system sources, service area, flows, storage, treatment and distribution system. The water system is permitted for an average daily flow of 90,000 gpd with a maximum average daily flow of 120,000 gpd during the month of highest use. Average daily flow



Note: Projected flows from the new areas planned for service (shaded in red) have not yet been identified and are not included in the estimated flow from this area described in the Plantext or Tables.



Note: Projected flows from the new areas planned for service (shaded in red) have not yet been identified

and are not included in the estimated flow from this area described in the Plan text or Tables.

Kent County Comprehensive Water & Sewerage Plan

nitrogen and 90% reduction in phosphorus. The project bid January 2017 and construction began in June 2017. The project is being funded though the Maryland Department of the Environment (MOE) Bay Restoration Program and United States Department of Agriculture-Rural Development. The startup of the upgraded facility occurred in October 2018.

4.5.5. Millington

The incorporated Town of Millington owns a wastewater treatment system. Maryland Environmental Services (MES) operates the wastewater treatment system contractually for the Town of Millington. The Millington wastewater treatment plant serves Millington, West Millington, Sandfield, Millington Elementary School, the former Howard Johnson's Restaurant located on U.S. Rte. 301, and the development at Rte. 291 / 301 including Food Lion, River's Edge, and Stoltzfus. An extension of service was authorized by MDE to the Chesterville Forest development to address failing septic systems. Please see section 4.7.7 for more details. The amendment can be seen in Appendix 4-I.

The collection system in areas outside the town limits is owned and operated by the County (Appendix 1-E contains intermunicipal agreements). A map of the service areas is included at the end of this chapter.

Table 4.5.5 in Appendix 4-C summarizes the wastewater treatment system technology, treatment process, service area, design and production flows and basic discharge information. The treatment facility is permitted for a flow of 105,000 gpd. Millington requested a design capacity permit revision from MOE which would allow flow up to 140,000 gpd. The revised discharge permit allows for an increase in average daily flow to 140,000 gpd after appropriate upgrading and approval by MDE that the design capacity is sufficient. The average flow for 2017 was 70,000 gpd.

The Millington wastewater treatment plant discharges to the Chester River, which is designated as Use I water and is protected for water contact recreation and aquatic life. It is located within the Upper Chester Watershed. Tributary Strategy nutrient limits for nitrogen and phosphorus are 3,342 lb/year and 457 lb/year respectively.

The existing Millington town sewerage service area includes 281 connections (EDUs). There are an additional 150 EDU connections in the County served by the wastewater treatment plant.

System History alld Upgrades:

In 2017, KCI Technologies, on behalf of the Town of Millington, initiated USDA Funding inquiries into replacing the existing town wastewater treatment plant in part, due to its location within a floodplain and thereby open to potential flooding risks and also to upgrade the treatment process to enhanced nutrient removal (ENR). The proposed alternative consists of constructing a new pump station, at the location of the existing treatment plant, that would convey the town's wastewater flow south to the Town of Sudlersville's wastewater system. At this time, the plan is conceptual and requires further investigation and numerous State, County and local approvals.

In 2011, a Low-pressure sewage collection system was constructed to Chesterville Forest Road, a Priority Funding Area, providing connections for 37 properties identified with failing septic systems.

In 2009, upgrades and service area extensions were being planned for the Millington service area. The map of the service area included at the end of this chapter includes proposed service area extensions.

4-11 2018

Kent County Comprehensive Water & Sewerage Plan

4.5.11. Great Oak Resort Club

Mears, Inc. owns and operates the wastewater treatment facility that serves the Great Oak Resort Club. The Club includes a restaurant, motel and marina.

The system is a one-acre stabilization lagoon with chlorination and dichlorination prior to discharge into Fairlee Creek in the Stillpond-Fairlee Watershed. The facility treats an average flow of 6,000 gpd and has a design capacity of 14,000 gpd.

4.5.12. Bayshore Campground, LLC

Bayshore Campground is a private campground located at 4228 Eastern Neck Rd, Rock Hall. The Campground provides seasonal public camping sites. The recreational vehicle camp sites provide electric and water service. There are four holding tank dump sites on the property.

The Campground currently utilizes holding tanks for recreational vehicle pump outs and onsite flows generated by the onsite bathrooms and office. There are no laundry facilities. Holding tank sewage is pumped out by a local septic hauling service and transported to the Kent County Worton wastewater treatment facility for disposal.

The Campground is in the process of designing and obtaining approval from the Maryland Department of the Environment for a conventional on-site disposal system on 6 acres of the property. The design is proposed to utilize Best Available Technology for reduction of nutrients and a trench infiltration leachate field with an average daily flow of 12,000 gallons per day and a maximum design flow of 24,000 gallons per day to be able to discontinue hauling of holding tank sewage.

Figure 4.12 identifies the proposed sewerage service area for the campground and location of the treatment facility. At the above mentioned planning stage, the Campground is exploring (in conjunction with MDE) the possibility of installing a 12,000 gallon per day on-site disposal system. Inclusion of this planning step in the Kent County Water and Sewer Plan does not constitute approval of this project or of a re-designation of the proposed sewer service area in Figure 4.12.

