THE ST. MARY'S COUNTY COMPREHENSIVE PLAN

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Chapter 7: WATER RESOURCES ELEMENT

7.1 INTRODUCTION

This Water Resources element identifies and directs the County response to the opportunities and limitations presented by local and regional water resources. The goals of the element are to protect State land and water resources, to protect the public health, safety and welfare, to comply with State plans, policies and regulations and to ensure that water resources will be adequate and managed in a manner that meets smart growth goals while meeting local economic, environmental and land use goals.

Watersheds. St. Mary's County is divided into three principal watersheds. The current Three Notch Road (Maryland Route 5 through Charlotte Hall and Mechanicsville, and Maryland Route 235 from Mechanicsville to Ridge) roughly follows the path of the Three Notch Road that was established around 1692 that ran along the ridge between the eastern and western watersheds from Point Lookout to the northern boundary of St. Mary's County. The area east of Three Notch Road and north of Cedar Point at the mouth of the Patuxent River drains northeast to the Patuxent River. The area east of Three Notch Road and south of Cedar Point drains east to the main stem of the Chesapeake Bay. The area west of Three Notch Road drains southwest either directly to or via four principal river systems into the Potomac River.

The Patuxent River watershed is characterized generally by steep slopes and highly erodible soils and high shoreline bluffs, which make farming and water access for transportation difficult. As a consequence, much of the Patuxent River watershed remained forested and sparsely developed until the 1950's. The development of the Patuxent River Naval Air Station on Cedar Point during World War II, the construction of the Thomas Johnson Bridge across the Patuxent River at Solomons in the 1970s, outsourcing base functions to contractors beginning in the 1980s, and extension of sewer up Three Notch Road to serve Wildewood brought significant development to the Lexington Park vicinity, which had grown up outside the naval base and expanded north along Three Notch Road to include the Hollywood Town Center. At the northern end of Three Notch Road, development concentrated around the site of "Ye Coole Springs" (purported to have healing powers, it was later the site of Charlotte Hall School) and the end of the train line in Mechanicsville 2 miles south. The Charlotte Hall, New Market and Mechanicsville Town Centers are designated as the principal growth areas in the northern end of the County.

In the Chesapeake Bay watershed the land south of Cedar Point east of Three Notch Road drops steeply from the ridgeline to a wide relatively flat coastal plain that is characterized by agricultural fields, forested wetlands, and several shallow pond/wetland and creek systems. This area remains sparsely developed except in Ridge, which developed adjacent to St. Jerome Creek that offered the only protected harbor on the western shore of the Chesapeake Bay north of Reedville, Virginia and south of Solomons Harbor in Calvert County.

The Potomac River watershed is characterized by relatively gentle slope from the ridge to the river, but it has four incised tidal creek and tributary stream systems (Wicomico River, St. Clements Bay, Breton Bay, and the St. Mary's River). The direct drainage to the Potomac River has similar topography to the Chesapeake Bay direct drainage – the gently sloped topography drops in a short distance to a wide flat coastal plain. The entire watershed has generally less steep topography than the Patuxent River watershed. Broad tidal bays and creeks offer protected harbors and ready access to the water, and soils are suitable for farming. Therefore, much of the development and agriculture located in this watershed and historic settlements grew up around the creeks and at the heads of tide in this watershed. Vacation communities developed as an escape from oppressive pre-air conditioned summers in Washington, D. C. As sediments from

agriculture filled up the bays, navigation into the headwater towns ceased, and, with the exception of Leonardtown, the County seat, these settlements faded to the remnant villages present today.

Land use and water resource planning. A primary goal of this Plan is to concentrate development in appropriate places and to support that concentration with infrastructure and services that have adequate capacity to provide an acceptable level of service for existing and proposed land uses. In turn the concentration of development makes the construction of infrastructure and the provision of services more economically feasible.

The development districts encompassing Lexington Park and the incorporated Town of Leonardtown (with adjacent lands outside of the town included in the development district) are and will continue to be the principal growth areas within the County. This Comprehensive Plan incorporates the Lexington Park Development District Master Plan that was adopted in 2005. These areas have the majority of existing water, sewer, and stormwater infrastructure and are eligible for State funding as "priority funding areas" (PFAs). Future expansion of infrastructure and service are planned for these areas. The County's 2008 Annual Growth Policy dictates that 70 percent of development should occur in designated growth areas. Given limitations for provision of sewer or septic in some town and village centers, it is contemplated that a majority of this growth will occur in Lexington Park and Leonardtown. These development districts pose the greatest challenges for managing stormwater and impacts of urban pollution, providing stormwater retrofits for older communities, and managing and improving the tributary streams and receiving tidal waters of Breton Bay and the St. Mary's River. This Plan expands each development district to include school and publicly used recreation sites to enable public funding for facility expansion and provision of sewer or water if these become necessary in the future.

The Town of Leonardtown has its own master plan that is independent from, but coordinated with, the plan for the Leonardtown Development District within County jurisdiction. There is insufficient capacity in the Leonardtown treatment plant to accommodate the growth contemplated within the incorporated town or potential minor infill development in the adjacent development district northeast of the corporate limits along Hollywood Road (MD 245). The State has restricted effluent discharged from the plant into Breton Bay. Within the years since the adoption of the 2002 Comprehensive Plan there has been no significant demand for development east of Leonardtown, an area that is separated from the town boundary by the significant and degraded Town Run stream system. These lands may accommodate a spray irrigation system necessary to expand capacity of the Leonardtown treatment facility to accommodate growth within or beyond the town.

The County Plan has recognized a number of historic unincorporated towns and villages as population and economic centers, and has designated them as growth areas since 1978. However, based on analysis of the limitations resulting from the lack of sewer and of adequate soils to support land application for sewage disposal, or to support concentrations of septic systems, and significant sensitive area constraints, this Plan recognizes that no significant growth will be possible in a number of these towns and villages unless or until sewer service is provided. Sewer service is not currently contemplated for these areas.

Minor adjustments of the boundaries of some villages and towns were made in recognition of lands that were wholly unbuildable due to wetland and floodplain constraints (Clements and Chaptico) and to accurately follow parcel boundaries (all growth areas). These changes had no effect on development potential of the individual parcels or the towns and villages as a whole.

The Hollywood Town Center offers a relatively narrow corridor for growth along Three Notch Road immediately north of the Lexington Park Development District. The town center has limited water and sewer access, but has a reasonable extent of unconstrained land area available for infill and expanded development and is a logical northern terminus for extension of sewer and

water systems from the Lexington Park Area. A minor expansion of the town center is contemplated to bring school and parks and recreation sites into the growth areas boundary which will facilitate public funding for facility expansion and provision of sewer or water if these become necessary in the future

Of the three town centers defined in the 2002 Comprehensive Plan at the northern end of the County, only Charlotte Hall has any existing sewer service (via two private systems with limited capacity to serve additional customers). While Charlotte Hall has undeveloped unconstrained land for expansion, there appears to be limited ability to provide sewage treatment due to soil and slopes limitations and the prevalence of protected sensitive areas, therefore development will be largely dependent on onsite septic disposal systems. A minor expansion of the town center is contemplated to bring school and parks and recreation sites into the growth areas boundary which will facilitate public funding for facility expansion and provision of sewer or water if these become necessary in the future.

New Market has minimal land area west of Three Notch Road (MD 5) that is undeveloped, and the majority of the land east of Three Notch Road has significant sensitive area constraints imposed by stream valleys and steep erodible soils that are unsuitable for sewage or septic disposal.

In the Mechanicsville Town Center, the majority of the undeveloped land east of Three Notch Road (MD 235) has severe slope, soil and sensitive area constraints and the areas west of Mechanicsville Road that parallels Three Notch Road is predominately developed with 2 plus acre lots and has only moderate infill potential where soils are appropriate for on-site septic disposal. For portions of the Mechanicsville Town Center this Plan supports downzoning due to environmental constraints imposed by soils and topography, efforts to maintain rural character along MD 5 and willingness of landowners to accede to the rezoning. The "down zoning" will allow transfer of development rights from these lands. This Plan also proposes the addition of these lands into the Huntersville Rural Legacy Area.

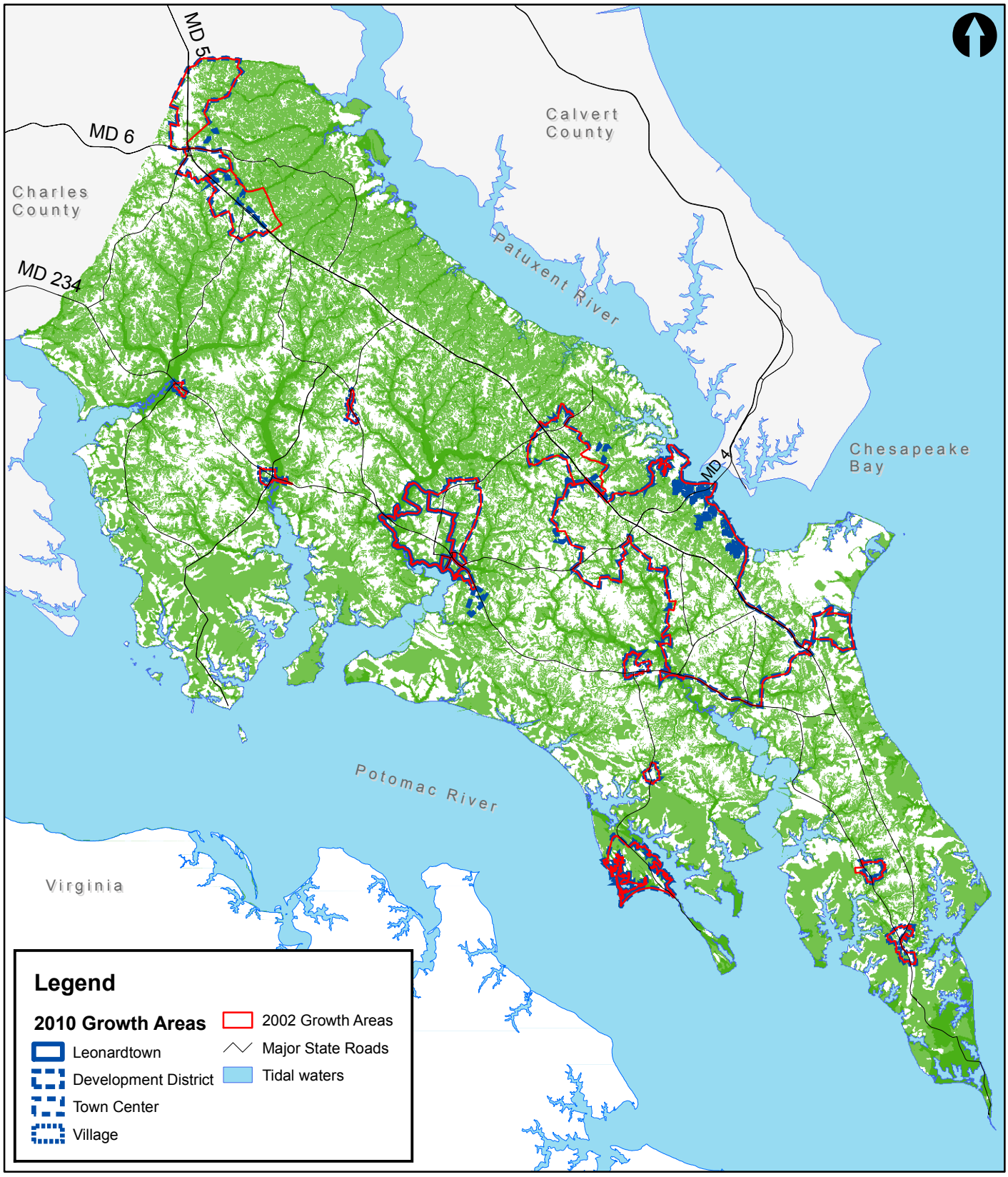
Despite the development limitation imposed by sewer and water and by sensitive area constraints, this Plan retains the boundaries of the Hollywood Town Center (with expansion to include the school and recreation properties to the east and certain office buildings to the south) and of the New Market Town Center, but specifically identifies areas that are considered unsuitable for development purposes and intended for open space preservation. The density available within these lands can be utilized on the developable portions of the properties.

