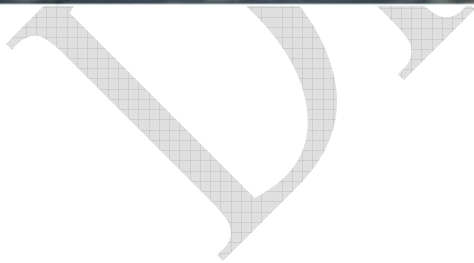




*WICOMICO COUNTY
DRAFT PHASE II
WATERSHED IMPLEMENTATION PLAN
NOVEMBER 18, 2011*



WICOMICO COUNTY CORE PLANNING TEAM

KEITH D. HALL, SALISBURY-WICOMICO COUNTY DEPARTMENT OF PLANNING, ZONING AND COMMUNITY DEVELOPMENT, TEAM LEAD, CORE PLANNING TEAM

JOSEPH W. ARTHUR, WICOMICO COUNTY DEPARTMENT OF PUBLIC WORKS

DENNIS DICINTIO, WICOMICO COUNTY HEALTH DEPARTMENT

DALE PUSEY, CITY OF SALISBURY PUBLIC WORKS

JASON LOAR, TOWN OF DELMAR, MD, REPRESENTATIVE

JOSEPH P. DERBYSHIRE, CITY OF FRUITLAND PUBLIC WORKS AND UTILITIES

P. DOUGLAS GOSNELL, TOWN OF SHARPTOWN COMMISSIONER

TOWN OF MARDELA SPRINGS

JERRY KENNEDY, TOWN OF HEBRON WATER / SEWER OPERATOR

WILLIAM GORDY, TOWN OF PITTSVILLE SUPERINTENDENT OF WASTE WATER PLANT

PETER J. MERKLE, TOWN OF WILLARDS WASTEWATER SUPERINTENDENT

KEVIN R. KEENAN, WICOMICO COUNTY SOIL CONSERVATION, TEAM LEAD, AGRICULTURE WORK GROUP

FRED MOORE, AGRICULTURAL WORK GROUP REPRESENTATIVE

LEE RICHARDSON, AGRICULTURAL WORK GROUP REPRESENTATIVE

KENNETH L. CIMINO, STATE HIGHWAY ADMINISTRATION

BRIAN FORET, WICOMICO COUNTY BOARD OF EDUCATION

ALISON ARMOCIDA, STATE LIAISON TO CORE PLANNING TEAM

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INTRODUCTION

A primary goal in the development of the Phase II Watershed Implementation Plan (WIP) is to identify viable recommendations to develop and implement programmatic actions. These actions are designed to improve water quality as a result of reducing the amount of nutrients and sediments from entering our waterways. This Draft Phase II WIP contains discussions about the current pace of implementation, limitations of achieving the interim and final targets, as well as on-going and future endeavors of the Core Planning Team (hereby referred to as the Team).

In response to a request by the Maryland Department of the Environment (MDE), a planning team was assembled to lead this local planning effort. Membership consists of representatives from each of the municipal jurisdictions, Wicomico County Department of Public Works, Salisbury – Wicomico County Department of Planning, Zoning, & Community Development, Wicomico County Health Department, Wicomico County Agricultural Work Group, Wicomico County Board of Education, State Highway Administration, and the assigned State liaison. Since the initial State-sponsored kick-off meeting at Salisbury University on February 7, 2011, seven (7) Team meetings have occurred, which included public meetings on July 21, 2011 and August 30, 2011. The efforts / progress of the Team are documented on their website. To learn more information about the activities of the Team, visit <http://www.mde.state.md.us/programs/Water/TMDL/TMDLImplementation/Pages/WicomicoTeam.aspx>.

To obtain an in-depth understanding about this planning effort, representatives of the Core Planning Team participated in numerous webinars, conferences, and training opportunities such as MDE webinars including: April 13, 2011; May 16, 2011; June 13, 2011; July 14, 2011; July 19, 2011; and October 13, 2011, as well as attended the Maryland Assessment Scenario Tool (MAST) training conducted by MDE on August 2, 2011. Given the magnitude of this planning effort related to the amount of background data (process and model based), it was imperative the team coordinated with the State, as well as surrounding counties, to obtain a clear and concise understanding of the anticipated deliverables associated with this task.