4.6. Shared Septic Systems

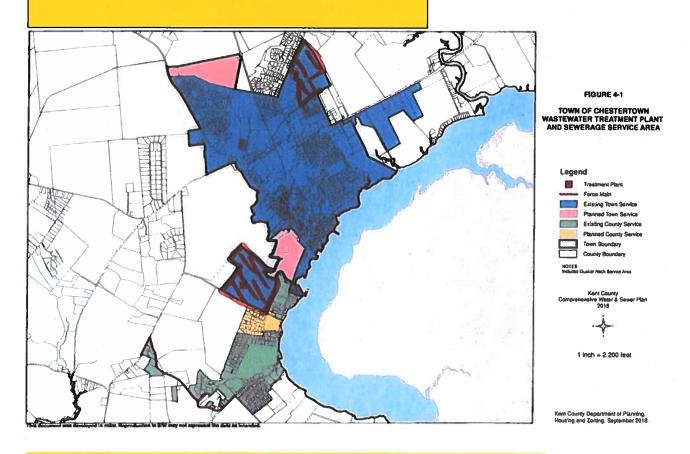
4.6.1. Rudnick

The Kent County Department of Public Works operates and maintains the Rudnick sewerage system. It is a shared septic system that serves nine (9) single family homes. The septic system has multiple fields that are routinely alternated. A map of the service area is included at the end of this chapter.

4.6.2. Little Neck

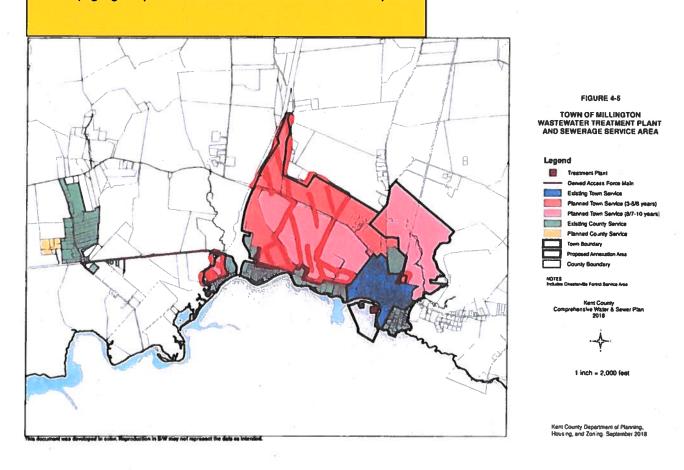
The Kent County Department of Public Works operates and maintains the Little Neck sewerage system. It is a shared septic system is designed to serve sixteen (16) existing single-family homes and a future community area. Each home has a septic tank, which drains to an effluent pump and chamber connected to a small diameter force main, which flows to the shared septic system. A map of the service area is included at the end of this chapter. (See figure 4-2, upper left corner)

4-18 2018



Note: Projected flows from the new areas planned for service (shaded in red) have not yet been identified

and are not included in the estimated flow from this area described in the Plan text or Tables.



Note: Projected flows from the new areas planned for service (shaded in red) have not yet been identified and are not included in the estimated flow from this area described in the Plan text or Tables.

Maryland DEPARTMENT OF PLANNING

September 10, 2019

Ms. Dinorah Dalmasy, Integrated Water Planning Program Maryland Department of the Environment Water and Science Administration 1800 Washington Boulevard Baltimore, Maryland 21230

Re: Adopted 2018 Kent County Master Water and Sewer Plan Update

Dear Ms. Dalmasy:

Thank you for providing the Maryland Department of Planning (Planning) with a copy of the adopted update to the 2018 Kent County Water and Sewerage Master Plan (Plan). The Plan was adopted by Resolution 2019-06 on June 18, 2019.

Planning's review of the draft update to the Plan—provided to the Maryland Department of the Environment (MDE) on November 21, 2018—did not raise any comprehensive plan consistency issues, but Planning did provide comments on three of the Plan's attachments. In response to MDE's review letter, which included Planning's comments, Kent County provided written responses to each of the comments raised by MDE, but they did not include a response to the comments raised by Planning.

In response to comments from MDE regarding the draft update to the Plan, Kent County revised population estimates; included permit numbers; revised rated plant capacities; improved map resolutions; identified community wells; revised treatment, discharge and planned improvement information at municipal facilities; and included missing Figure 4.12. In response to comments from Planning regarding the draft update to the Plan, Kent County amended Appendix 1D (Extension of Municipal Services) to remove references to Article 66B. However, no response was provided and no revision was made regarding Planning's comments on Appendix 1C (Model Wellhead Ordinance), and Appendix 1C continues to reference Article 66B. Furthermore, the slides included as part of Appendix 2B remain unchanged and continue to be illegible.

Ms. Dinorah Dalmasy

September 10, 2019

Re: Adopted 2018 Kent County Master Water and Sewer Plan Update

Page 2

Despite the lack of update to Appendices 1C and 2B, the adopted changes are **generally consistent** with the 2018 Kent County Comprehensive Plan, specifically with the following goals:

- to encourage growth in towns and villages;
- to coordinate growth with towns and villages;
- to promote water and sewer services in designated communities; and
- to coordinate future development with the provision of infrastructure.

If you have any questions concerning these comments, please call David Dahlstrom at 410-819-4084 or Sylvia Mosser at 410-767-4487.

Sincerely,

Charles W. Boyd

Director, Planning Coordination

cc: Robin Pellicano; Nicholai Francis-Lau; and Steve Alfaro, MDE

Tony Redman, DNR Dwight Dotterer, MDA

Jason Dubow; Joe Griffiths; David Dahlstrom; and Sylvia Mosser, Planning