Figure 7.1.a. shows the changes to growth area boundaries. The red lines show the 2002 growth areas boundaries and the dashed blue lines show the revised growth area boundaries adopted under this Plan.

Non-point source pollution and water resource planning. St. Mary's County is a predominately rural county. Many areas of concentrated development, particularly in the former vacation communities along the shorelines and within Lexington Park and Leonardtown, were developed prior to adoption and implementation of stormwater management regulations in Maryland. After adoption of these regulations by the State in 1983, much of the major residential development that occurred was placed on relatively large lots (exceeding 2 acres in size), and development on lots of this size was exempted by the regulations from providing stormwater management. In 2002, following the State's adoption of new stormwater management regulations and of the 2000 Stormwater Design Manual, and largely in recognition that stormwater exemption criteria were promoting sprawl and discouraging clustering of development, the County adopted ordinances to require that stormwater quantity and quality controls be provided for development in major subdivisions (more than 5 lots) regardless of the size of the lots and for the road systems in minor subdivisions (5 lots or less).

As discussed in Chapters 5 and 6, St. Mary's County is actively seeking to retain forestry and agriculture as a viable economic base in the County. Forestry provides one of the least polluting land uses and conversion of open land to forest is a viable practice to manage and reduce pollution. Agricultural land uses are preferred rural land uses and maintaining viable agricultural land and operations is a goal of the County and State. The preference for maintaining agricultural activities and lands as important social, cultural, economic and aesthetic components of a rural landscape pose significant challenges for maintaining and improving water quality in the Chesapeake Bay and the many streams and rivers feeding into the Bay. The greatest quantities of sediment and pollutant loadings entering the Chesapeake Bay are generated on agricultural land. The large extent of agriculture land area places the burden and expense of maintaining and improving water quality on the relatively small population of farmers that is required to implement sediment and erosion control plans and nutrient management plans and to install extensive best management practices necessary to reduce soil erosion, control animal wastes and other pollutant discharges to water bodies.

Figure 7.1.a.



St. Mary's County Growth Area Boundary Changes: 2002 Plan to 2010 Plan

0 1 2 3 4 8 Miles

Land utilization projections based on 2030 build out. The County is projected to add an additional 19,300 dwellings between 2010 and 2030. Based on its Annual Growth Policy (AGP), which will direct no less than 70% of new residential development to growth areas, the County can expect to add at least 675 new dwellings per year in the growth areas and no more than 260 dwellings per year in the rural areas. (Note that the limits of the AGP are reviewed annually by the County Commissioners, and are subject to change. The percentages listed here are for illustrative purposes.)

Discounting infill on vacant platted lots, the maximum area necessary to accommodate the projected 13,510 growth area dwellings, if developed at the planned PFA density of 3.5 dwellings per acre, is 3,700 acres. The projected 5,790 rural area dwellings would use approximately 56,750 acres of RPD density acreage (average 9.8 acres per dwelling based on mandatory clustering and TDR programs) while occupying no more than 14,200 acres (approximately 75% of the density acres are protected via TDRs and clustering).

Using the maximum figures of 3,700 acres of development in growth area zones and 14,200 acres of growth in the rural zones, the County developed Scenario 1 for sewer capacity, water supply and non-point source pollution that are found in Appendix A (incorporated by reference). Scenario 2 assumes increased rural clustering for 50% of the lots and very large lot development for the balance of rural lots.

Watershed Planning. Watershed plans in various forms exist for a majority of the 8-digit watersheds[1] in the County including:

1. The Patuxent River Policy Plan completed in 1984, and the 1997 Addendum to the Policy Plan.
2. The Wicomico Scenic River Management Plan (covering the Wicomico River watershed in Charles and St. Mary's Counties), completed in 1994.
3. Number of existing planning studies for the Breton Bay Watershed, including:
   - Breton Bay Watershed Restoration Action Strategy (BBWRAS) completed in 2002.
   - An analysis of sensitive areas, wetland and forest restoration opportunities for the St. Mary's and McIntosh Run watersheds (KCI, 1996).
4. Number of existing planning studies for the St. Mary's River including:
   - an analysis of sensitive areas, wetland and forest restoration opportunities for the St. Mary's River (KCI, 1996);
   - Hilton Run Watershed Management Plan (a 12-digit subwatershed within the St. Mary's River watershed), 2004; and
   - an Army Corps of Engineers' Feasibility Study (December 2008).

In addition, a Watershed Restoration Action Strategy for the St. Mary's River (SMRWRAS) was in preparation as this Plan was being written. All of these plans (except the

[1] All U.S. watersheds have a proper name and a corresponding number called a Hydrologic Unit Code (HUC) for identification. Maryland (MD) performs analysis at the "MD 8-digit watershed level". MD 8-digit watersheds drain about 90 square miles, although they may be considerably larger or smaller depending on the configuration of the streams and the elevation of the land. There are 127 Maryland 8-digit watersheds. Watershed groups often work at the MD 12-digit watershed level. Several 12-digit watersheds may be within each 8-digit watershed since the 12-digit watersheds in Maryland average about 11 square miles. There are plans developed for watersheds at both the 8-digit and 12-digit watershed levels.

SMRWRAS) were developed prior to release of the 2008 criteria for development of watershed plans published by the U.S. Environmental Protection Agency as guidelines for States' implementation of nonpoint source management programs under Section 319 of the Clean Water Act, and are necessary for the award of "Section 319" grants to States to implement those programs. Because 319 grants are an important source of funding for implementation of local projects in partnership with the State of Maryland, updates of the plans will be needed as the County develops its NPDES program to improve project eligibility for funding.

In addition to these general characterizations, the Maryland Departments of Natural Resources and the Environment have mapped particular segments of watersheds as important, particularly valuable, and in need of protection. These areas, shown in Figure 7.1.b, include:

1. Green infrastructure, mapped by DNR, includes two area types. The first, called "hubs" are unfragmented areas (primarily forests and wetlands), hundreds or thousands of acres in size, that are vital to maintaining the State's ecological health. They provide habitat for native plants and animals, protect water quality and soils, regulate climate, and perform other critical functions. The second areas mapped connect the hubs with "corridors" - linear remnants of natural land such as stream valleys and floodplains that allow animals, seeds, and pollen to move from one area to another. They also protect the health of streams and wetlands by maintaining adjacent vegetation. Preserving linkages between the remaining blocks of habitat will ensure the long-term survival and continued diversity of plants, wildlife, and environment.
2. Protected Sensitive Areas include streams, stream buffers, stream valleys (including adjacent steep slopes), wetlands and their buffers, floodplains, highly erodible soils, and adjacent hydric soils that are protected by County zoning regulations as required by State law (Article 66B).
3. Stronghold watersheds are those watersheds in the State that are most important for the protection of Maryland's aquatic biodiversity. Stronghold watersheds are the places where rare, threatened, or endangered freshwater fish, amphibians, reptiles, or mussel species have the highest numbers (abundance and number of occurrences). Special protection of these watersheds is necessary to ensure the survival of these imperiled fauna.
4. Tier II streams are stream segments that are better than necessary to support Clean Water Act §101(a)(2) "fishable/swimmable" uses. Their catchment areas (the land draining to the segment) and the streams are regulated under an antidegradation requirement by MDE and EPA. Any applicant for development activity in the watershed must demonstrate that a) the activity will not impact the biological integrity as assessed by MDE, or b) the activity will diminish assimilative capacity (25%) and applicant explains how use of assimilative capacity was minimized, or c) if use of more than 25% assimilative capacity is projected, a social and economic justification for the activity provides an adequate economic justification approved by EPA for the activity, environmental site design and innovative practices have been used to the full extent possible and Clean Water Act regulatory requirements are met
5. Sensitive Species Project Review Areas are areas that primarily contain habitat for rare, threatened, and endangered species and rare natural community types including such regulated areas as Natural Heritage Areas, Wetlands of Special State Concern, Colonial Waterbird Colonies, Habitat Protection Areas, and Waterfowl Concentration and Staging Areas. These DNR mapped areas provide information to local jurisdictions and State agencies to assist with assessing environmental impacts and reviewing potential development projects or land use changes.

The need to develop specific programs to protect existing and pending Tier II streams and their watersheds, Stronghold Watersheds and Sensitive Species habitat areas is recognized, and this Plan currently proposes implementation of the objectives, policies, and actions identified in Chapters 5 and 6. Development of the NPDES program will provide additional stream protection requirements as well as more formal plans and processes for project review to assure that land development minimizes generation of pollutants and maintains stream water quality and existing natural hydrology.

Planning For Water Supply and Water Quality Protection. The Annotated Code of Maryland establishes State policies to improve, conserve, and manage the quality of waters of the State and protect, maintain, and improve the domestic, agricultural, industrial, recreational, and other beneficial uses. State policy provides for the legitimate, beneficial uses of this State's waters, and to provide for prevention, abatement, and control of new or existing water pollution. This Plan element establishes the following principles for water supply and water quality protection (which includes managing waste water disposal) within the County:

