Town of Preston, MD
Water Resources Element

Microsoft Office Outlook 2007.lnk

1.0 Introduction

In 2006, the Maryland Legislature required all counties and municipalities to examine their water resources when predicting future growth. The Water Resources Element requires municipalities to analyze current water supplies, wastewater treatment plant capacity, and point source and non-point source loadings. When looking at the future growth needs, the Town must address any shortcomings of water resources and either change future land use scenarios to eliminate problem areas or provide options to address any limitations. The following section examines Preston's existing water resources in conjunction with the Town's current development and projected future growth. Where necessary, improvements and alternatives to solve water resource problems are discussed.

Goals:

- New development will be served by public water and sewer infrastructure.
- Development approvals will be contingent upon a finding by the Planning Commission that adequate capacity is available to fully serve the proposed project(s) or will be available in order to satisfy timely approvals and issuances of occupancy permits.
- New development must not add new burdens to Town residents; rather it should contribute its fair share to the financial and infrastructural burdens created by growth. Potential infrastructure improvements necessitated by growth will be fully funded by developer interests although the Town may act as a partner for potential grants and loans
- The Town will maximize its utilization of Federal and State grants and loans to help reduce the financial burden on residents and system users for any capacity or process upgrade or enhancement that may be mandated in the future by the Maryland Department of Environment.

2.0 Growth Assumption

The Municipal Growth Element established a simple growth scenario for future residential dwelling units in Preston, Maryland. This scenario calls for infill development on existing vacant parcels within Town and will be evaluated for needed water and waste water infrastructure capacity. Similarly, an analysis of two designated growth areas will also be included.

Evaluation of infill involves identifying undeveloped lots within the existing corporate limits of the Town and estimating uses and potential demands based on zoning and lot size. The total potential future residential development within the existing town boundary is estimated at 375 households based on the projected population divided by the anticipated household size in 2030. Average household size is expected to decline over the planning period from 2.57 in 2010 to 2.47 in 2030. An aging overall population is assumed to account for the decreasing household size.

Designated growth areas are areas outside the current corporate limits that would be most conducive to annexation due to serviceability, geographic proximity, and presence of community facilities. The two designated growth areas in Preston are described in the Municipal Growth Element (MGE). The total residential usage anticipated within the designated *growth areas* is based on 44 existing developed residential parcels and 5 vacant residential lots. Additional potential non-residential development could be accommodated on two agricultural parcels of about 55 acres and 20 acres respectively. Additionally, a developed parcel of nearly 18 acres (commercial trucking terminal) is zoned for commercial use and would require minimal water and sewer service.

Additional capacity may be needed in order to accommodate future industrial or commercial growth as well as a range of potential infill development demands. The Town of Preston will evaluate the ability to provide water and sewer services to industrial and commercial users upon the user's request.

The MGE includes a capacity analysis of vacant in-town land that suggests available land (as currently zoned) has a capacity to accommodate 263 new dwelling units (DU's). However, only 45 dwelling units could be constructed on land that is currently served by public sewer. An additional 72 units could be constructed if the Water and Sewer Plan's 5-year service extension is implemented and an additional development potential of 146 units would be achieved by extending the service area to the 10-year "planned" area.[1]

Based on population projections (and an estimated demand for new dwellings), 25 new dwelling units will be needed over the next 5 years and a total of 46 will be needed over

the next 10 years. This nearly equals the current growth capacity of already served vacant land (without any extension of sewer or water service to newly annexed areas within Town). The 2000 census listed 242 existing dwelling units. The MGE listed total development capacity of the available land inventory within Preston as 263. Accordingly, there presently exists sufficient land inventory to accommodate the projected needs for new dwellings throughout the planning period and beyond.

If both designated growth areas are annexed and added to the land inventory, the additional potential residential service demand will include 44 existing residences and 5 vacant lots zoned for residential use. All other potentially annexed parcels are planned for non-residential purposes, including preservation and tourism development.

Table 1-1 Dwelling Unit Projections

Preston Dwelling Unit Projections							
	Census	Projected	Projected	Projected	Projected	Projected	Projected
	2000	2005	2010	2015	2020	2025	2030
MDP	242	258	288	324	362	405	449
Preston	242	255	271	277	298	320	343

Source: MDP selected "Highest Development Pressure Method; Preston Comprehensive Plan, draft MGE (adjusted to 2007 Assessment and Taxation data)

To ensure State agency concerns are addressed, this Water Resource Element will evaluate the Town's water supply, wastewater capacity, and source loading with respect to the growth projected in the infill build-out scenario of 263 DU's plus the growth area potential of 49 dwellings. The hypothetical ultimate build-out scenario would account for full infill and complete development of all designated growth areas resulting in an increase of 312 dwellings. At this time it is highly improbable that the Town will experience this level of growth over the next 20 years. A total of around 70 new homes is much more likely and consistent with the growth policies included in the MGE.

3.0 Water

Groundwater Sources

The Town has two wells, located on Maryland Avenue, that supply water to the public distribution system. All of the potable water supplied by Preston used for industrial, commercial and residential purposes within the Town of Preston is secured from the Piney Point Aquifer at depths of 600 feet and 533 feet respectively.[2]

One well feeds a 6 inch pipe, and the other, drilled in 1991, feeds an 8 inch pipe. Chlorination is provided at the water treatment plant. An elevated tank on Wright Street at Chambers Street provides 150,000 gallons of storage[3]. The system is permitted to withdraw an annual average of 80,000 gpd and a maximum of 120,000 gpd.[4]

Table 1-2: Existing Public Water System Capacity

Aquifer	Permitted	Average Daily Usage	Available Capacity
Piney Point	80,000 gpd *	64,915 gpd	15,085 gpd

* gpd = gallons per day

source: Preston pumping records for 2006-2009

The Town will consider the feasibility of establishing a Wellhead Protection Area to prevent source water contamination through further restrictions on land use within a 100 foot radius of each well. The Town will evaluate the potential Wellhead Protection Area during project reviews and assess potential problem areas and present solutions to prevent source water contamination.