PURPOSE

As requested by MDE, each of the twenty-three counties and Baltimore City were instructed to prepare a Phase II Watershed Implementation Plan that details / demonstrates how each jurisdiction will do their part in improving the water quality of the Chesapeake Bay and its tributaries across Maryland. In doing so, MDE provided each County with existing nutrient loads (2009 progress), 2017 nutrient targets, and 2020 final targets for the following sectors:

- ▶ Individual septic systems;
- ▶ Urban run-off (Non-Regulated and Regulated);
- ▶ Waste water treatment plants;

- ▶ Agriculture; and
- ▶ Forest.

It is important to note for the purpose of this planning effort, the use of the term “County” within this document refers to a scale of geography utilized for this application and is **not intended to imply or suggest County regulatory or approval authority of this document or any content herein.**

The expectations of the State related to the preparation of local Phase II WIPs include the development of Two-Year milestones for 2012 and 2013, input decks generated in the Maryland Assessment Scenario Tool (MAST), and supporting narrative. The Team developed the Draft Two-Year milestones in accordance with the guidance provided by MDE. These Draft Two-Year milestones were submitted to the State liaison on September 12, 2011, for the purpose of receiving comments from MDE on the preliminary draft. The proposed Two-Year milestones are discussed throughout this document; however, the complete listing is located in *Appendix I*.

The milestones represent a variety of programmatic actions to be considered by the locally elected officials to assist in meeting the targeted allocations for septic, urban runoff, and waste water sectors. Moreover, the milestones emphasize the need for significant federal and State funding to accomplish the nutrient reductions to meet the 2020 target. For example, State consideration to increase our annual funding levels for septic system upgrades as part of the Bay Restoration Fee (BRF) would increase the potential to meet the 2020 target for the septic sector. If implemented, this recommendation would provide the necessary funding to upgrade approximately 70 – 100 onsite individual septic systems per year to Nutrient Removal Technology / Best Available Technology (BAT). It is unlikely this goal could be achieved without of an increase to the existing program, which would require legislative action by Maryland’s General Assembly.

In a letter dated October 5, 2011, the Environmental Protection Agency (EPA) identified a substantive change in expectations of the local jurisdictions Phase II WIP submissions with regard to loading decks being incorporated within the Phase II WIP. Specifically, the local jurisdictions were informed to proceed with the preparation of a Phase II WIP that “does not expect the jurisdictions to express “local area targets” in terms of Phase 5.3.2 Watershed Model inputs or outputs, such as pounds of pollutant reductions by county.” Furthermore, the letter stated “Instead, Phase II WIPs could identify “targets” or actions that local and federal partners would take to fulfill their contribution toward meeting the Chesapeake Bay TMDL allocations.” Therefore, based on the most recent direction provided by the EPA, this Draft Phase II WIP is consistent with the expectations of the federal and State government. This Draft contains dialogue regarding the opportunities and weaknesses associated with meeting the 2017 and 2020 targets for nutrient reductions. As this planning effort continues, Best Management Practices (BMPs) for each sector will be researched, as well as other methods to offset the existing and future nutrient contributions such as the potential for purchasing nutrient credits.

A major undertaking in the development of this Phase II WIP is to identify viable recommendations that have a reasonable level of assurance of being implemented. Also, this Draft Phase II WIP includes information related to the current pace of implementation, limitations of achieving the interim and final targets, as well as on-going and future endeavors of the Core Planning Team.

It is our understanding this submission represents a Draft Plan that will be revised / updated by the Team prior to the State-imposed July 2, 2012 deadline.

SEPTIC SYSTEMS

BACKGROUND

According to the MAST, there are approximately 23,200 individual on-site sewerage disposal systems within Wicomico County. Of the 23,200 systems, 7,054 systems are located within 1,000 ft of a perennial stream and the remaining 16,146 systems are outside of the Chesapeake Bay Critical Area (CBCA) and not within 1,000 ft of a perennial stream. The annual pound (lbs) of Nitrogen delivered within the two aforementioned septic zones is 165,103 lbs. Systems located within 1,000 ft of a perennial system account for 41.2 percent or 68,027.8 lbs of the total Nitrogen contribution and the remaining 58.8 percent or 97,075.3 lbs of the total Nitrogen is from systems located outside of the CBCA and not within 1,000 feet of a perennial stream.