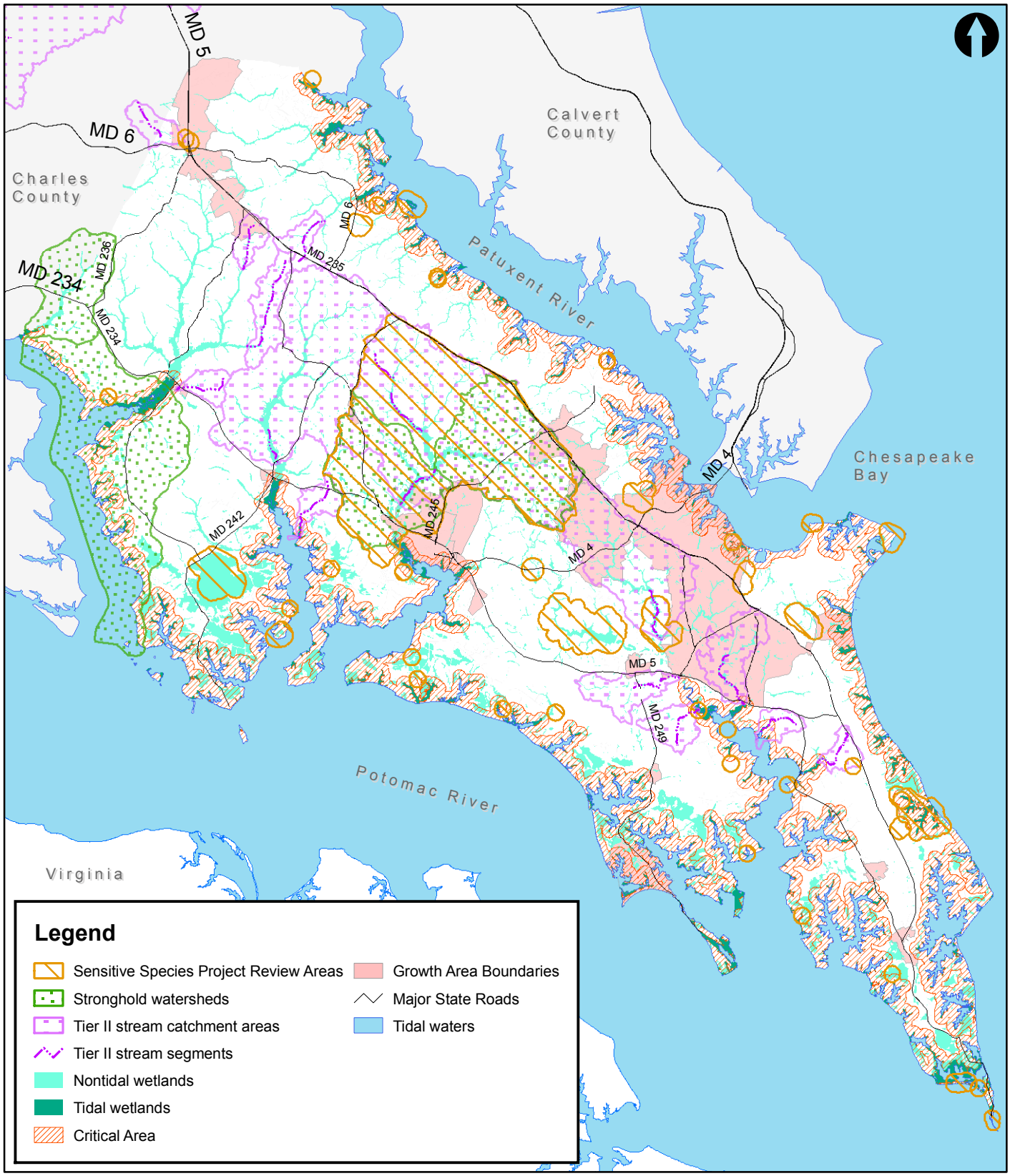
1) Improve the water quality of streams by meeting assigned effluent discharge requirements and by identifying and seeking to reduce other sources of pollution.
2) Coordinate with State and Federal agencies and to work cooperatively in improving the quality of waters of the State.
3) Encourage the wise use of groundwater, and coordinate with State agencies and surrounding jurisdictions on water use issues.
4) Assure a dependable supply of water for residential, institutional, commercial, and industrial uses, as well as irrigation, fire suppression, and stream assimilation for present and future generations.
5) Correct sanitary and water supply problems in existing problem areas through coordinated planning with County, State, and Federal agencies.

The following general policies will be used to accomplish the stated objectives, and to implement the St. Mary's County Comprehensive Water and Sewerage Plan:

1) The use of groundwater over other drinking water sources during the planning period will be encouraged; alternative sources may be considered, particularly in areas experiencing groundwater availability and supply problems.
2) Land application of wastewater effluent and/or advanced wastewater treatment, where practical and environmentally safe, will be encouraged over traditional point-source treatment and discharge into waters of the County or State.
3) Significant stream bodies will be protected by prohibiting future point-source points of sewage effluent into natural drainage basins.
4) Conservation of potable water sources will be encouraged through the implementation of water conservation techniques and programs.
5) River basin coordination with adjoining jurisdictions and State and Federal agencies will be encouraged.

The reuse of effluent, where practical and environmentally safe, as a method of reducing effluent volume and permitted discharge amounts into waters of the State, will be encouraged to the extent that it is available.

Figure 7.1.b.



St. Mary's County
Areas and Habitats subject to State or Federal regulatory review

0 1 2 3 4 8 Miles

7.2 ANALYSIS OF WATER SUPPLY AND SEWER/SEPTIC CAPACITY NEEDS

In 2007, St. Mary's County and the Metropolitan Commission contracted for the services of CH2M-Hill, Inc. to provide a facilities plan and needs assessment for sewer and water capacity in the County. Domestic water supply relies on groundwater withdrawn by both private individual wells and public water systems. Domestic wastewater disposal is via both private Onsite Sewage Disposal System (OSDS) and public sewerage collection and treatment systems. The following table (Figure 7.2) summarizes the water supply and sewer/septic capacity needs through the planning period based on population projections and standards used to project water use per person and effluent generated per household.

Figure 7.2: Estimates of County population, households, water demand and wastewater generation.

Estimates	Census 1970	Census 1980	Census 1990	Census 2000	2005	2010	2015	2020	2025	2030
Population	47,388	59,895	75,974	86,211	96,450	105,400	118,200	130,100	141,150	151,500
Households	12,100	18,791	25,500	30,642	35,050	38,875	44,450	49,350	53,950	58,175
Population Per Household	3.68	3.10	2.87	2.72	2.66	2.62	2.57	2.55	2.53	2.51
Average Household Population	44,537	58,245	73,297	83,429	93,225	101,822	114,363	125,909	136,451	146,220
Millions of Gallons per day (MGD) of domestic water demand @75 gallons per person	3.554	4.492	5.698	6.465	7.234	7.905	8.865	9.758	10.586	11.362
MGD of domestic wastewater @ 250 gallons per household	3.025	4.698	6.375	7.661	8.762	9.719	11.113	12.338	13.488	14.544

Source: CH2M-Hill flow analysis and tables, 2007

7.3 WATER SUPPLY ASSESSMENT AND PLANNING

For water supply, St. Mary's County is entirely dependent on water withdrawal from aquifers shared by surrounding jurisdictions. The County is served by five aquifers: the Patapsco (Upper and Lower), Aquia, Piney Point, and Magothy. Only the Aquia is available to serve the entire County, whereas the Patapsco, Piney Point, and Magothy are found in limited areas.

Although surface water has not been seriously discussed as an option for the County since the early 1970s, and the 1982 Comprehensive Water and Sewer Plan (CWSP) identified potential reservoir sites on McIntosh Run, the St. Mary's River, Killpeck Creek, and Persimmon Creek, no significant measures were put in place until the 2002 Comprehensive Plan removed portions of St. Mary's Lake watershed from the Lexington Park development district. The environmental constraints, and nature of coastal plain soils makes development of additional reservoirs for water supply extremely unlikely and groundwater resources have been and are expected to continue to be the primary source of water for the County for the foreseeable future.

Given the Southern Maryland region's dependence on aquifers for water supply and evidence of significant drawdowns affecting pumping in the more intensely developed areas in Southern Maryland, a study of the aquifers supplying water for the counties in Southern Maryland was conducted from 2002 through 2005 by the Maryland Department of Natural Resource's Resource Assessment Service of the Maryland Geological Survey in cooperation with the Boards of County Commissioners of Calvert, Charles, and St. Mary's Counties and the United States Department of Interior Geological Survey. In the resulting administrative report, Water-Supply Potential of the Coastal Plain Aquifers in Calvert, Charles, and St. Mary's Counties, Maryland, with emphasis on the Upper Patapsco and Lower Patapsco Aquifers by David D. Drummond (Drummond Report) the information below excerpted from the report describes the aquifers, the reason for the study and the study conclusions:

> The water needs of Calvert, Charles, and St. Mary's Counties (referred to in this report as Southern Maryland) are predominantly supplied by five major aquifers. From shallow to deep, these are the Piney Point, Aquia, Magothy, Upper Patapsco, and Lower Patapsco aquifers. Declining water levels and water-quality issues in the Aquia aquifer have prompted water-supply managers to shift a portion of ground-water withdrawals from the Aquia aquifer to the deeper Upper Patapsco and Lower Patapsco aquifers. As of 2002, cones-of-depression have formed in the Aquia aquifer centered at Lexington Park (200 feet below sea level), the Magothy aquifer at Waldorf (90 ft below sea level), the Upper Patapsco aquifer at La Plata (136 ft below sea level), and the Lower Patapsco aquifer at La Plata (200 ft below sea level). Because of these concerns, a study was undertaken to assess the water-supply potential of these aquifers, and to provide water managers with information necessary for long-term planning.
>
> A ground-water flow model was developed that simulates water levels in the five major aquifers in Southern Maryland. The flow model was calibrated using historical pumpage and water levels, and was then used to estimate future water levels through 2030 based on future pumpage scenarios compiled in conjunction with County planning departments.
>
> Projected water demand in Calvert and St. Mary's Counties through 2030 could be met by increased pumpage in the Aquia aquifer (without shifting withdrawals to deeper aquifers) without reducing water levels below the 80-percent management level. Shifting a portion of public-supply withdrawals from the Aquia aquifer to the Upper Patapsco aquifer would result in an increase in available drawdown in the Aquia aquifer in many areas of the counties, with minimal effects on drawdowns in the outcrop area in Charles County.
>
> In St. Mary's County, projected ground-water demand could be met without shifting withdrawals to deeper aquifers (Scenario 1). In this scenario, the deepest simulated head for 2030 is about 248 ft below sea level in the Aquia aquifer at Lexington Park, and the lowest remaining available drawdown is 71 ft at Charlotte Hall. A 20-percent increase in ground-water withdrawals (Scenario 2b) does not cause drawdowns to exceed management levels. Shifting 25 percent of public-supply withdrawals from the Aquia aquifer to the Upper Patapsco aquifer (Scenario 5a) increases remaining available

drawdown at Charlotte Hall to 83 ft, and shifting 50 percent (Scenario 5b) increases remaining available drawdown at Charlotte Hall to 96 ft. Increased withdrawals in the Upper Patapsco aquifer in St. Mary's County in Scenarios 5a and 5b contribute minimally to drawdowns near the outcrop area in Charles County.

The 2005 MGS study utilized the 2002 County Comprehensive Plan in its model as a basis for forecasting future pumpage scenarios and included both residential and non-residential demand. Based on the analysis and the conclusions drawn in the Drummond Report, the County agrees water supply will be sufficient to serve the needs of a growing population through the 2030 planning period. That conclusion is reinforced because this Plan recommends increased water efficiency and system maintenance to eliminate water loss in the system; it also recommends metering of wells to assist in identifying inefficiencies and to drive use reductions. However, based on investigation by the County Water Policy Task Force, the County Commissioners forwarded concerns, observations and requests for action (summarized in priority order below) to the State Water Resources Management Advisory Committee for its consideration and response in order to address concerns about long term water supply for the County and region:

1. Use of the Patapsco Aquifer. The County Commissioners believe that St. Mary's County will reach management levels in the Aquia and Piney Point aquifers not long after the 2030 time frame in the Lexington Park, Leonardtown and Charlotte Hall areas unless the Patapsco aquifer is more extensively used. Heavier reliance on the Patapsco by all municipal and all other major users can provide private well users with more available water from the Aquia and Piney Point; and will halt and may perhaps reverse the water level declines in both that have occurred over the past 60 years. In the Lexington Park area, the St. Mary's County Metropolitan Commission started in 2000 to use the Patapsco to relieve stress on the Aquia and to conform to the new allowable Federal arsenic drinking water standards. The leveling of the decline in potentiometric surfaces in test wells and improved water quality indicates the change is having the desired effect.