According to the Town's 2005 Comprehensive Plan, areas of corrosion along water distribution lines and inadequate pipe diameters limit the Town's ability to expand and serve customers outside of Town boundaries. In 2005 the Town and County were considering extending service to areas located north of the Town. A County proposal to extend water service north to the communities of Nelpine Heights and Jonestown was discussed and rejected by the Town. The County has subsequently finalized a contract to provide for a public water system for the Jonestown area.

Well Production

Between 2006 and 2009, the average daily flow was 64,915 gallons per day (gpd). The high and low averages were 68,933 gpd in 2006 and declined steadily to 60,727 gpd, in 2009. The highest peak month was in July 2006 with average daily usage of 105,574 gallons per day. July and August always reflect the highest water usage, probably due to increased garden irrigation.

Utilizing the average usage *during the peak month* and the Town's current estimated dwelling unit count of 271,[5] the Town averages 359 gpd/du during the peak month. This also corresponds to a methodology that divides the estimated population of 697 by 2.57 persons per household. Applying that usage rate to the potential of 312 future residential connections would result in an approximate increase in water demand of 112,000 gpd bringing the total water supply required within the distribution system to 209,154 gpd. That figure is based on the inclusion of average peak demand from the 271 dwellings listed in the tax records for 2007 (unadjusted, due to the lack of subsequent building permits).

Applying the foregoing water demand figures to the Plan's assumed development scenario of 72 additional dwelling units over the next twenty year planning period results in an approximate increase in water demand of 25,848 gpd and a total water

supply required of 123,000 gpd. This indicates that another well will need to be added and a new water appropriation permit secured if growth is to be accommodated. The available capacity of 15,085 represents a maximum development potential of 42 additional dwellings. If projected dwelling unit demand materializes, then the additional well will be needed within 10 years. Preston should closely monitor water usage and begin procedures to increase the existing permits to prevent delays with infill development and future projects.

Even at present, if one of the existing wells were out of service, the other would be insufficient to maintain the Maximum Daily Flow as required within the Recommended Standards for Water Works. With existing demands, it is recommended that a third backup well be constructed within the Piney Point aquifer to provide water during periods when wells are removed from the system for maintenance. According to the 2005 Preston Comprehensive Plan, there is adequate water available in the current aquifer to supply the expected growth through 2030. However, in periods of seasonal drought, there are already times when voluntary usage restrictions are put into place, calling into question the assumption that the town water plant's 120,000 gpd is sufficient for more customers.

The Maryland Department of the Environment generally accepts water usage projection at 250 gpd/du. The Town's actual average water demand per dwelling unit equals 240 gpd. Future planning assumptions will utilize the lower, actual flow figure.

Sewerage Facilities

Sewage treatment, however, is a different story. Between the years of 2006 and 2008 the State capped Preston's ability to add any new sewer connections because the treatment plant was running at capacity. In 2008, the plant was running significantly lower discharge volumes (averaging 37,628 gallons per day), and Preston was granted 9 new allocations, all of which have been taken by in-town builders who were on a waiting list. In 2009, average daily discharges had increased to 65,399 gpd[6]. In December 2009 average daily flows spiked to 166,605 gpd, and an Inflow and Infiltration (I/I) study is underway beginning with a photographic inspection of the sewer collectors looking for broken connections in the system. At present, there are no available sewer allocations that could serve additional development.

This has serious consequences for potential annexation of the Linchester area and the western areas [in the direction of Easton], and any development of already-annexed areas. While houses in the Linchester area could still be annexed into Town and left on their septic systems for now, this would only be a temporary stop-gap measure.

The average daily flows for the last three years has been 61,762gallons per day (which equals 257 equivalent dwelling units, EDU's, based on a average dwelling unit metered use of 240 gallons per day). Assuming that the I/I study identifies specific issues that can be corrected (and that funding for design and construction of specified

Table 1-3 Waste Water Treatment Plant Performance (2007)

CURRENT PLANT PERFORMANCE								
Waste Water System	**Avg Daily Flow (mgd)**[7]	**TN mg/l**	**TP mg/l**	**TN Load lbs/yr**	**TP Load lbs/yr**	**Capacity BNR TN lbs/yr**	**Capacity BNR TP lbs/yr**	**Design Capacity (mgd)**
Preston 2007	0.082	11.34[8]	0.997[9]	2,831	249	2,825	1,059	0.116
Preston 2008	0.037	11.34	0.997	1,277	112	2,825	1,059	0.116
Preston 2009	0.065	11.34	0.997	2,244	197	2,825	1,059	0.116

Source: Preston and Caroline County Department of Planning, Codes and Engineering

Notes about the numbers: daily total nitrogen/phosphorus concentration (expressed as milligrams per liter - to the nearest 0.01mg/L) multiplied by the flow volume of effluent discharged during the 24-hour period ((expressed as million gallons per day (MGD) to the nearest 0.01 MGD)) multiplied by 8.34 and rounded to the nearest whole number to convert to pounds per day (lbs/day) units, then totaled for the calendar month to convert to pounds per month (lbs/mo) units, and then totaled for the calendar year to convert to pounds per year (lbs/yr) units. 1 mg/l = 3.78 mg/gal

corrective actions can be achieved) then it is reasonable to assume that the waste water treatment plant will return to an operational status in the general range of recent average flows. A flow of 0.115 mgd (115,000 gpd) was used in waste allocation calculations for the current NPDES discharge permit – MD0020621 (effective until July 31, 2011). Notification is to be provided to the Department of Environment at least 180 days before the flow is expected to exceed this flow.