To achieve the 2020 target for this sector, three (3) BMPs have been incorporated into the MAST, all of which are designed to reduce nutrients. These three BMPs include:

- ▶ Upgrade of existing individual on-site sewerage disposal system to Nutrient Removal Technology / Best Available Technology;
- ▶ Septic System Pumping; and
- ▶ Connection to a public waste water treatment plant.

As illustrated in the summary tables provided by MDE, which were based on the results of the EPAs Chesapeake Bay Model 5.3.2 basin-level analyses, the amount of Nitrogen reduction necessary to meet the annual 2020 target of the County is 62,239 lbs. This will require extensive funding and programmatic actions to achieve this reduction within the next eight (8) years. Based on the current pace of implementation and the limited amount of resources, it is envisioned the 2020 target allocation can not be achieved unless significant federal and State financial assistance is readily available.

BEST MANAGEMENT PRACTICES

Upgrade to Nutrient Removal Technology

Since 2006, the Wicomico County Health Department averages approximately 50 upgrades of existing individual on-site sewerage disposal systems to BAT systems using funding from Maryland's BRF program. These upgrades have occurred in all three (3) septic zones (CBCA, within 1,000 feet of a perennial stream, and outside of CBCA and not within 1,000 feet of a perennial stream). As a result of upgrading roughly 300

systems, contributions of Nitrogen delivered to our local receiving waters decreased. To quantify the impact of these upgrades, a conservative approach was utilized to calculate the contributions based on accepted methodology. For example, MDE estimates the Nitrogen contribution of individual systems with a Nutrient Removal Technology will reduce Nitrogen by approximately 50 percent compared to systems without this technology.

For the purpose of this rudimentary analysis, the Team allocated these upgrades of individual septic systems to those occurring within 1,000 feet of a perennial stream. Prior to the upgrade, these 300 systems accounted for 4,500 lbs of Nitrogen per year delivered to the edge of stream. In comparison, the annual contribution of these 300 systems after being upgraded to BAT resulted in an annual Nitrogen contribution of 2,250 lbs, thus a reduction of 2,250 lbs annually compared to the conventional septic system. This decrease accounts for approximately 3.6 percent of the total annual reduction necessary to meet the 2020 target.

As contained in the Draft Two-Year milestones, the County Health Department seeks additional funding through the BRP to provide appropriate funding levels to upgrade 70 – 100 individual septic systems per year throughout the County. Given the current financial state of the BRF, it is recommended that the State continues to identify alternatives to increase to County's allotment of BRF monies, which may require legislative changes by Maryland's General Assembly. Currently, the annual residential BRF is \$30.00. At the time of this publication, the Governor's Task Force on Sustainable Growth recommended increasing the fee to \$60.00 annually starting in fiscal year 2013 and \$90.00 annually by fiscal year 2015.

Septic System Pumping

Of the three (3) BMPs for the septic sector, it is difficult to determine the Nitrogen reductions resulting from pumping of individual septic systems. As a general practice, it is recommended that homeowners have their individual septic system pumped every three (3) to five (5) years to keep the system at optimal performance; however, this is not mandated / regulated.

There are numerous challenges to implementing this BMP including the associated costs, as well as the reporting and tracking functions. To make this BMP more appealing to homeowners with septic systems, the creation of a Septic System Pumping Program is recommended. It is envisioned this proposal would be a voluntary-based voucher program, not regulatory, using funds from the BRF. Every three (3) to five (5) years each homeowner would be eligible to receive a voucher to cover an undetermined portion of the pumping costs. In Wicomico County, the average cost to pump-out a system is estimated at \$250.00 per household. Therefore, if one-fourth of the existing systems were pumped every four (4) years, approximately 5,800 individual systems would be pumped annually at a projected cost of \$1.45 million. Additionally, the Team will continue to effectively coordinate with the State and local partners to identify methods designed to increase public awareness of properly maintaining septic systems.