   Accordingly since 2006 the County has required that new or replacement wells be drilled into the Patapsco wherever it is feasible from an engineering standpoint to do so. This requirement applies to all wells installed by the water and sewer authority, the Metropolitan Commission; to all major users; and to new rural subdivisions with 25 units or more that are served by a public water system. Some requests for water appropriation permits can come directly to the Maryland Department of the Environment (MDE) without passing through the County's governmental planning process. Directing an applicant to use a specific aquifer is a State prerogative; but heavier use of the Patapsco is a sound, proactive approach to managing the County's water supplies. The County requested the State Water Resources Management Advisory Committee to confirm support for this proposed requirement, and, where major user appropriations permits come directly to MDE, and to confirm that the County will be afforded an opportunity to comment on the aquifer to be used before the permit is issued.

   [Note: The town of Leonardtown shifted its water supply withdrawals from the Aquia to the Upper Patapsco in November 2007. Several new Upper Patapsco wells have been drilled in the Lexington Park area. Water levels in some USGS monitoring wells in the area have shown a small rebound.]

2. Recycled Water and Other Conservation Measures. St. Mary's County needs to do more to conserve water in available aquifers that provide all drinking water, but are also used to water lawns, golf courses, athletic fields, commercial landscaping and to meet industrial operational needs. Use of recycled grey water could significantly reduce the use of valuable potable drinking water for uses for which non-potable water is adequate. Because

new waste water treatment techniques now result in effluent more pure and contaminant-free than many public water sources, the State should consider potential for filtration and reuse of effluent to meet both potable and non-potable water needs. The County is in a position to encourage or require other conservation steps. Consequently, the St. Mary's County Commission on the Environment has been directed to investigate the full range of other water conservation methods and report back on those that offer high payback potential either with or without use of incentives. The County requested the State Water Resources Management Advisory Committee to address restrictions that limit water conservation and reuse options by identifying State and local regulatory changes needed and by initiating legislation necessary to make grey water systems and recycled wastewater both legal and encouraged in Maryland. In keeping with this recommendation, the County will identify areas county–wide where water recirculation and reuse projects may be feasible (i.e. golf courses, nonpotable domestic, commercial, and industrial uses) to help extend existing water resources.

3. Aquifer Recharge Areas. In all the studies referenced above, little is said about the Aquifer outcrop areas that re-supply the Aquia, Piney Point and Patapsco. It is important to know whether actions and land use changes initiated by neighbors to the north and west are likely to damage, interrupt or pollute the water that flows from there. It could be that other's actions of which the County is unaware could mitigate or invalidate the proactive actions it is proposing here. The State Water Resources Management Advisory Committee was asked to place a priority on investigation of this aspect of the County's water resources and initiate appropriate action if negative impacts appear likely.

4. Management Levels. The State of Maryland needs to clearly define the policy and action that will occur regarding permits and continued withdrawal from aquifers when Management Levels are reached at a withdrawal point in an aquifer. It is currently unclear whether all well drilling permits will cease or whether only those permits for major users extracting greater than 10,000 gallons per day will end. Additionally, the geographic extent where permits will be denied needs to be clearly spelled out, so that the area where drilling is no longer to be permitted is clearly defined. This is needed not only for the benefit of individual owners/developers sewer and water but also for County comprehensive service planning purposes. The State Water Resources Management Advisory Committee was asked to ensure that such clarification is accomplished as soon as possible.

5. Alternate Drinking Water Sources. Despite expanded water conservation and recycling efforts, eventually, the County will be confronted with exploring other sources of water. Desalinization may be a feasible option for the concentrated areas of development found in Lexington Park and Leonardtown. Additionally, the Patuxent Aquifer may offer potential, but has never been investigated. Because local and regional jurisdictions do not have the resources or technical expertise to examine the feasibility of either of these possibilities, the State Water Resources Management Advisory Committee was asked to place a high priority on studying potential for use of desalinization plants and the Patuxent Aquifer in Southern Maryland.

6. Private Well Usage Data. In this County, private domestic wells account for an estimated 30-50 percent of all the water consumed. Currently, there is no definitive data on daily consumption from these wells, yet assumptions about consumption were included in the studies that predict adequate water supply for the region through 2030. The County strongly believes statistically valid analysis of water withdrawal rates from private domestic wells is needed. A private well usage initiative should be undertaken so that hard data is accumulated and available. The County has committed an initial funding

amount $30,000 to initiate such a study, but needs participation by the Maryland Geological Service to perform the work. The State Water Resources Management Advisory Committee was asked to support a study of water withdrawal rates from private domestic wells and, if significant differences between the findings and the assumptions used in the water supply reports exist, that appropriate reevaluation of the water supply reports be initiated.

7. Observation Well Monitoring. Well monitoring provides essential data for use in future forecasting. Monitoring, in the spring and fall as a minimum, is essential and funding must be provided to continue the monitoring. The County requested the State Water Resources Management Advisory Committee to pursue adequate funding so that this crucial data collection effort is not jeopardized.

There are relatively few problems with water quality in the County. Three areas, Fenwick Manor and Holland Forest developments and portions of Hollywood, had natural arsenic levels in excess of 10 parts per billion. These problem areas have been addressed by plans to connect affected properties and future development to new deep wells or to the Lexington Park water system.

Problems for individual properties associated with loss of water due to the cone of depression in the vicinity of high concentrations of wells or wells with high withdrawal rates and the inability to lower pumps in older wells have been addressed both by shifting to deeper aquifers for larger water withdrawals and individuals drilling new wells meeting current standards to reach the water.

This Comprehensive Plan shows changes to the Mechanicsville Town Center from its configuration in the 2002 Comprehensive Plan. It removes undeveloped, significantly constrained and sensitive areas. It also recognizes that many of the village centers in addition to the New Market and Mechanicsville Town Centers have significant environmental constraints that limit development potential, and that their small sizes limit the economic feasibility of providing efficient water and sewer infrastructure. Growth in these areas will be dependent on private or community wells and private or shared septic systems. The presence of constraints means that development density will be far less than allowed by zoning, which will result in less overall demand for water supply and reduce the need for construction of water supply infrastructure, particularly in the northern end of the County where an extensive water supply network is currently unavailable. In addition, because of concerns over the long term water supply beyond the 2030 planning horizon, the County has included expanded goals and objectives to further reduce demand via increased water conservation, to shift toward water treatment and supply toward increased reuse of treated effluent, and to promote utilization of residential grey water for nonpotable water uses.

7.4 WATER QUALITY AND SUPPLY GOALS, OBJECTIVES, POLICIES, ACTIONS AND MEASURES FOR SUCCESS

7.4.1 **Goal**: Assure an adequate, safe, and efficient water supply.

A. **Objective:** Protect and manage ground water supplies.

i. ***Policy:*** Protect and manage groundwater resources to maintain a safe and adequate water supply.

a. *Action:* Establish and enforce land use controls, site development standards, development regulations, stormwater management regulations, and erosion and sediment control regulations that control both the quantity and quality of runoff from developed areas

to maintain or improve the quality of runoff and groundwater entering the Chesapeake Bay and its tributaries.

b. *Action:* Work with State and regional agencies to protect aquifer recharge areas.

c. *Action:* Support Statewide policies that protect groundwater recharge areas from contamination and from increases in imperviousness that might limit replenishment of the supply.

d. *Action:* Establish requirements for abandonment of wells that are not being used.

B. **Objective:** Manage groundwater withdrawals.

i. ***Policy:*** Require that new wells be directed to aquifers in a manner that meets the needs and protects existing development from adverse impacts of significant increases in withdrawal amounts and rates.

a. *Action:* Monitor groundwater withdrawal rates and aquifer depth to assure adequate levels of service for both public and private systems and wells.

b. *Action:* Continue to enforce requirement that community water systems be provided for developments of more then 25 units to avoid negative impacts of concentrating individual wells in rural areas, expressed as number of dwelling units or businesses located within a certain distance of each other.

c. *Action:* Evaluate and implement recommendations of the County's Water Policy Task Force for programs to encourage and facilitate water conservation, reclamation and recycling as means to reduce groundwater withdrawal rates, to protect private wells located in the upper aquifers from cones of depression caused by large public well withdrawals, to provide water supply for non-potable water uses to reclaimed water sources.

7.4.2 **Goal**: Provide infrastructure to meet the service needs in growth areas to ensure adequate capacity to provide an acceptable level of service for existing and proposed land uses, and to address adequate facilities and services outside the growth areas.

A. **Objective:** Provide planned water service.

i. ***Policy:*** Provide phased distribution system matched to growth in the County.

a. *Action:* Provide central water supply systems in the development districts and town centers. Within the service area, require connection of all structures with plumbing that are located 200 feet or less from any distribution line.

b. *Action:* Upgrade community water systems as needed to meet appropriate standards (including fire protection) and to keep pace with increasing capacity needs.

ii. ***Policy:*** Provide central water systems to serve expanding populations in existing village centers, neighborhood conservation districts, and areas meeting development thresholds.

a. *Action:* Provide central water systems to areas with failing wells in village centers, neighborhood conservation districts, and areas meeting development thresholds.

iii. ***Policy:*** Require shared wells as defined in the CWSP to be supervised or operated by the St. Mary's County Metropolitan Commission (MetCom). Require dedication of all new central water systems to MetCom for ownership, operation, and maintenance in accordance with MetCom standards and specifications.

7.5 GROUNDWATER CONSERVATION AND ALTERNATIVE WATER SOURCES

7.5.1 **Goal**: Meet long term water supply needs.

A. **Objective:** Protect the water supply.

i. ***Policy***: Participate with Tri-County Council to study aquifers in the region.

ii. ***Policy***: The County continues efforts to significantly reduce development in rural areas.

iii. ***Policy***: Maintain an aggressive water conservation program.

iv. ***Policy***: Require abandoned wells to be capped.

v. ***Policy***: Monitor and address water quality issues related to naturally occurring arsenic in the Piney Point and Aquia aquifers, contamination from polluted sites, and implement measures necessary to meet current arsenic standards.

vi. ***Policy***: Do not extend or provide public water service into areas mapped for No Planned Service.

B. **Objective:** Conserve groundwater and identify alternatives to groundwater sources.

i. ***Policy:*** Develop a detailed water conservation plan for the County to be incorporated into the next update of the Comprehensive Water and Sewer Plan.

ii. ***Policy:*** Develop and encourage alternative use of groundwater withdrawal to meet long term water supply needs. Although current groundwater supplies appear adequate, and current environmental regulatory restrictions make development of new surface water supplies unlikely, it is in the long range interest of the County to protect areas identified as potential surface water impoundment areas in the CWSP.

a. Establish and enforce land use policies to protect potential impoundment sites from adverse impacts of development on water quality and on the ability to construct the impoundment area.

b. Protect existing surface waters from contamination by toxic chemicals, heavy metals, pesticides, and human and animal waste. Implement clean up programs where necessary.

iii. ***Policy:*** Support public educational programs on water conservation practices.

iv. ***Policy:*** Expand water reuse and recycling in the County.

a. Continue and expand use of treated effluent for irrigation and industrial uses and work with MDE to limit permits for withdrawal of potable water for industrial uses and for irrigation.

b. Adopt plumbing code provisions for installation of residential and commercial grey water systems and develop a training program for plumbers on system design and installation.

c. Work with community developers to provide residential grey water systems for flushing toilets and irrigation.

d. Promote use of rain barrels and cisterns as a water source to meet water needs for residential and commercial landscaping.