Accordingly, approximately 53,000 gallons per day of additional capacity might be realistic. That would provide allocations for about 220 additional EDU's. *Until the results of corrective actions to reduce Inflow and Infiltration are realized no additional allocations are possible and no additional growth can be accommodated. The amount of I/I reduction will determine the amount of development capacity remaining in the waste water treatment plant.* The theoretical total buildout demand of all infill and all growth area lands equals 74,880 gallons per day of sewerage treatment. Assuming a realized capacity of 53,000 gpd, that would result in a possible shortfall of 21,880 gpd. However, the 70 EDU's [that are consistent with the growth vision and household projections in the MGE] would only require 16,800 gallons per day which would still provide capacity for potential annexation of 44 existing dwellings (10,560 gpd) and leave around 25,000 gpd of capacity for additional infill, additional annexation/development,

non-residential demands or some combination of these options. Accordingly, while there does not appear sufficient capacity to provide total service for all possibilities, there should be sufficient capacity under the existing NPDES permit to accommodate a reasonable amount of infill and growth consistent with the Town's vision for its future within the time horizon of the Plan.

This information is presented to provide baseline information for future revisions and updates to this WRE. At the present time, no Total Maximum Daily Load (TMDL) limits for Total Nitrogen and Total Phosphorous have been established for the Upper Choptank Watershed. However, the Town will carefully monitor potential State actions that may set limits on total nitrogen and total phosphorous for the watershed. Such limits would be allocated between point and non-point sources and could restrict the ultimate development potential of Preston as well as the overall watershed.

Any future development, including infill, will not be handled by the current sewerage treatment plant until additional operating capacity is created. It is anticipated that I/I relief will provide that capacity. Since Preston operates on an extremely tight annual budget, there is no plan to build a new plant with greater capacity. Expansion on site using existing process technology is not possible because the lagoon is at capacity and any expansion of discharge capacity requiring a new NPDES permit would trigger a requirement for Biological Nutrient Removal (BNR) performance. Expansion beyond 500,000 gallons per day capacity would trigger Enhanced Nutrient Removal (ENR) standards that apply to "major" waste water treatment plants. It is not anticipated that Preston would require an ENR plant within the foreseeable future. When the present plant reaches 80 percent of design capacity State regulations require the preparation of a capacity allocation plan that will also study the need for a new facility. Therefore, new development will be required to document its impact on the available plant capacity prior to and as a condition for development approval. The Town of Preston will adopt a water conservation ordinance requiring builders to implement conservation standards to use less water and dispose of less waste water to extend the useful life of the Town's current infrastructure as far as possible.

Any discussion regarding potential construction of a new waste water treatment plant would need to begin with a feasibility analysis that would evaluate potential designs and space requirements. The Town may consider pursuing grant funding for a feasibility study in order to gain a better understanding of its long term options. At present, regulations will permit Preston to continue to operate the present lagoon design so long as capacity is not enlarged.

Non-Point Water Quality

Non-point source pollution occurs when rainfall, snowmelt, or irrigation runs off land or through the ground and gathers pollutants, which are carried with the runoff and deposited into surface water or leaked into ground water. The amount of stormwater runoff in developed areas is a function of the amount of impervious surface associated with the built environment, i.e., roads, parking areas, roofs, etc. The greater the percentage of impervious surface, the faster water flows over land. In wooded or heavily vegetated areas, the water is intercepted by undergrowth, plants and trees as it flows over land and it reaches streams more gradually, a process that underscores the importance of grass and forest riparian buffers, particularly on agricultural land.

These natural impediments reduce flood-related stream discharges and enable lower, sustained flows which in turn reduce the potential for erosion caused by storm events. The slower pace of runoff from undeveloped land also allows time for vegetation to uptake the nutrients in the runoff, which results in lower nutrient loads being discharged into waterways.

Because undeveloped land comprises most of Caroline County, the nutrient loads delivered from County land are almost entirely from non point sources. This is true for much of the Bay watershed. Because agricultural land comprises more than half (59 percent) of the County's total land area, the heaviest non-point source nutrient loads delivered from County land are from farms. Developed land, which includes residential, commercial, institutional and industrial properties, comprises about 7 percent of the County and forested land makes up approximately 32 percent of the County. The remaining 2 percent includes all other land uses including barren land and extractive uses (surface mining).

Caroline County's non-point source loading rates were calculated using a formula that includes land use acreages, soil factors, average annual rainfall and impervious surface percentages. The result is a per-acre loading rate for each land use. The methodology used is the same as that employed by Caroline County in order to facilitate useful comparisons and analysis.

Nitrogen loads from on-site septic systems are also included in the County's total non point source load. Nearly all properties located in the unincorporated areas of the County and some properties located within municipal boundaries are served by on-site sewage disposal systems (septic systems), approximately 11,105 as of the end of 2008. The nitrogen loading rate of a septic system is: *9.5 lbs nitrogen/person/year times the average number persons per household times 0.4 (transport factor)*

The transport factor reflects the percentage of nitrogen lost as it is transported from the septic system to the nearest body of water. The 0.4 transport factor indicates that 60 percent of the nitrogen coming from septic systems is absorbed through uptake in plants and trees en route to where it is eventually discharged into a waterway.

The estimated loading rates for County land uses and septic systems are illustrated below.

Table 1-4: Non-Point Source Loading Rates

Land Use	Nitrogen Loading Rate (lbs/ac)	Phosphorus Loading Rate (lbs/ac)
Agricultural Land	23.15	2.17
Forest	1.48	0.02
Developed	9.02	1.31
Other	8.83	1.18

Notes: "Developed" includes residential, commercial, industrial and institutional land uses, "Other" includes extractive (mining) and open urban land uses, barren land, beaches, and bare exposed rock. All loading rates based on MDE loading rate estimates. Agricultural loading rate based on MDE "No Action" (i.e., no BMPs implemented) rate, to illustrate impacts of BMPs implemented by farmers in 2008. Sources: Maryland Department of Environment; Caroline County Dept. of Planning, Codes and Engineering, 2009.