Connection to Public Waste Water Treatment Plant

Of the three (3) BMPs to reduce nutrients, connecting to a public waste water treatment plant achieves the greatest benefit related to reducing nutrients contributed by this sector, but is the most expensive alternative to implement. Wicomico County does not possess regulatory authority of the public systems located within the incorporated jurisdictions. With exception of the Town of Mardela Springs, which is served by individual septic systems, the remaining seven (7) incorporated areas have regulatory authority and operating responsibilities for their public waste water treatment facilities. In the past, the majority of connections to public service occurred as a result of establishing Urban Service Districts or annexation. Annexations typically occur on parcels of undeveloped land rather than areas previously developed; therefore, it is unlikely that connections of existing individual septic systems will occur as a result of annexation. The interest level of incorporated jurisdictions to create new or expand existing Urban Service Districts is limited; however, it is recommended that the County and the municipalities with public waste water treatment systems continue discussions to identify possible alternatives to connect individual septic systems to a public system.

If it is the desire of the State to reduce the amount of existing individual septic systems by connecting them to public systems, several programmatic and funding actions will need to be implemented to realize this initiative. Currently, the County Health Department and MDE have two (2) detailed policies to determine if a property will require connection to a public system or issue permits to replace an existing septic system should the system fail. The first issue is the adequacy of the public system's ability to meet the anticipated demand based on the available supply of a waste water treatment plant. The second, and more important criteria, is the issue of defining availability. For the purpose of this discussion, MDE and the County Health Department have defined availability as "ready for immediate use." Therefore, it has been the determination of MDE if a property must be annexed as a condition to connect to a public sewer system, that system would not be considered available.

In addition to affording MDE and the County Health Departments the leverage necessary to encourage an incorporated jurisdiction to connect systems within areas containing failing septic system without requiring annexation, funding mechanisms will need to be identified. See *Appendix II* for a map delineating the areas with failing systems. In some circumstances, funding will be necessary to offset costs associated with infrastructure improvements to expand service and capacity at publicly-owned waste water treatment plants. For example, if an incorporated jurisdiction desires to annex land adjacent to an area experiencing failing septic systems, the financial expenditure required to provide service to those areas with failing septic systems should be considerably or completely subsidized by using BRF monies or other federal and State funding opportunities. Therefore, the incorporated jurisdiction is not assuming the financial responsibility of serving an unincorporated area. Prior to the expansion of any Urban Service District, it is recommended the incorporated jurisdictions review their fee structure to make certain the costs associated with the provision of service are at an acceptable level to ensure the ongoing operations meet present and future demand. As part of the Two-Year

milestones, it is recommended that continued discussions occur between the County and the seven (7) municipalities for the purpose of identifying opportunities designed to increase the level of interest to expand or create new Urban Service Districts. In addition, it has also been recommended that a study to identify the impacts of establishing a water and sewer authority be prepared, contingent on available funding.

URBAN RUNOFF

BACKGROUND

According to the State-prepared WIP Phase II Target Load Summary for Wicomico County, the baseline (2009 progress) amount of Nitrogen delivered annually for this sector is 258,445 lbs. To meet the expectations of the 2017 target, which has an annual load of 221,807 lbs, a reduction of 36,638 lbs of Nitrogen will need to be achieved by 2017. Between 2017 and 2020, an additional 15,702 lbs of Nitrogen will need to be decreased to meet the 2020 target, which is 206,105 lbs.

The EPAs Chesapeake Bay Model 5.3.2 allocates Nitrogen contributions for nine (9) specific land use classifications including the following:

- ▶ County Phase I / II MS4 jurisdictions;
- ▶ Municipal Phase II MS4 jurisdictions;
- ▶ State Phase II MS4;
- ▶ State Highway Administration Phase I / II MS4;
- ▶ Regulated Industrial Facilities;
- ▶ Construction;
- ▶ Extractive;
- ▶ Non-Regulated areas; and
- ▶ Federally Developed areas.

Of the aforementioned land use classifications, the majority of Nitrogen contribution allocated to Wicomico County occurs within the Non-Regulated areas and the Municipal Phase II MS4 jurisdiction. These two (2) land uses account for 97.4 percent of the 2009 progress load for this sector. Regulated Industrial Facilities, Construction, and Extractive land uses account for the remaining 2.6 percent of the total lbs of Nitrogen for this sector.