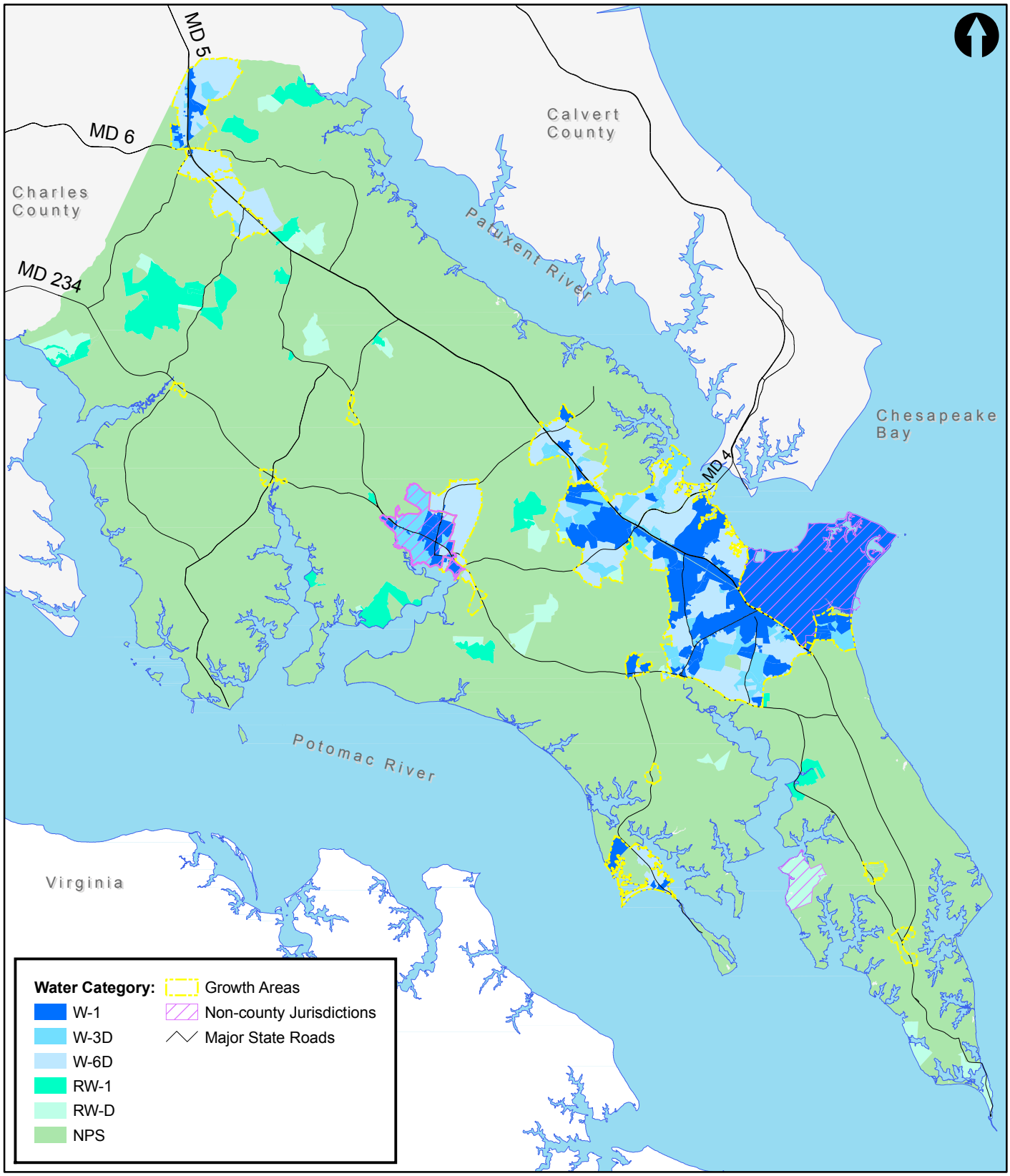
v. ***Policy:*** Conduct a pilot project to investigate use of treated effluent for drinking water supply.

vi. ***Policy:*** In partnership with the other Southern Maryland counties, investigate the potential for use of desalinization technology using the waste energy from the Calvert Cliffs Nuclear Power plant.

C. **Objective:** Facilitate proactive management of permits and review of water appropriations to ensure that permitted allocations are adequate to meet water demands.

i. ***Policy:*** Develop and implement Water Supply Capacity Management Plans for each water system.

Figure 7.4 Water Service Area Map

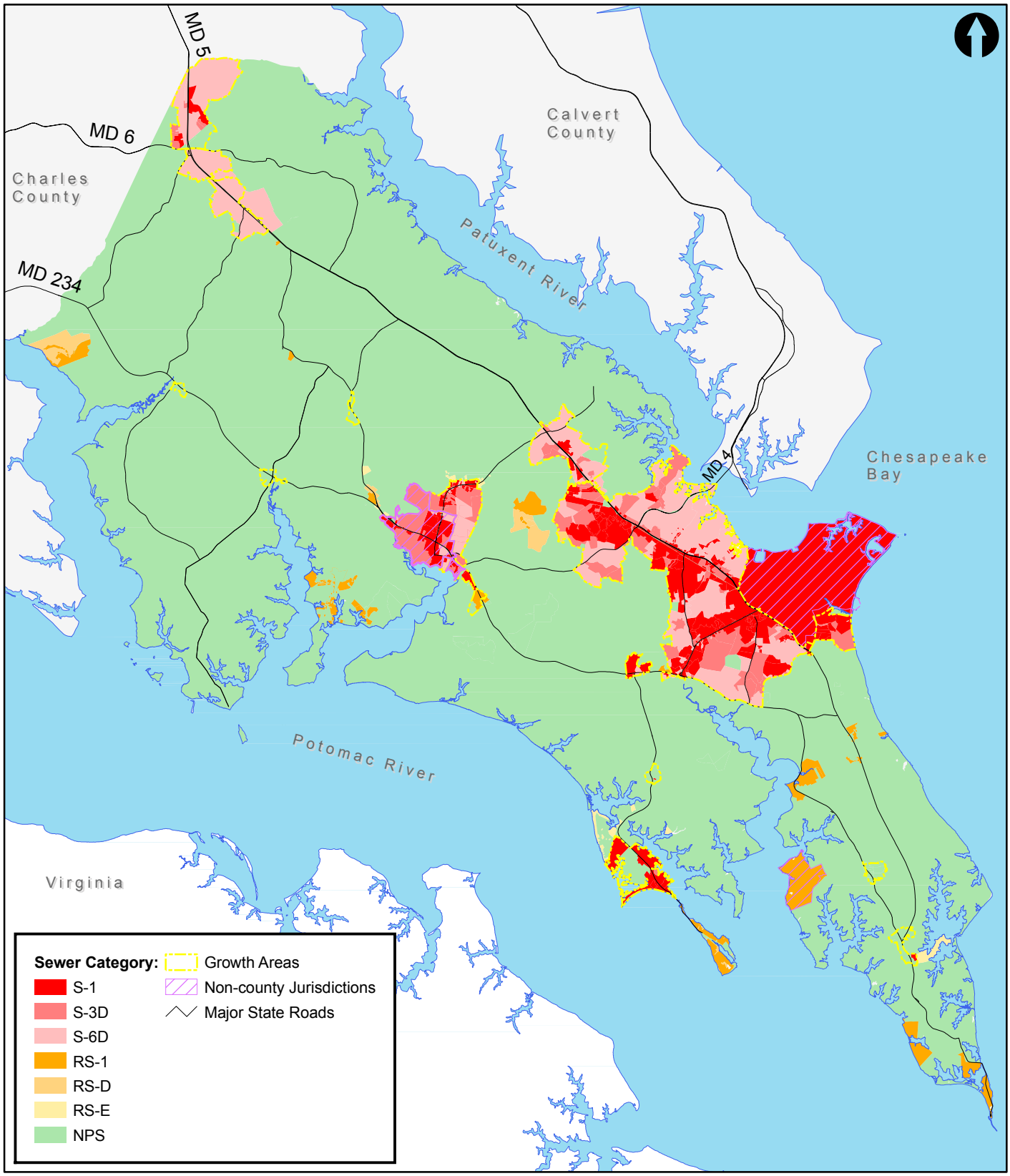


St. Mary's County Water Service Areas

0 1 2 3 4 8 Miles

Note:
An update of the CWSP will be necessary to coordinate planned service areas with the approved Comprehensive Plan Growth Area Boundaries

Figure 7.5 Sewer Service Area Map



St. Mary's County Sewer Service Areas

0 1 2 3 4 8 Miles

Note:
An update of the CWSP will be necessary to coordinate planned service areas with the approved Comprehensive Plan Growth Area Boundaries

7.6 WASTEWATER ASSESSMENT AND PLANNING

There are four principal public wastewater treatment plants in the County: 1) the Leonardtown wastewater treatment plant that serves the Leonardtown Development District and the Town of Leonardtown that discharges into Breton Bay; 2) the Marlay-Taylor water reclamation facility that serves the Lexington Park Development District, the Piney Point Town Center, St. George's Island, St. Mary' College, the Hollywood Town Center and certain areas of failed septic systems, and that discharges into Pine Hill Run, a small tidal tributary that discharges directly into the Chesapeake Bay; 3) St. Clement's Shores and 4) Wicomico Shores that serve these neighborhood conservation districts and discharge effluent land application within the Breton Bay and Wicomico River watersheds respectively. There are several small package plants, including one operated by Maryland Environmental Services at Point Lookout State Park, discharging into Lake Canoy at tidal embayment or that discharges directly into the Potomac River. Another example is the plant serving the navy and coast guard stations at Webster Field, which discharges into the St. Mary's River.

In 1980 St. Mary's County and the Town of Leonardtown entered into an interjurisdictional agreement for sharing the capacity of the Leonardtown WWTP, but the threshold for sharing has been exceeded, which means there is no plant capacity available to serve growth within the Leonardtown Development District. As a result, growth in the development district must rely on septic systems. The County and Town are working cooperatively to identify the quantity of additional capacity needed and the plant upgrades that would be necessary to maintain the nitrogen and phosphorous loads entering Breton Bay. It is anticipated that any future upgrade of the plant will need to utilize land application for disposal of the additional effluent resulting from increases in plant capacity.