Table 1-5 Choptank Watershed Loads and Caps

Nutrient Loads and Caps for Choptank River Watershed				
Source	**Basin Nitrogen Cap (lbs/yr)**	**County Nitrogen Cap (lbs/yr)**	**Basin Phosphorus Cap (lbs/yr)**	**County Phosphorus Cap (lbs/yr)**
Point Sources	206,105	70,076	19,147	6,510
Non Point Sources	2,073,895	705,124	190,853	64,890
Total Sources	2,280,000	775,210	210,000	71,400

Source: Caroline County Department of Planning, Codes and Engineering; Maryland's Tributary Strategy – Statewide Implementation Plan, 2007

Table 1-6 Land Use and Point Source Loads

Point and Non-Point Nutrient Loads for Choptank River Watershed			
2008 NON-POINT SOURCE LOADS	**ACRES**	**TN (lbs/yr)**	**TP (lbs/yr)**
LAND USE			
Agricultural Land	93,736	2,169,988	203,407
Forest Land	41,552	61,497	831
Developed Land	21,856	191,677	24,916
Other	2,840	25,077	3,351
Water	859	7,130	490
Septic Systems (#)	9,100	82,992	0
TOTAL CHOPTANK NPS LOAD		2,538,361	232,995
CAROLINE CHOPTANK BASIN NPS CAPS		705,124	70,076
NPS NUTRIENT REDUCTIONS NEEDED		1,833,237	162,919
2008 POINT SOURCE LOADS	**AVG FLOW (mgd)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Denton WWTP	0.349	8,605	1,254
Greensboro WWTP	0.149	9,534	1,578
Preston WWTP*	0.065	2,244	197
Ridgely WWTP	0.134	7,342	1,224
TOTAL CHOPTANK PS LOAD		27,725	4,253
CAROLINE CHOPTANK BASIN PS CAPS		70,076	6,510
PS NUTRIENT REDUCTIONS NEEDED		NONE	NONE

Source: Caroline County Department of Planning, Codes and Engineering; Maryland's Tributary Strategy – Statewide Implementation Plan, 2007

Notes:
* Agriculture is made up of cropland, pasture, orchards, feeding operations, agricultural buildings, and row and garden crops. "Developed" includes residential, commercial, industrial and institutional land uses, "Other" includes extractive (mining) and open urban land uses, barren land, beaches, and bare exposed rock. All loads based on MDE loading rate estimates. Agricultural loading rate based on MDE "No Action" (i.e., no BMPs implemented) rate, to illustrate impacts of BMPs implemented by farmers in 2008 (see Table XX). Sources: Maryland Department of Engineering; Caroline County Dept. of Planning, Codes and Engineering, 2009.

Point source loads do not currently exceed the Tributary Strategy Basin cap; however, the estimate of non-point source nutrient loads exceeds the County's share of the non-point source caps by significant margins (1,833,237 pounds TN and 162,919 pounds TP).

Caroline County Point and Non-Point Source Nutrient Load Caps

To date no nutrient Total Maximum Daily Loads (TMDLs) have been set for the major tributaries or sub-watersheds in Caroline County; however, MDE's Statewide Implementation Plan includes data on basin nutrient loads and recommended nutrient caps for the two 6-digit watersheds in which Caroline County is located: the Choptank River Basin and the LES Basin. These basin nitrogen and phosphorus caps were used by Caroline County to evaluate the impact of the County's nutrient loads on receiving waters and assign appropriate nutrient caps for the County's point and non-point source nutrient loads.

Caroline County's percentage of MDE's recommended basin nutrient caps were determined using the percentage of Caroline County land in each basin, and calculating Caroline County's share of the nutrient cap using the same percentage of each basin's caps. This information is reproduced in this element as a beginning point for discussion and coordination between municipal and County planners, staff, and officials. It is anticipated that in the future TMDLs may be assigned that limit the amount and location of new growth. It is therefore important to understand current conditions and begin to analyze implications for the future.