As a major component of the Two-Year milestones, the preparation of Watershed Management Plans for the Nanticoke, Wicomico, and Pocomoke Rivers has been recommended. At the time of this publication, the City of Salisbury was recently awarded a National Fish and Wildlife Foundation Grant to prepare a Watershed Management Plan for the Wicomico River watershed. Moreover, the Nanticoke Watershed Alliance is in the final stages of completing the Nanticoke River Watershed Management Plan. Funding opportunities need to be pursued to finance the Pocomoke River Watershed Management Plan. Upon completion, these plans will provide recommendations related to the preferred type and placement of BMPs designed to reduce Nitrogen contributions from stormwater runoff.

Given the limitation of available funding necessary to meet the expectations, it is unlikely that any of the local jurisdictions within Maryland are capable of achieving the 2020 targets. At a minimum, the recommendations contained within this Plan need to be considered to minimize future contributions from this Sector.

NON-REGULATED URBAN RUNOFF

This land use designation is defined as Non-MS4 areas of developed land with pervious and impervious surfaces. With the exception of the City of Salisbury, this land use consists of approximately 31,689 acres of developed land within the unincorporated portion of the County and the seven (7) municipalities. Stormwater management resulting from development activities within these areas is required to be designed in accordance with the County's Stormwater Ordinance. Other than the existing Stormwater Ordinance, the County does not have any stormwater programs.

To obtain an increased understanding about the relationship of BMPs and their efficiencies for each land use designation, several planning-level analyses were conducted using MAST. Subsequently, a matrix was developed to provide the per acre reduction of Nitrogen for eligible BMPs for each land use designation. See *Appendix III*. Without cost considerations, the preferred BMPs within Non-Regulated Developed Areas (Impervious and Pervious) included:

- ▶ Urban Forest Buffers;
- ▶ Urban Stream Restoration;
- ▶ Urban Tree Planting;
- ▶ Urban Growth Reduction;
- ▶ Urban Infiltration Practices (with sand/veg no underdrain);
- ▶ Bioretention / Raingardens; and
- ▶ Bioswales.

The cost of implementing any BMPs should be inclusive of land acquisition, pre-construction, construction, and post-construction costs. In an effort to minimize costs, the key Phase II WIP strategies recommended for this sector are Urban Nutrient Management and Rural Residential Tree Planting. Because of the inexpensive nature and the relative ease of implementation, both of these BMPs have been included as part of the Two-Year milestones.

It is envisioned that participation in a program designed to establish and put into practice Urban Nutrient Management Plans for existing and future residential subdivisions would be voluntary, instead of regulatory. The primary goal of this BMP is to reduce the amount of fertilizer applied to grass lawns. A major component required for the success of this program will involve public education and awareness.

Establishing a voluntary tree planting program is another example of an inexpensive and effective method to reduce nutrients. At this time, there are minimal limitations

implementing this type of program. Therefore, opportunities to establish partnership(s) with local non-profit organizations to develop this program and determine the technical resources and volunteer base available to assist in the successful implementation of this program should be considered.

Other than establishing voluntary based Urban Nutrient Management Plans and a Rural Residential Tree Program, the County and local jurisdictions do not have the funding or staff resources necessary to implement any BMPs beyond that required by State Ordinances such as Forest Conservation Act and Chesapeake Bay Critical Area Program.

MUNICIPAL PHASE II MS4 JURISDICTION

The City of Salisbury is the only Municipal Phase II MS4 Jurisdiction on the Eastern Shore of Maryland. Salisbury's Urban Runoff contribution has been parsed from the overall load because of its status as a Phase II MS4 jurisdiction. The annual load of Nitrogen for the 2009 progress is 52,688 lbs. To meet the expectations of the 2017 target, a reduction of approximately 17 percent or 9,162 lbs of Nitrogen will need to be achieved by 2017. Between 2017 and 2020, an additional 7 percent or 3,926 lbs of Nitrogen will need to be decreased to meet the difference between the 2017 and 2020 targets, 43,526 lbs and 39,600 lbs, respectively.

Over the past year, Salisbury has actively pursued opportunities to better understanding the relationship between their desire to improve local water quality and this planning effort. Within the past three (3) months, the City was the recipient of a National Fish and Wildlife Foundation grant in the amount of \$75,000 to prepare a Watershed Management Plan for the Wicomico River watershed. To prepare this Plan, the City has partnered with the Center for Watershed Protection. Upon completion, the Plan will serve as a road map designed to provide information about the location and types of BMPs to use. Moreover, the University of Maryland, Center for Environmental Finance selected Salisbury as pilot area to prepare a Stormwater Financing Feasibility Study. This Study will provide the City with recommendations related to the feasibility of financing stormwater related endeavors. Upon completion, both studies will be instrumental as the City proceeds with this planning effort.