To achieve Maryland's water quality standards for the Chesapeake Bay, the State of Maryland has developed a strategy for point sources as part of the Tributary Strategy Statewide Implementation Plan (a.k.a., "Point Source Strategy"). The Point Source Strategy is a two-part plan to: (1) upgrade significant wastewater treatment plants (WWTPs) to state of the art enhanced nutrient removal (ENR) technology to meet permit loading limits based on concentrations of 4.0 mg/l or less total nitrogen and 0.3 mg/l or less total phosphorus and (2) maintain the nutrient load caps for all point sources. New dischargers and existing dischargers of any size that want to grow beyond their Tributary Strategy nutrient loading caps can do so through several mechanisms: optimizing treatment options; acquiring equivalent point source discharge credits from other dischargers; upgrading minor facilities to Biological Nutrient Removal (BNR) or ENR levels; retiring an existing minor WWTP after connecting its flow to BNR or ENR facility; retiring existing OSDSs by connecting them to ENR facility or other facility that will provide a net nutrient reduction; land application of wastewater with pre-treatment and nutrient management controls; and acquiring nonpoint source discharge credits. Rules governing the creation and exchange of credits for nonpoint sources will be developed in Phase II of Maryland's cap management approach.

In rural areas onsite septic disposal systems (OSDS) are the principal means of sewage disposal. Septic systems have numerous benefits including ground water recharge, eliminating point discharges, they require less infrastructure, maintenance, and provide for a long term solution for rural sewage disposal that protects citizen health as long as there are adequate back up fields. They also have significant disadvantages including the need for maintenance (often neglected by owners), significant cost to owners for replacing a failed traditional system ($5,000 to $15,000, often without warning) and most significantly for environmental purposes they don't prevent nitrogen from reaching ground water—producing about 9.5 lbs of nitrogen per person per

year. Alternative systems that reduce nitrogen in the effluent can overcome these disadvantages but are not widely used and although there is funding to assist in the installation systems few residents have availed themselves of the program — at the close of 2009 fewer than 20 had been installed in the County. The requirements for attaining approval for a septic disposal area have provided a significant check on rural development, as well as for towns and villages that have no public sewer provided.

7.6.1 **Goal**: Provide infrastructure to meet service needs in growth areas, ensure adequate capacity to accommodate concentrated development in growth areas and to address adequate facilities and services outside the growth areas.

A. **Objective**: Implement a comprehensive program for sewerage disposal that supports the land use concept for the County.

i. ***Policy***: Ensure the safe and environmentally sound collection and disposal of wastewater and polluted stormwater generated in St. Mary's County.

ii. ***Policy***: Protect ground water and surface water resources from pollution associated with sewage treatment facilities and septic systems.

a. Action: Reduce nutrient pollution through installation of Enhanced Nutrient Pollution technologies at waste water treatment facilities.

b. Action: Identify and require correction of malfunctioning septic systems.

c. Action: Require use of Best Management Practices and innovative technologies to intercept and filter pollutants from stormwater and to discharge the cleaned water principally via structures designed to infiltrate the effluent into groundwater in order to maintain natural flow and hydrology of nearby streams and wetlands.

B. **Objective**: Properly dispose of wastewater and take actions to reduce the pollutants in waste water.

i. ***Policy****:* Implement the CWSP through preparation and adoption of such ordinances, rules and regulations as may be necessary.

a. *Action*: Assure public ownership of all community water and sewerage systems.

b. *Action*: Require all sewage collection systems be designed and constructed to St. Mary's County Standard Specification for Water and Sewerage Construction.

c. *Action*: Evaluate a balance between assigned equivalent Dwelling Units (EDUs) and actual effluent quantities (flow).

ii. ***Policy****:* Reduce existing and potential pollution, and achieve State water quality standards.

a. *Action*: Conduct watershed studies to verify water quality, to identify sources of pollution and causes for water quality problems and determine actions necessary to correct identified problems.

i) Inform citizens about pollution problems and solicit advice and cooperation from the public to address the problems.

ii) Identify funding resources to correct existing problems. Fairly assess costs for correcting problems to parties responsible for causing water quality problems.

b. *Action*: Assure that water resources are carefully managed by responsible agencies.

c. *Action*: Discharge treated effluent only through outfalls in the Chesapeake Bay or Potomac River or through approved methods for land application. Prohibit long term discharges into other water bodies.

d. *Action*: Assure that County government programs conform to the goals of the CWSP.

iii. ***Policy****:* Guide development to areas where water and sewerage systems exist or may be installed both economically and in conformance with the Land Use Plan.

a. *Action*: Provide planned sewerage service and extend new sewerage service in a deliberate and orderly manner to planned growth areas. Provide central sewage collection systems in the development districts. As collection systems are extended into service areas, require connection of all structures with plumbing within the service area when the structure is located within 200 feet of any collection line. Properties that abut or are crossed by a collection line or by a sewer service easement shall be assessed a benefit service charge whether or not the structures on the property are required to connect to the collection line.

b. *Action*: Direct sewerage service as needed to remedy the failure of existing septic systems where no feasible alternative exists. Avoid discharge of treated wastewater into local waters. Do not extend new sewerage service to rural areas unless it corrects an existing health hazard or environmental threat.

i) Public sewerage service extended to correct an existing health hazard or environmental threat shall not be used to intensify development in rural areas or neighborhood conservation districts outside growth areas.

ii) Small local land-treatment systems are the preferred means of providing sewerage service to such areas.

c. *Action*: Ensure that all interceptors are sized to meet the needs of the planned growth of the drainage area or sanitary district in which the projects are located.

d. *Action*: Consider recommendations of the Metropolitan Commission Task Force that was appointed in 2009.

iv. ***Policy***: Adhere to the nutrient cap established for County wastewater treatment facilities so that the total amount of nitrogen and phosphorous pollution that is permitted to be discharged in wastewater effluent by treatment plants and land application plants is not exceeded regardless of the increases in numbers of gallons per day discharged and of the number of persons served by wastewater treatment systems in the County.

a. *Action*: Upgrade wastewater treatment plants to enhanced nutrient removal technology to achieve 3 mg/l discharge rates for all plants, and cap new allocations for discharge to facilities as necessary hold the total discharge to the cap set in the Maryland Tributary Strategy for Point Sources.

b. *Action*: Identify and pursue implementation of innovative technologies and methods that can allow increased sewer allocations without exceeding Nutrient Cap for treatment facilities. Considerations for meeting the Cap should include reuse of effluent for potable supply, direct recharge of aquifer or storage in surface impoundment, bioremediation of effluent via grey water use for landscape and industrial needs.

C. **Objective**: Limit impacts of onsite septic disposal systems (OSDS).

i. ***Policy***: Encourage use of land application community sewer systems, where feasible (i.e., spray irrigation, drip underground irrigation, etc.).

ii. ***Policy***: For all new septic systems, requiring two back-up fields. Limit or prevent expansion of structures served by an OSDS that cannot meet this requirement.

iii. ***Policy***: Develop a program to educate OSDS owners about necessary system maintenance, including routine pump out, of septic systems and provide incentives and/or requirements to perform maintenance.

iv. ***Policy***: Promote use of approved alternative septic system technologies to: retrofit existing systems to reduce risk of failure; to correct system failures where connection to central collection systems are not feasible; to allow expansion of existing structures where use of a conventional septic system is not feasible; and to minimize environmental impacts wherever conventional systems are currently feasible.

a. *Action*: In minor subdivisions developments within the RPD where shared septic easement use is proposed, require clustering when such clustering may improve system performance, reduce impacts from clearing and land disturbing activities and allow more efficient use of the land.

b. *Action*: In targeted areas, require all new and replacement septic systems to be nitrogen removing septic systems.

c. *Action*: Require retrofits to correct failing septic systems to be nitrogen removing septic systems.

d. *Action*: Assist and direct citizen to make use of the State grants available for installation of nitrogen removing septic systems.

D. **Objective**: Ensure that marine pump-out facilities are available at all existing and future marinas.

7.7 STORMWATER ASSESSMENT AND PLANNING

Pollutants in stormwater discharges from many sources are largely uncontrolled. The *National Water Quality Inventory, 1990 Report* to Congress provides a general assessment of water quality based on biennial reports submitted by the States under Section 305(b) of the CWA. This report indicates that roughly 30% of identified cases of water quality impairment are

attributable to stormwater discharges. During rain events that produce runoff, numerous pollutants including sediment, nutrients, bacteria, oil, metals, and pesticides are washed into storm sewer systems from diffuse sources such as construction sites, residential neighborhoods, commercial areas, parking lots, roads, and industrial facilities. Additionally, illegal dumping, sanitary sewer system leaks, and illicit connections to storm sewer systems can be significant sources of pollutants. Some of the more serious effects to receiving waters are the contamination of drinking water supplies, restrictions on water contact recreation, loss of wildlife habitat, decreases in the number and variety of aquatic organisms, and fish kills.

Suitability of Receiving Waters. The St. Mary's River, Breton Bay and the Patuxent River (via smaller creeks) are the primary receiving waters for runoff from the two development districts and Hollywood and Piney Point Town centers. All of these water bodies have identified impairments associated excess nutrients and sediment. It appears anecdotally that many of the individual catchment areas have impairments associated with erosion of legacy sediments and periodically from failures of erosion and sediment control or stormwater structures within individual development sites. Retrofit sites have been identified for a number of unmanaged or inadequately managed sites in the development districts.

In order to reduce, and ultimately to eliminate impairments associated with poor water quality and excess quantity entering receiving waters, management of runoff from new development will need to achieve full control and/or provide mitigation for sediment and erosion control during construction and stormwater runoff from completed developments. At the same time the County will need to step up monitoring and enforcement to improve stormwater quality and reduce quantities leaving existing development sites with stormwater management facilities, improve land management practices in some cases implement retrofit projects. Where existing development is without stormwater management implementation of regional retrofits may be necesasry in addition to improving land management practices.

Construction Site Stormwater Runoff Control. The Maryland Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland establishes a statewide erosion and sediment control program to control construction site stormwater runoff. This statute, coupled with the Code of Maryland Regulations (COMAR), specifies the requirements for any construction activity that disturbs five thousand (5,000) square feet or more of earth. Because Maryland has an erosion and sediment control program in place that regulates more earth disturbing activities than by the NPDES stormwater program, MDE considers compliance with the State statute to be compliance with this minimum control measure, this general permit, and CFR.

COMAR contains procedures for approving proposed construction drawings and erosion and sediment control plans prior to the start of any development or local permit issuance. State regulations also define erosion and sediment control plan review and enforcement responsibilities. Typically, erosion and sediment control plans are reviewed and approved by local Soil Conservation Districts (SCD) for private projects and by MDE for State and Federal construction projects. Enforcement of approved erosion and sediment control plans statewide is MDE's responsibility unless MDE has delegated its enforcement authority to a County or municipality. St. Mary's County does not have "delegated" authority for inspection and enforcement of stormwater management and for sediment and erosion control and relies on Maryland Department of the Environment for inspection and enforcement or these regulations.

According to COMAR, to be delegated erosion and sediment control enforcement authority, a locality must have an ordinance or set of regulations in place approved by MDE, inspection and enforcement procedures to ensure proper erosion and sediment control implementation and maintenance, and sufficient field staff to inspect active construction projects. MDE reviews the field performance of erosion and sediment control field staff to help judge

whether enforcement authority should be delegated. This erosion and sediment control program review occurs when a County or municipality applies for delegation of enforcement authority. Additionally, the maximum length of delegation is two years.

Permittees shall comply with all State and local laws, regulations, ordinances, and procedures relating to erosion and sediment control. Additionally, permittees may seek delegation of enforcement authority from MDE, rely on another delegated authority provided that entity accepts responsibility, or have MDE enforce erosion and sediment control requirements within their jurisdictional boundaries. Permittees shall clearly state how this minimum control measure will be implemented in the NOI submitted to MDE according to PART II of the general permit.