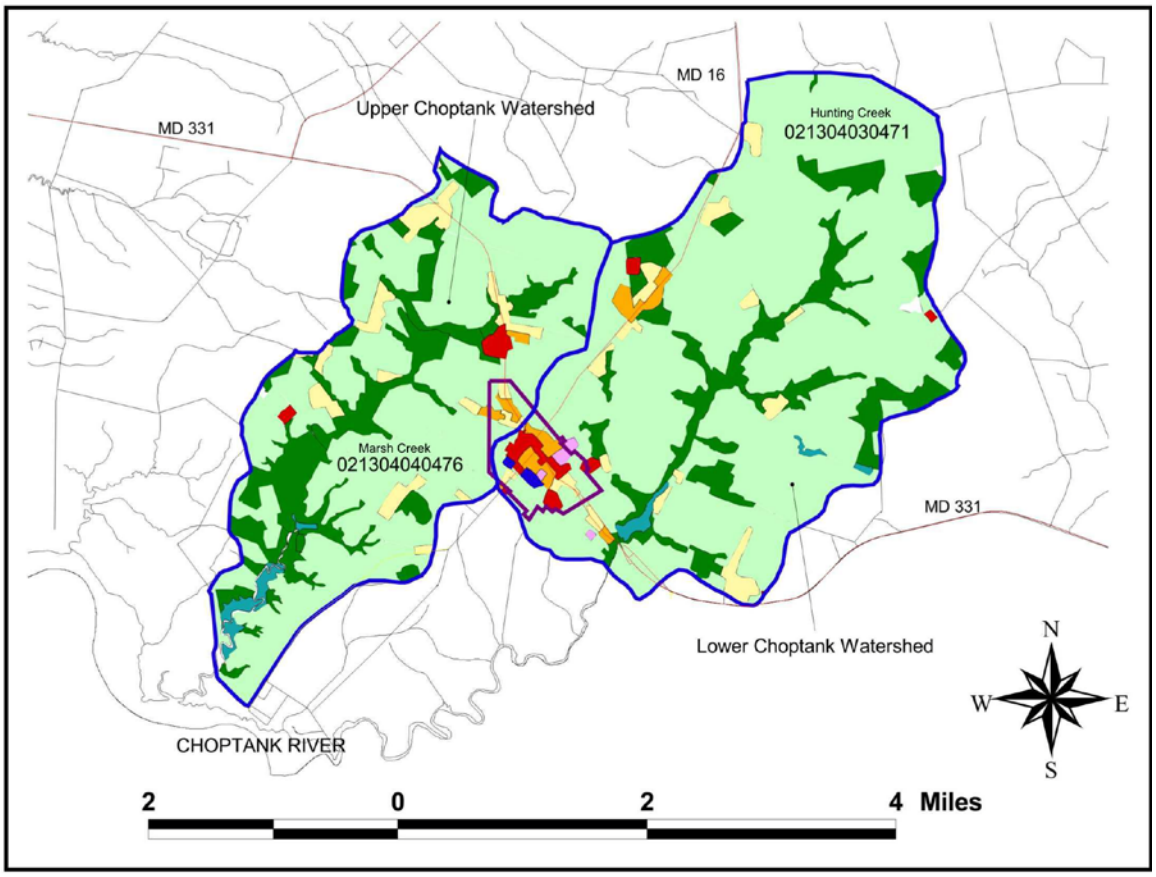
Preston's Subwatersheds

Due to the compact geography of Preston and the Preston Planning Area, comparisons and analyses of "regional" watershed-based non-point land use impacts did not seem appropriate at the 8-digit watershed level (as defined by the Chesapeake Bay Program administered by EPA with Maryland State agency oversight of Basin level (Tributary Strategies program). Accordingly, to provide meaningful context for a municipal Water Resource Element, the analysis has been conducted at the 12-digit subwatershed level (where boundary files have been located to guide Geographic Information System (GIS) analysis.

Preston lies partially within two 12-digit subwatershed: the Marsh Creek portion (021304040476) of the Upper Choptank Watershed and the Hunting Creek portion (021304030471) of the Lower Choptank Watershed. Preston comprises 4 percent of the land within these two small subwatersheds. The largest land use by far in these subbasins is agriculture, accounting for 85 percent of all land. Preston, even with its significant agricultural land inventory has 53 percent of its land areas devoted to urban uses while 47 percent is in agriculture. Only about 6.5 percent of the two subwatersheds, in total, are devoted to urban uses. A detailed summary is provided below that includes a summary table of land uses and a map of their spatial distribution. The policy implications for growth management clearly reveal the importance of coordinating with Caroline County planning efforts while focusing municipal attention on managing and improving stormwater management efforts. Slowing urban runoff and collecting it in retention areas, including low-lying vegetated wetlands and buffer areas near waterways, offers the greatest potential for addressing the negative water quality impacts associated with Smart Growth densification of development patterns.

Map 14

Preston Area 12 Digit Subwatersheds
Land Use / Land Cover



Legend	Preston	Watershed*
Agriculture	168 acres	7,421 acres
Forest	0 acres	714 acres
Low Density Residential	38 acres	330 acres
Medium Density Residential	64 acres	118 acres
Commercial	59 acres	97 acres
Industrial	14 acres	14 acres
Institutional	12 acres	12 acres
Wetlands	0 acres	64 acres
	355 acres	8,770 acres

* includes all acreages within corporate limits

Table 1-7 Subwatershed Nonpoint Loads

Marsh Creek and Hunting Creek Nonpoint Loads						
Land Use	**Acres**		**TN (lbs/yr)**		**TP (lbs/yr)**	
	Preston	Watershed	Preston	Watershed	Preston	Watershed
Agricultural Land	168	7,421	3,889	171,796	365	16,104
Forest Land	0	714	0	1,057	0	14
Developed Land	187	571	1,687	5,150	245	748
Other	0	0	0	0		
(Water)		64				
Totals	355	8,770	5,576	178,003	610	16,866

Even at this reduced scale, the disproportionate impact of agriculture on nonpoint loads is obvious. While the Town will work to implement low impact "green" landscaping principles and will cooperate with the County and MDE on revisions to the Stormwater management regulations, it is clear that meaningful changes to nonpoint loads will result through improved coordination on best management practices implemented by the agricultural sector. Preston supports Caroline County's efforts in this area.

Maryland's High Quality Waters (Tier II)

Mapped Tier II waters exist to the east and to the west of Preston but do not appear to directly impact the Preston Planning Area. They do impact portions of Marsh Creek and Hunting Creek as shown on the accompanying map 15. The implications for water quality and land use planning are clarified below and taken directly from State regulations administered by the Maryland Department of Environment. The Clean Water Act requires three components to water quality standards that set goals for and protect each States' waters. The three components are: (1) designated uses that set goals for each water body (e.g., recreational use), (2) criteria that set the minimum conditions to support the use (e.g., bacterial concentrations below certain concentrations) and (3) an antidegradation policy that maintains high quality waters so they are not allowed to degrade to meet only the minimum standards. The designated uses and criteria set the minimum standards for Tier I.

Maryland's antidegradation policy has been promulgated in three regulations: COMAR 26.08.02.04 sets out the policy itself, COMAR 26.08.02.04-1, which is discussed here, provides for implementation of Tier II (high quality waters) of the antidegradation policy, and COMAR 26.08.02.04-2 that describes Tier III (Outstanding National Resource Waters or ONRW), the highest quality waters. No Tier III waters have been designated at this time.

Tier II antidegradation implementation has the greatest immediate effect on local government planning functions so MDE has prepared the following discussion to provide technical assistance to local governments working to complete the Water Resources Element of their comprehensive plans as required by HB 1141.

1. 26.08.02.04 – 1(B)

General: An applicant for proposed amendments to **county plans** or **discharge permits** for discharge to Tier II waters that will result in a new, or an increased, permitted annual discharge of pollutants and a potential impact to water quality, shall evaluate alternatives to eliminate or reduce discharges or impacts. **If impacts are unavoidable, an applicant shall prepare and document a social and economic justification.** The Department shall determine, through a public process, whether these discharges can be justified."

2. 26.08.02.04 – 1(F)(1) – (3)

(1) Permits. Before submitting an application for a new discharge permit or major modification of an existing discharge permit (for example, expansion), the discharger or applicant shall determine whether the receiving water body is Tier II or, a Tier II determination is pending, by consulting the list of Tier II waters."

(2) Water and Sewer Plans (County Plans). As part of its continuing planning process, the Department shall review proposed amendments to county plans for any new or major modifications to discharges to Tier II bodies of water. If a proposed amendment to a County Plan results in a new discharge or a major modification of an existing discharge to a Tier II water body, the applicant shall perform a Tier II antidegradation review."