At this time, the State is not requesting Phase II MS4 jurisdictions to conduct BMP analysis for inclusion into the Phase II WIP. MDE will incorporate a set of generic stormwater BMPs that regulated jurisdictions can choice from to meet the municipal Phase II MS4 allocations. Following the completion of the Phase II WIP, Salisbury will have the opportunity to review and revise, where necessary, the generic BMPs. It is recommended that the City continues to conduct BMP analysis for this sector, as well as review the estimated acreage of the Municipal Phase II MS4 land uses (impervious and pervious).

WASTE WATER

BACKGROUND

There are seven (7) public sewer systems located in the incorporated jurisdictions of Wicomico County (Salisbury, Fruitland, Delmar, Hebron, Sharptown, Willards, and Pittsville) currently serving over 17,500 housing units. For the purpose of this discussion, treatment plants will be classified as a major or minor facility. Waste water treatment plants with a capacity greater than 0.5 million gallons daily (MGD) are major plants; whereas, facilities with a capacity less than 0.5 (MGD) are referred to as minor plants. Of the seven (7) waste water treatments plants (WWTP), three (3) are considered major plants with a capacity greater than 0.5 million gallons daily (MGD) and the remaining four plants are minor systems with a capacity less than 0.5 MGD. See *Table 1*.

TABLE 1 – MUNICIPAL TREATMENT SYSTEMS IN THE COUNTY

<i>Jurisdiction</i>	<i>Existing / Permitted Treatment Capacity (million of gallons per day)</i>	<i>Treatment Technology</i>
Salisbury	8.5	Biological Nutrient Removal (BNR) & Enhanced Nutrient Removal (ENR)
Delmar	0.85	Activated sludge
Fruitland	0.80	Advanced secondary BNR
Hebron	0.101	Facultative lagoon
Pittsville	0.115	Oxidation ditch; activated sludge
Sharptown	0.15	Activated sludge
Willards	0.20	Activated sludge

Source: 2010 Wicomico County Comprehensive Water and Sewerage Plan

The baseline / 2009 progress amount of Nitrogen delivered annually from municipal waste water treatment plants (major and minor plants) and minor industrial plants located within Wicomico County is 276,777 lbs. To accomplish the 2017 target load of 117,072 lbs of Nitrogen, a reduction of 159,705 lbs by 2017 will need to be achieved. Between 2017 and 2020, this sector will experience a surplus of 22,963 to accommodate future growth and development. The State Phase I WIP recommends considerations to achieve the necessary nutrient reductions that include the following:

- ▶ Major WWTPs – Upgrade existing plants to ENR;
- ▶ Minor WWTPs – Upgrade the five largest plants; and
- ▶ Minor Industrial – MDE has a conceptual strategy for Minor Discharges that will become better defined in the coming years.

MAJOR WASTE WATER TREATMENT PLANTS

The City of Fruitland and the Town of Delmar are in the process of upgrading their facilities to achieve ENR treatment levels of nutrient removal. These extensive Capital Improvement Projects have been funded in whole or in part by the State as part of the BRF expenditures to the Wastewater Treatment Fund. The City of Salisbury recently completed upgrades to their waste water treatment facility, which included increasing hydraulic capacity from 6.8 MGD to 8.5 MGD, as well as improving the treatment technology to ENR. Unfortunately, the plant is unable to achieve the anticipated treatment levels. The City intends to upgrade the level of treatment at their facility to meet ENR discharge levels. The exact timing is difficult to project based on issues including the identification of available funding and on-going negotiations between the City and MDE.

Upon completion of the upgrades to the major WWTPs, it is projected the 2017 target allocations for this sector will be achieved; however, these upgrades may not be completed prior to that target date.