7.7.1 **GOAL:** Maintain after development, as nearly as possible, the predevelopment runoff characteristics in order to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding.

A. **Objective**: Implement environmental site design (ESD) to the maximum extent practicable using appropriate structural best management practices only when necessary.

i. ***Policy***: Require all new development sites to utilize environmental site design (ESD) to minimize landscape alteration that uses small-scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources.

ii. ***Policy:*** As the principal means of managing stormwater generated onsite, require plans for new development to include a comprehensive stormwater management system with natural areas, ESD approved by MDE and other elements designed to reduce impacts. Structural conveyance systems and impoundments to collect stormwater and surface discharge of stormwater to locations off site shall be minimized.

a. *Action*: Adopt and implement regulations to assure that new and redeveloped sites are developed in accordance with ESD principles and State stormwater management regulations.

b. *Action*: Seek and provide training for consultants, builders, applicants and review staff to facilitate design, review and approval and implementation of ESD in development projects.

B. **Objective**: Assure compliance with and implementation of approved plans for sediment and erosion control during development.

i. ***Policy:*** Assure that the cost of inspection and enforcement are borne by the applicant and when violations occur assure that the violation and corrective actions are performed and that the full cost of bringing violations into compliance including restoration and clean up is assessed to the violator.

C. **Objective**: Establish a storm water utility as part of the NPDES program to provide funding for corrective actions necessary to address needed stormwater retrofits in areas where stormwater management is currently absent.

7.8 DISCUSSION, POLICIES AND ACTIONS FOR IMPLEMENTATION OF THE TRIBUTARY STRATEGIES FOR THE LOWER POTOMAC AND THE PATUXENT WATERSHEDS

Background. The Chesapeake 2000 Agreement outlines 93 commitments detailing protection and restoration goals critical to the health of the Bay watershed. The agreement

addresses goals in five major categories: living resources; vital habitats; water quality; sound land use; and stewardship and community engagement. The agreement calls for water quality goals based on scientifically determined requirements to restore the Bay's living resources, and lays out a framework for restoration efforts to be reached by 2010, and then maintained. The Chesapeake Bay Program, EPA and the States, used a computer model to create the pollution budget for the entire Bay Watershed. The budgeted pollution was assigned to States and subdivided to watersheds. This allowable amount is called the nutrient allocation. The nutrient allocation for the Bay is compared to the TMDL to meet local water quality standards. The more stringent of the two is then applied. The Tributary Strategies are implementation plans to meet the more stringent allocation determined for the Bay, as well as the pollution budget for both the Bay and local waters. If the local TMDL is more stringent, then additional best management practices will apply to that watershed.

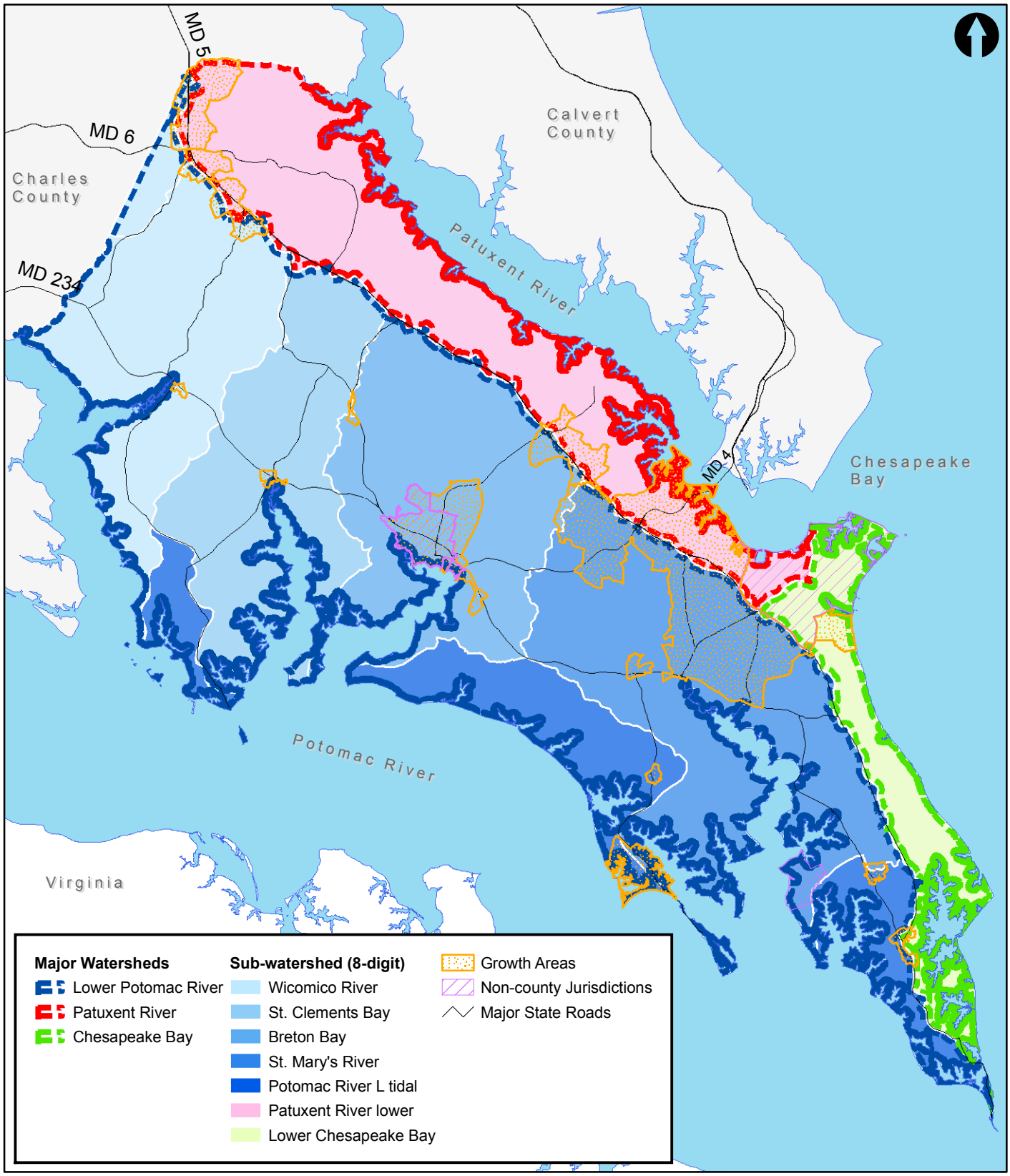
The Bay-wide annual nutrient loading goals are 175 million pounds of nitrogen and 12.8 million pounds of phosphorous. Maryland's portion is 37.25 million lbs for nitrogen and 2.92 million lbs for phosphorous. Achieving these goals will require more than a 50% reduction of 1985 harmful nutrient run-off levels from all sources. Specific sediment reduction goals were not set at that time; however significant reductions in sediment laden run-off will be achieved as the strategy is implemented.

The state-wide Tributary Strategy is intended to achieve and maintain Maryland's nutrient reduction goals. These goals are also caps, meaning once Maryland and other States achieve the necessary reductions, they must maintain that level in order to sustain improved water quality in the Bay.

Based on the loads assigned to each of 10 tributary basins, a specific strategy for each tributary segment was developed with extensive input from the Tributary Teams, local governments, scientists, and various stakeholder and citizen groups. Each strategy is tailored to the individual needs and characteristics of each local tributary.

The process used to develop the strategies provided the opportunity to comprehensively identify actions needed to achieve the nutrient reduction goals. As a result of this comprehensive process and in consideration of other commitments in the Chesapeake 2000 Agreement, the strategy also addresses such important issues such as habitat restoration, erosion control, growth management, agricultural land preservation and the protection of public water supply. Each strategy was developed via an extensive public process to identify options to be included and the strategy implementation process. The strategy was then refined based on public input, scientific data, and local and State policies, laws and implementation issues. The resulting final strategies call for actions above and beyond many existing local and State policies, laws and budgets. The Strategies identify an incredible magnitude of actions needed to bring the Bay back into balance and recognizes that ultimate success relies on everyone in the watershed showing the collective social and political will to put these plans into practice and do what is needed to bring back the Bay.

Figure 7.8. County Watersheds



St. Mary's County Watershed boundaries

0 1 2 3 4 8 Miles

Developing a Local Tributary Strategy. St. Mary's County is responsible for a portion of the loads assigned to the Lower Potomac Tributary Basin and to the Patuxent River Tributary Basin. The basin specific Tributary Strategies detail the magnitude of the problem, attributes the pollution to its various sources and identifies the best management practices needed to remove the Bay from the U.S. Environmental Protection Agency's (EPA) list of impaired waters. Basin wide strategies must be further refined for implementation appropriate in this County. Refining the local strategy will require the County, in cooperation with the Tributary Strategy Teams, to identify specific actions or practices to achieve measurable reductions in nutrients and sediment entering local waterways feeding to the Bay. This includes some established practices currently being implemented, as well as emerging practices with reduction efficiencies based on preliminary scientific study. Local progress must be evaluated regularly and new programmatic, policy and fiscal measures suggested, to ensure that the County contributes to Maryland's progress toward removing the Bay and the Tributaries from the impaired waters lists.

The Statewide Tributary Strategy identify State actions and also note the "gap" in meeting the Bay water quality and habitat goals that will have to be addressed at the local level. The State strategy recognizes that each jurisdiction will need to tackle nutrient and sediment pollution in the most efficient way possible for that part of the Bay watershed and that there is no "one-size-fits-all" strategy for the entire Bay watershed. Each tributary-specific strategy (and each jurisdiction's local strategy within the basin strategy) must be designed to address the unique land-use characteristics of that watershed. Pollution reduction actions needed in rural watersheds, for example, vary greatly from those needed in more urban areas. Regardless of the type of watershed, however, every strategy is based on a specific nitrogen, phosphorus and sediment allocation.

Many rural Tributary Strategies rely heavily on working with farmers to reduce the amount of nutrients and sediment flowing from cropland and pasture. Bay wide, about 42 percent of annual nitrogen loads comes from agriculture. Many strategies reduce pollutant loads by relying on a few key "best management practices" (BMPs) that may include:

1. Cover Crops reduce erosion and the leaching of nutrients to groundwater by maintaining a vegetative cover on cropland. This practice involves seeding cereal crops into recently harvested cropland with little disturbance of the surface soil. As they grow, the new crops capture or "trap" nitrogen and prevent it from reaching local streams and the Bay.
2. Enhanced Nutrient Management or "Yield Reserve" is a reduction in nitrogen applied to cropland beyond the nutrient management recommendation. Based on research, the nutrient management rates of nitrogen application are set approximately 35 percent higher than what a crop needs to ensure nitrogen availability under optimal growing conditions. In a yield reserve program, the farmer would reduce the nitrogen application by 15 percent. An incentive or crop insurance is used to cover the farmer's risk of yield loss.
3. Conservation Tillage involves planting and growing crops with minimal disturbance of the surface soil. This practice reduces nutrient and sediment runoff by leaving residue from the previous crop on the land and minimizing erosion.
4. Forest or Riparian Buffers are wooded areas along rivers, streams and shorelines that help filter nutrients, sediments and other pollutants from runoff. In some areas of the Bay watershed, buffers can reduce nutrient and sediment pollution by 70 percent.