(3) Exemptions. The requirement to perform a Tier II antidegradation review does not apply to individual discharges of treated sanitary wastewater of less than 5,000 gallons per day, if all of the existing and current uses continue to be met."

3. 26.08.02.04 – 1(G)

(1) If a Tier II antidegradation review is required, the applicant shall provide an analysis of reasonable alternatives that do not require direct discharge to a Tier II water body (no-discharge alternative). The analysis shall include cost data and estimates to determine the cost effectiveness of the alternatives.

(2) If a cost effective alternative to direct discharge is reasonable, the alternative is required as a condition of the discharge permit or amendment to the county plan.

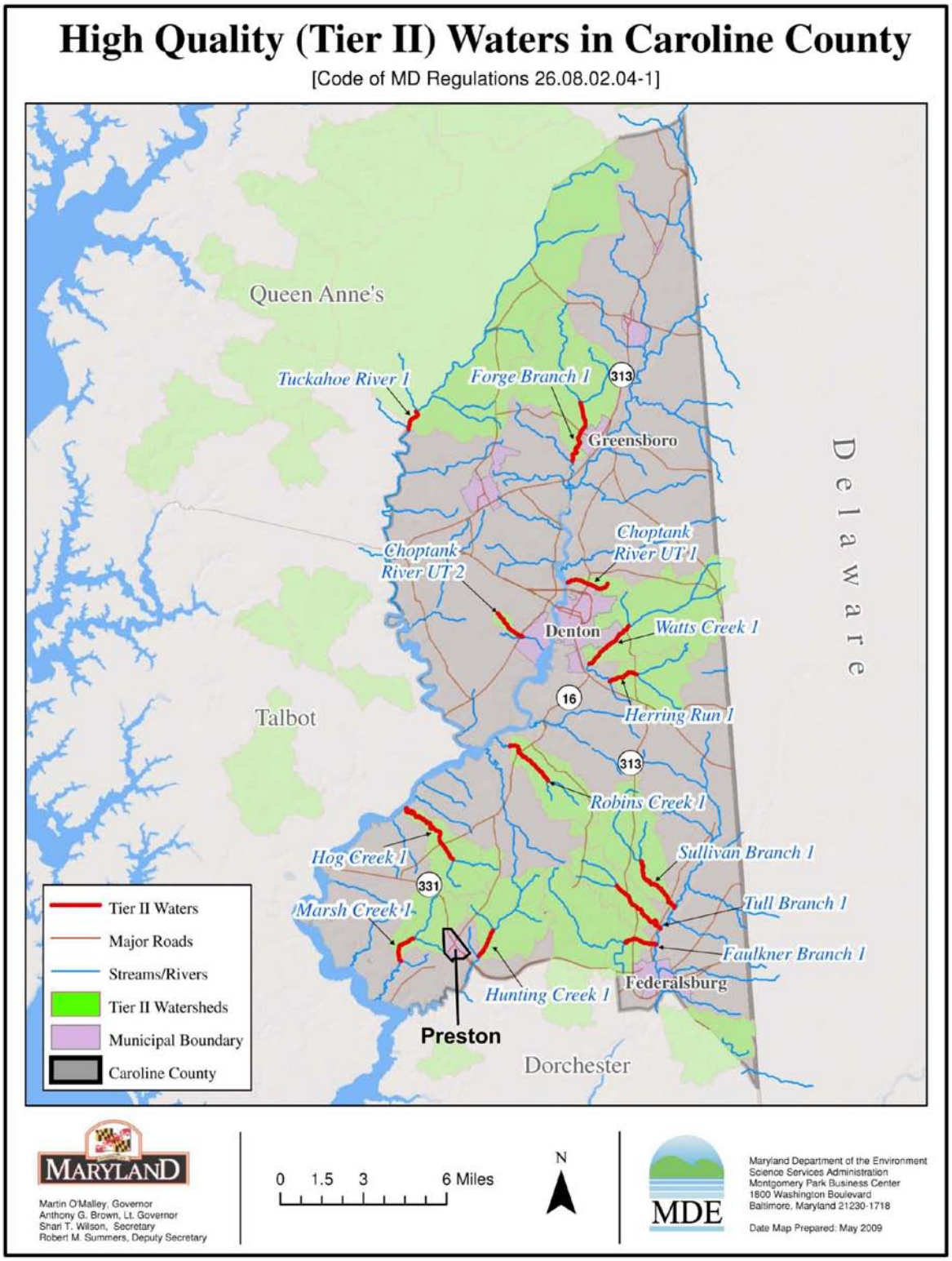
(3) If the Department determines that the alternatives that do not require direct discharge to a Tier II water body are not cost effective, the applicant shall:

(a) Provide the Department with plans to configure or structure the discharge to minimize the use of the assimilative capacity of the water body, which is the difference between the water quality at the time the water body was designated as Tier II (baseline) and the water quality criterion; and

(b) If an impact cannot be avoided, or no assimilative capacity remains as described in §G(3)(a) of this regulation, provide the Department with a social and economic justification for permitting limited degradation of the water quality.

(4) An applicant shall update an antidegradation review when applying for a new permit or major modification to an existing permit.