MINOR WASTE WATER TREATMENT PLANTS

The baseline (2009 progress) amount of Nitrogen delivered annually as a result of contributions from the four (4) existing minor waste water treatment plants is 14,439 lbs. This component of the waste water sector is currently operating within the 2020 target loads (15,452 lbs of Nitrogen). Therefore, a reserve of 1,013 lbs of Nitrogen exists, which may be capable of supporting limited growth.

Maryland adopted a point source strategy to address nutrient loadings from publicly-owned and operated waste water treatment plants. The strategy for minor treatment plants is to base annual nutrient loads on design capacity or projected 2020 flow, whichever is less. Therefore, when a minor facility expands, its projected nutrient loads become point source caps. If the projected nutrient loads are less than 6,100 lbs / year of Nitrogen and 457 lbs / year of Phosphorus, the point source cap must remain at the projected nutrient load. In contrast, if the projected nutrient loads exceed the aforementioned limits, the minor plant will need to reduce contributions of Nitrogen to no more than 6,100 lbs / year and Phosphorus to 457 lbs / year.

At the time of this publication, there are no immediate plans to expand the design capacity or to upgrade any of the minor facilities to BNR or ENR standards. It is recommended that jurisdictions with minor plants, at or near capacity, begin to consider identifying potential solutions including nutrient trading, changes in future land use, or the use of spray irrigation as a means of disposing the treated effluent.

AGRICULTURE

BACKGROUND

The baseline / 2009 progress amount of Nitrogen delivered annually from this sector is 963,866 lbs. To meet the 2017 target load of 934,088 lbs of Nitrogen, a reduction of 29,778 lbs of Nitrogen will need to be achieved. In an effort to meet the 2020 target load an additional reduction of 12,762 lbs of Nitrogen is required. Based on the current and projected rate of implementation it is plausible this sector may meet their target loads.

For more information about the efforts of the Agricultural work group for the Phase II Watershed Implementation Plan, contact the Wicomico County Soil Conservation District at (410) 546-4777.

PUBLIC INVOLVEMENT

NON-PROFIT ORGANIZATIONS

Wicomico County's Watershed Implementation Plan (WIP) can improve the health of area waterways, but the Plan will require support from local residents, businesses and institutions to be successful. Representing many people who live and work in Wicomico, non-profit organizations active on the Shore can provide assistance to the County and municipalities in meeting nutrient reduction targets under the Bay TMDL.

Local non-profits have historically engaged citizens, businesses, and institutions who prioritize clean water in a variety of public and private initiatives including shoreline restoration, water quality monitoring, technical assistance and participation on policy committees, and support for grant funding, among other opportunities.

As Wicomico County develops and implements its WIP, the non-profit community can assist in the following ways:

- ▶ Deliver a volunteer base to assist with streamside restoration projects, tree plantings, and river cleanups;
- ▶ Assist with surveys/inventories of potential project sites and review available funding incentives for restoration and BMP implementation;
- ▶ Administer water quality monitoring programs, such as the Wicomico Creekwatchers program operated jointly by Salisbury University, the Wicomico Environmental Trust, and the Creekwatchers volunteer leadership team;
- ▶ Provide professional technical support for policy analysis and implementation;
- ▶ Co-sponsor grant applications and help secure additional financial resources, including further grant funds for Wicomico River watershed assessment, management, remediation, and stakeholder outreach; and
- ▶ Educate and engage citizens in support recommendations and considerations contained within this Draft WIP.