Reducing pollution from urban areas is equally critical to restoring the Bay. Tributary Strategies will call on many municipalities to upgrade sewage treatment plants to reduce the amount of nitrogen reaching local waters. Bay wide, sewage treatment plants contribute 19

percent of the total nitrogen flowing into the Bay each year. Additionally, urban areas that contain a large amount of impervious land – where water cannot be naturally filtered by penetrating into the ground – storm water management techniques will aim to reduce pollutants carried by storm drains into local streams. Urban management practices can include:

1. Enhanced Nutrient Removal (ENR) uses new technologies to further reduce the amount of nutrients flowing from sewage treatment plants, which can result in rapid improvements in local water quality.
2. Low-impact Development Practices (LID) include a variety of techniques including rain gardens, rain barrels, roof gardens and down spout (gutter) disconnects. These practices improve water quality in local streams and the Bay by filtering pollutants into natural areas and minimizing erosion and storm water flow.
3. Erosion and Sediment Control Practices, such as silt fences, protect local streams from sediment pollution and increases in runoff associated with land development activities. By retaining soil on-site, sediment and attached nutrients are prevented from leaving disturbed areas and polluting streams.
4. Septic System Upgrades will reduce the amount of nitrogen flowing into the Bay. By retrofitting or replacing traditional septic systems with more advanced denitrification systems – or connecting existing septic systems to a wastewater treatment plant – annual nitrogen loads to the Bay can be decreased.

Development of the Local Strategies. This Comprehensive Plan directs active participation by the County in the development of the basin specific strategies using the established State program and process. As that process moves forward in 2009 and 2010, the strategies developed for St Mary's County are proposed to be developed on a 12- digit subwatershed basin level to facilitate coordination with the NPDES permit. The local strategies will be a mix of both urban and rural strategies depending on the mix and character of the land uses within those subwatersheds. Key priorities for the County in development and implementation of local strategies will be long term protection of water quality with minimal maintenance of practices, fair assignment of the costs for implementation to those responsible for the pollution, and assuring that public funds expended achieve not only the nutrient and sediment goals but other comprehensive Plan goals for habitat protection and restoration, land conservation, and meeting community needs. Finally the strategies need to detail what funding initiatives are needed, what policies must be implemented and what technologies need to be developed to expedite Bay restoration and the Plan must be flexible so that as technology improves, new innovations can be incorporated into the existing plans, allowing Bay Program partners to find new ways to reduce collective impact on the Bay.

7.8.1 **Goal**: Achieve the nutrient and sediment reductions goals and the water quality and habitat restoration goals established for the Chesapeake Bay, Patuxent and Potomac River basins in the Statewide Tributary Plan necessary to remove the Bay and its tributaries from EPA's 303(d) list of impaired waters.

A. **Objective:** Develop and implement a local Tributary Strategy Action Plan specific to the County portions of the Lower Potomac and of the Lower Potomac watershed.

i. ***Policy***: Coordinate the strategy development and implementation with existing Federal, State, local, and volunteer programs to address the goals of the statewide strategy as well as goals of this Comprehensive Plan.

ii. ***Policy***: Encourage, support and participate on Tributary teams made up of local, State and Federal agency representatives, business, industry and environmental interest group representatives and interested citizens to develop the local Tributary Strategy Action plan.

a. *Action*: Assure that County activities, programs and projects support implementation of the Tributary Strategy Action Plan developed.

b. *Action*: Monitor and report on implementation actions to assure that progress on implementation is achieved and documented.

c. *Action*: Utilize State tracking and analysis of water quality, water clarity, and habitat improvements or declines to adjust the implementation plan as needed to meet strategy milestones.

d. *Action*: Implement regulatory controls needed to assure implementation if non-regulatory efforts do not or cannot achieve water quality goals of the strategy.

7.9 DISCUSSION, OBJECTIVES, POLICIES AND ACTIONS FOR NPDES PERMITTING.

Section 402 of the Clean Water Act (CWA) prohibits the discharge of any pollutant to waters of the United States from a point source, unless that discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. Under the provisions of the NPDES regulations, stormwater discharges from municipal separate storm sewer systems are considered point sources that require an NPDES permit.

The Maryland Department of the Environment (MDE) has been granted authority by the United States Environmental Protection Agency (EPA) to issue NPDES permits in accordance with statutory requirements promulgated by the CWA. The Environment Article, Title 9, Subtitle 3, Part IV, Annotated Code of Maryland requires a discharge permit for any activity that could cause or increase the discharge of pollutants into waters of the State. Additionally, Code of Maryland Regulations (COMAR) 26.08.04 requires MDE to administer the NPDES program as part of the State's own discharge permit system. These regulations also define municipal separate storm sewer systems as point sources of pollution subject to NPDES permit requirements.

Section 402(p) of the CWA, as amended by the Water Quality Act of 1987, requires NPDES permits for stormwater discharges from medium municipal separate storm sewer system. A medium municipal separate storm sewer system (MS4) is defined in the CWA as serving a population of greater than 100,000 and less than 250,000. In 2008 St. Mary's County reached the 100,000 population threshold and following the United States Department of Commerce's 2010 Census, will be designated as a medium municipality. As a result, the County will be required to seek approval for an NPDES permit application.

7.9.1 **Goal**. Comply with Clean Water Act mandates for developing a program that addresses non-point source pollution in the County.

A. **Objective**: Develop a plan and process to coordinate the various water resource programs to streamline management and implementation of the State and Federally mandated programs.

i. ***Policy***: Develop a comprehensive water quality protection framework that coordinates the development of an MS4 nonpoint pollution program with existing NPDES permits for point sources, with the TMDL program, with Tributary strategies implementation plans, with the implementation and updates to the CWSP and with resource protection programs.

ii. ***Policy***: Develop a National Pollution Discharge Elimination System (NPDES) program for a Municipal Separate Storm Sewer System (MS4) permit to address non-point source pollution.

a. *Action*: Develop a program to reduce pollutants in stormwater runoff for construction sites disturbing one or more acres. This primarily includes developing: an ordinance, requirements to implement erosion and sediment control BMPs, requirements to control other waste at the construction site, procedures for reviewing construction site plans, procedures to receive and consider information submitted by the public, and procedures for inspections and enforcement of stormwater requirements at construction sites.

b. *Action*: Develop a program to address post-construction stormwater runoff from new development and redevelopments that disturb one or more acres. This primarily includes developing: strategies to implement a combination of structural and non-structural BMPs, an ordinance to address post-construction runoff, and a program to ensure adequate long-term operation and maintenance of BMPs.

c. *Action*: Develop a program to detect and eliminate illicit discharges. This primarily includes developing: a storm sewer system map, an ordinance prohibiting illicit discharges, a plan to detect and address these illicit discharges, and an education program on the hazards associated with illicit discharges.

d. *Action*: Develop a program to educate the community on the pollution potential of common activities, and increase awareness of the direct links between land activities, rainfall-runoff, storm drains, and their local water resources and give the public clear guidance on steps and specific actions that they can take to reduce their stormwater pollution-potential.

e. *Action*: Offer opportunities to the public to participate in stormwater program development and implementation by offering positions on a local stormwater management panel, facilitating opportunities for direct action, educational, and volunteer programs such as riparian planting days, volunteer monitoring programs, storm drain marking, or stream-clean up programs, by partnering with groups who want to participate in promoting environmental causes to offer opportunities to participate in the stormwater management program.

f. *Action*: Train staff on ways to protect stormwater, particularly when maintaining infrastructure and performing daily municipal activities, such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. This primarily includes: developing inspection and maintenance procedures and schedules for stormwater BMPs, implementing BMPs to treat pollutants from transportation infrastructure, maintenance areas, storage yards, sand and salt storage areas, and waste transfer stations, establishing procedures for properly disposing of pollutants removed, and

identifying ways to incorporate water quality controls into new and existing flood management projects. Conduct activities that can pose a threat to water quality using practices and procedures to prevent pollutants from entering the MS4 including winter road maintenance, minor road repairs and other infrastructure work, automobile fleet maintenance, landscaping and park maintenance, and building maintenance, parking lot and street sweeping and storm drain system cleaning, contain spills, manage trash, and handle non-stormwater discharges.

7.10 DISCUSSION, POLICIES AND ACTIONS FOR IMPLEMENTATION OF THE TMDL

Total Maximum Daily Loads (TMDLs) allow Maryland to set pollution budgets for each tributary contributing to Maryland's waters. Maryland Department of the Environment (MDE) technicians, using science and modeling, establish the maximum amount of pollutants that various segments of a water body can handle and still meet water quality standards. TMDLs are based on the relationship between pollution sources and in-stream water quality conditions. TMDLs are developed for a single pollutant or stressor for each water body. TMDLs are used on a smaller scale than the Maryland's Tributary Strategies to address local water quality problems.

Using TMDLs as a tool to guide pollutant reductions is key to protecting water quality. Maryland's Draft Statewide Tributary Strategy Implementation Plan identifies programs and policies currently underway and new initiatives to reduce nutrients to meet that budget. Water quality standards in streams and the Maryland portion of the Chesapeake Bay watershed set the goal for the budget Maryland's current list of water bodies identifies 134 impaired watersheds. Various combinations of water bodies and pollutants result in over 655 potential TMDLs statewide.

7.10.1 **Goal:** Bring impaired waterbodies into compliance with the TMDL limits established by MDE, and maintain water quality in order to remove them from the lists of impaired waters of the State.

A. **Objective**: Adopt a comprehensive approach to management of pollution (point and nonpoint sources) to minimize adverse impacts on water quality in the Chesapeake Bay and its tributaries that result from 1) the pollutant discharges from point sources and 2) high nutrient, sediment, chemical pollutants carried by runoff.

i. ***Policy***: Limit and mitigate the impacts on water quality that result from pollutants that are discharged from both point and non point sources including:

a. *Action*: Implement planned upgrades to major waste water treatment plants (Leonardtown WWTP and Marlay Taylor WRF) to reduce nitrogen and phosphorus in the wastewater down to 3 mg/l total nitrogen and 0.3 mg/l total phosphorus.

b. *Action*: Encourage individual landowners on septic systems to upgrade to nitrogen removing systems and to utilize Bay Restoration Funding available form MDE.

c. *Action*: Continue to identify areas of failed or failing systems and require connection to public sewerage systems in growth areas, and facilitate connection to rural systems developed to reduce environmental impacts of multiple new septic systems and to eliminate failing septic systems.

d. *Action*: Require agricultural best management practices and development and implementation of Nutrient Management Plans and Sediment and Erosion Control Farm Plans for agricultural fields, pastures, and animal confinement areas to reduce loss of top soil and to minimize the impacts of agriculture activities on water quality by reducing nutrient, sediment and chemical pollution in runoff and groundwater.

e. *Action*: Publicize and promote landowner participation in State and Federal funding programs for planting cover crops, retiring vulnerable land, fencing programs, manure management and others practices that capture runoff, and minimize erosion and loss of soils, maintain and enhance productivity of prime agricultural lands, prevent loss of property, and enhance and protect the quality of water resources and sensitive habitats.

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