Map 15


High Quality (Tier II) Waters in Caroline County
[Code of MD Regulations 26.08.02.04-1]
Queen Anne's
Talbot
Dorchester
Delaware
Tuckahoe River 1
Forge Branch 1
313
Greensboro
Choptank River UT 1
Choptank River UT 2
Denton
Watts Creek 1
16
Herring Run 1
313
Robins Creek 1
Hog Creek 1
331
Sullivan Branch 1
Marsh Creek 1
Tull Branch 1
Faulkner Branch 1
Federalsburg
Hunting Creek 1
Preston
Tier II Waters
Major Roads
Streams/Rivers
Tier II Watersheds
Municipal Boundary
Caroline County
MARYLAND
Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
Shari T. Wilson, Secretary
Robert M. Summers, Deputy Secretary
0 1.5 3 6 Miles
N
MDE
Maryland Department of the Environment
Science Services Administration
Montgomery Park Business Center
1800 Washington Boulevard
Baltimore, Maryland 21230-1718
Date Map Prepared: May 2009

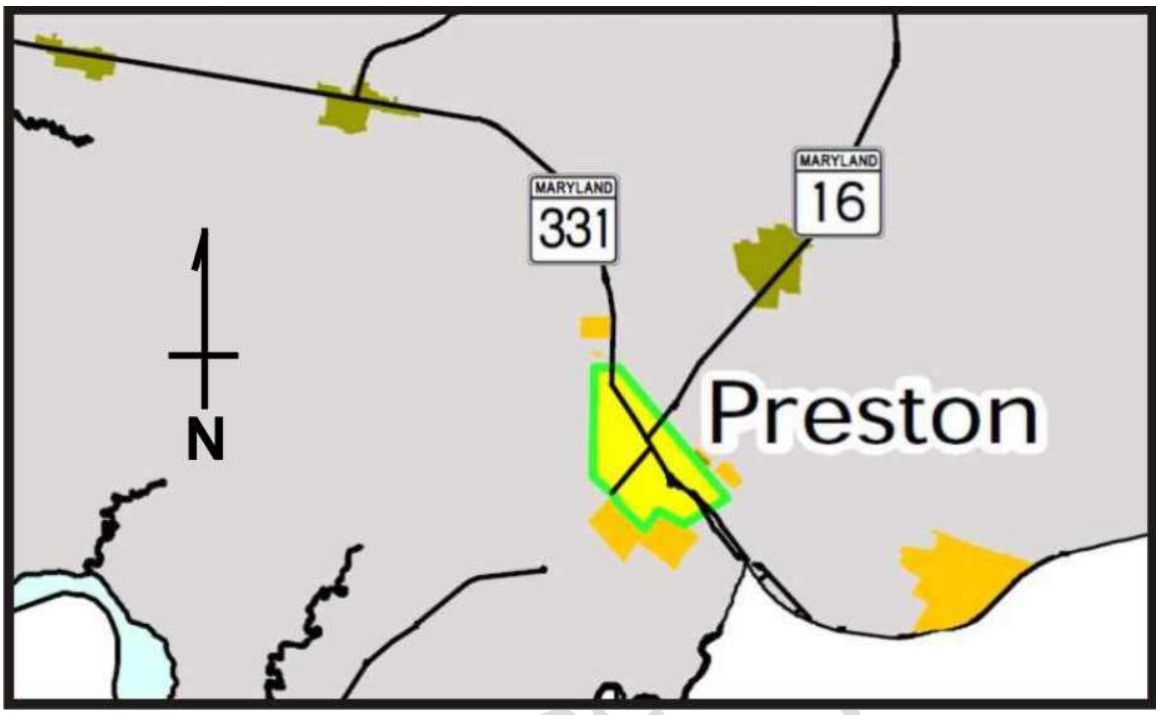
Stormwater Management

Stormwater management criteria for any development is regulated by the County. The Town of Preston will look at ways to improve stormwater runoff through new building ordinances for subdivisions. It should be noted that neither adopted policy nor stormwater management site design should preempt the identified principles of buildings sited close to the street, minimal surface parking lots (set behind buildings), walkable street design, a modified grid street system and continuation of a highly connective rectilinear grid. The new stormwater management regulations that will become effective in May 2010 will require very careful coordination between the County review staff and the Town Planning Commission. Certain impervious surface requirements, particularly as they relate to new requirements affecting redevelopment, may not be practical or achievable in an urban setting such as Preston. Accordingly, this is an issue that will require ongoing interjurisdictional coordination.

Preston will coordinate with County initiatives to implement the new State Stormwater Management Regulations and will review the Model Stormwater Manual for potential changes that need to be incorporated into the Town's Zoning Ordinance and Subdivision Regulations.

4.0 Financing of Needed Infrastructure Expansions

While the Town will use every practical means to continue to upgrade public services and facilities consistent with the intensity of development, innovative partnerships with developers and County and State government agencies will be the only way our infrastructure will keep pace with even measured development. In that regard, it is important for Preston to certify potential annexations to the Maryland Department of Planning (MDP) as Priority Funding Areas (PFA) and include the necessary documentation and justifications to ensure that PFA maps prepared by MDP for State funding agencies are accurate, up to date, and reflect local plans and priorities. An excerpt from MDP's Caroline County PFA map is included below.



Preston boundaries, as shown, have been designated – as well as gold colored areas near and adjacent to Town. Areas beyond Town were designated by Caroline County.

Preston's Comprehensive Plan identified several fiscal objectives for the Town: 1) to maintain a balanced budget and adequate reserve, 2) to maintain the full fiscal benefits from commercial and/or industrial development within town, and 3) to seek additional outside funding sources for identified town needs.

Water & Sewer – The most challenging component of Preston's infrastructure systems and the greatest inhibitor of any future development is the wastewater treatment facility. The Town is committed to maintaining adequate water and sewer services to meeting the growing needs, but standard and current operating budgets will not enable any upgrade to these facilities. Furthermore, the current wastewater treatment plant is not expandable. Thus, a new facility is needed. Funding of this facility may be accomplished in part through Federal or State grants, but it will likely depend on the willingness of developers and new residents to take on the burden of partially financing and funding the construction of a new wastewater treatment plant. Without this type of partnership, no further development can occur in Preston. Naturally, any such agreement would necessitate the construction of a wastewater treatment plant which had a lesser impact on Hunting Creek, the Choptank River, the Chesapeake Bay and other environmental assets. Additionally, the water infrastructure is nearly at capacity, additional well capacity will be needed, and the Town must remain aware of the

necessity of long-term replacement of water pipes whose flow has been dramatically reduced in recent years due to corrosion. This decrease in flow pressure limits the possibility of expansion and ought to be included jointly in a sewer and water financing and funding agreement with developers. Similarly, the County should be engaged in any conversations about funding and development for possible regional wastewater solutions to areas in the County in the vicinity of Preston that may experience failing septic systems in the future.

End Notes:

1 Table 7, MGE

2 2005 Town of Preston Comprehensive Plan

3 Caroline County Comprehensive Water & Sewerage Plan, 1992.

4 Preston Water Appropriation Permit

5 2007 MD Property View data

6 Preston discharge records

7 Preston discharge records

8 Caroline County Department of Planning, Codes and Engineering. EPA, Chesapeake Bay Program reports 2007 average concentrations equal to 7.58 mg/l of TN which includes April data anomaly of 29.38 mg/l.

9 Caroline County Department of Planning, Codes and Engineering

Preston WWTP 2007 Concentration Data

PRESTON	MD0020621	1	1/31/2007	TN	6.44	MG/L	MDE
PRESTON	MD0020621	1	2/28/2007	TN	6.78	MG/L	MDE
PRESTON	MD0020621	1	3/31/2007	TN	7.07	MG/L	MDE
PRESTON	MD0020621	1	**4/30/2007**	**TN**	**29.38**	**MG/L**	MDE
PRESTON	MD0020621	1	5/31/2007	TN	8.66	MG/L	MDE
PRESTON	MD0020621	1	6/30/2007	TN	4.51	MG/L	MDE
PRESTON	MD0020621	1	7/31/2007	TN	4.12	MG/L	MDE
PRESTON	MD0020621	1	11/30/2007	TN	4.41	MG/L	MDE
PRESTON	MD0020621	1	12/31/2007	TN	2.22	MG/L	MDE
PRESTON	MD0020621	1	12/31/2007	TN	2.22	MG/L	MDE
					75.81		
					7.581	mg/l	
PRESTON	MD0020621	1	1/31/2007	TP	0.99	MG/L	MDE
PRESTON	MD0020621	1	2/28/2007	TP	0.99	MG/L	MDE
PRESTON	MD0020621	1	3/31/2007	TP	0.99	MG/L	MDE
PRESTON	MD0020621	1	4/30/2007	TP	0.99	MG/L	MDE
PRESTON	MD0020621	1	5/31/2007	TP	1.23	MG/L	MDE
PRESTON	MD0020621	1	6/30/2007	TP	0.74	MG/L	MDE
PRESTON	MD0020621	1	7/31/2007	TP	1	MG/L	MDE
PRESTON	MD0020621	1	11/30/2007	TP	0.99	MG/L	MDE
PRESTON	MD0020621	1	12/31/2007	TP	0.99	MG/L	MDE
					8.91		
					0.99	mg/l	

http://www.chesapeakebay.net/data_pointsource.aspx

Town of Preston

2007 Water Pumping Records

Jan	1,566,000	31	50516		
Feb	1,804,400	28	64443		
Mar	1,655,700	31	53410		
Apr	1,634,900	30	54497		
May	2,536,700	31	81829		
Jun	2,428,800	30	80960		
Jul	3,272,800	31	105574		
Aug	2,501,400	31	80690		
Sep	2,387,500	30	79583		
Oct	2,155,100	31	69519		
Nov	1,592,100	30	53070		
Dec	1,646,100	31	53100		
			827192	68933	average daily withdrawal

2008 Water Pumping Records

Jan	1,822,200	31	58781		
Feb	1,438,900	28	51389		
Mar	1,605,800	31	51800		
Apr	1,857,000	30	61900		
May	2,061,300	31	66494		
Jun	2,300,300	30	76677		
Jul	2,585,600	31	83406		
Aug	2,927,800	31	94445		
Sep	2,200,300	30	73343		
Oct	1,934,500	31	62403		
Nov	1,514,900	30	50497		
Dec	1,546,200	31	49877		
			781012	65084	average daily withdrawal

2009 Water Pumping Records

Jan	1,625,000	31	52419
Feb	1,516,400	28	54157
Mar	1,604,300	31	57180
Apr	1,715,400	30	57180
May	2,005,800	31	64703
Jun	2,015,500	30	67183
Jul	2,834,700	31	91442
Aug	2,411,200	31	77781
Sep	1,728,000	30	57600
Oct	1,609,700	31	51926
Nov	1,458,200	30	48607
Dec	**1,504,900**	**31**	**48545**

728723	60727	average daily withdrawal
	194744	
	64915	**average withdrawals 2007-2009**
	291461	
	97154	**average peak month daily flows**
at 2.57p/hh	359	gallons per estimated DU
at 2.53 p/hh	275	**gallons per estimated DU**
	32669	**additional du demand**
	97154	total water demand

Town of Preston

2007 Waste Water Discharge Records

Jan	3,856,000	31	124387		
Feb	1,710,400	28	61086		
Mar	13,066,800	31	421510		
Apr	4,714,200	30	157140		
May	2,755,700	31	88894		
Jun	2,069,700	30	68990		
Jul	323,000	31	10419		
Aug	0	31	0		
Sep	0	30	0		
Oct	0	31	0		
Nov	781,300	30	26043		
Dec	876,925	31	28288		
			986757	82230	average daily discharge

2008 Waste Water Discharge Records

Jan	1,000,000	31	32258		
Feb	650,000	28	23214		
Mar	878,526	31	28340		
Apr	1,292,891	30	43096		
May	2,110,752	31	68089		
Jun	2,302,897	30	76763		
Jul	145,318	31	4688		
Aug	0	31	0		
Sep	2,219,511	30	73984		
Oct	1,774,381	31	57238		
Nov	0	30	0		
Dec	1,359,725	31	43862		
			451532	37628	average daily discharge

2009 Waste Water Discharge Records

Jan	1,544,341	31	49817
Feb	1,315,517	28	46983

Mar	1,904,733	31	74947		
Apr	2,248,421	30	74947		
May	0	31	0		
Jun	2,541,329	30	84711		
Jul	1,900,627	31	61311		
Aug	1,954,789	31	63058		
Sep	1,924,594	30	64153		
Oct	1,375,383	31	44367		
Nov	1,616,575	30	53886		
Dec	**5,164,750**	**31**	**166605**		
			784785	**65399**	**average daily discharge**
				185256	
					average daily discharge
				61752	**between 2007 and 2009**