APPENDIX I – DRAFT TWO-YEAR MILESTONES

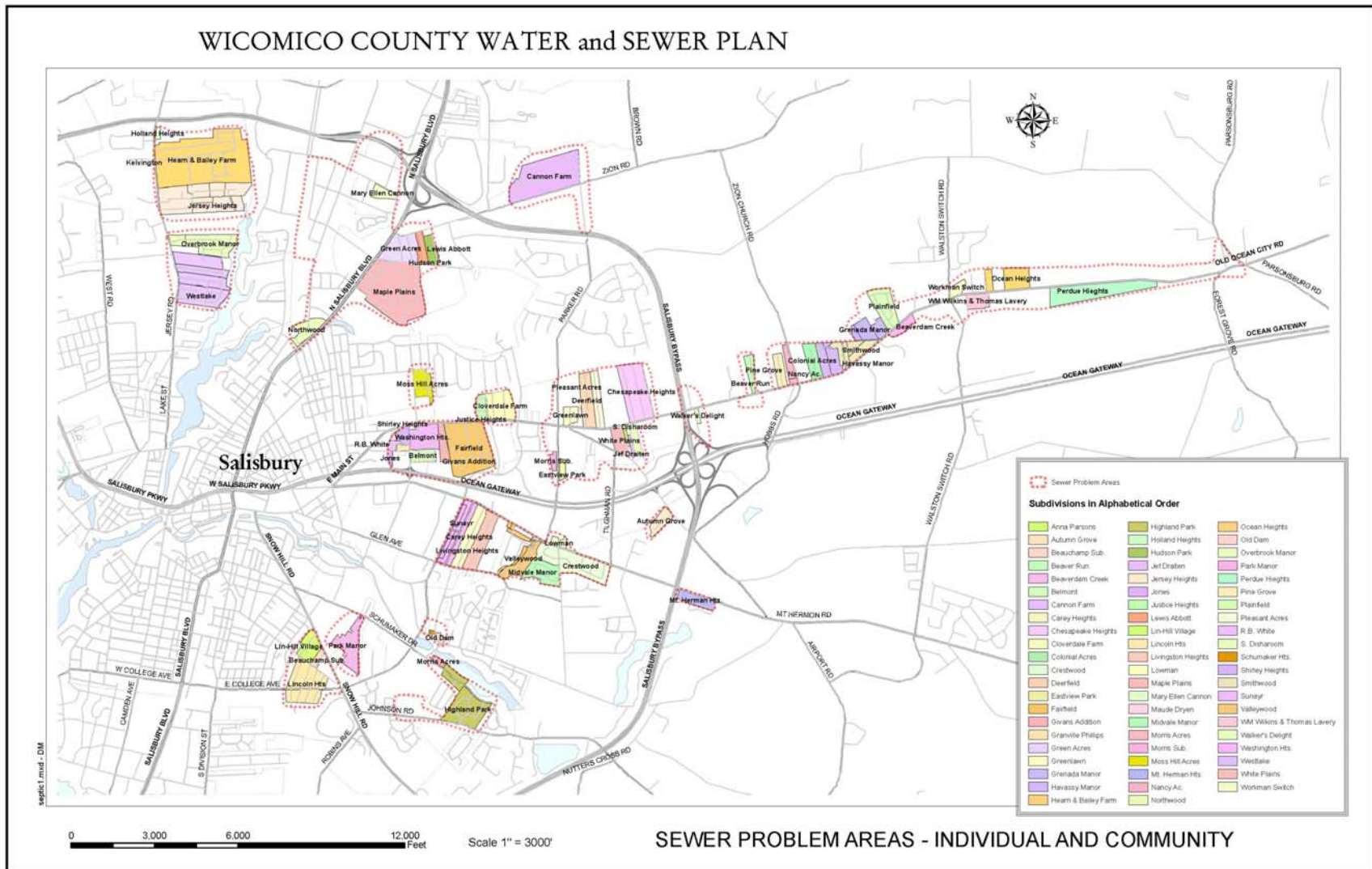
Phase II – Proposed Two - Year Milestones

1. Scale – Planning level
2. Recommendations – Countywide
 - a. Work closely with the agricultural community to reduce nutrients from entering our local waterbodies;
 - b. Voluntary Tree Planting program;
 - c. Create tracking and reporting systems consistent with the needs of rural and urban areas for septic, stormwater, and WWTP;
 - d. Identify State and Federal funding opportunities for the purpose of obtaining professional consulting services to prepare watershed management plans for the Wicomico and Pocomoke Rivers;
 - e. Seek increased funding levels of the Bay Restoration Fund to facilitate a septic pumping program that is voucher based. Additionally, utilize additional funding to increase the number of septic systems upgraded annually;
 - f. Upgrade approximately 70 – 100 septic systems to best available technology;
 - g. Continue discussions with municipalities to accept sewage from individual on-site septic systems;
 - h. Quality control of data used within Bay model and MAST
 - i. Overestimated the number of septic systems in the County. MAST is calibrated to 23,200 systems; whereas, approximately 19,750 systems exist. This discrepancy results in a potential reduction of 20,000 lbs of nitrogen;
 - ii. Continue to identify eligible BMPs implemented since 12/31/2005
 - i. Partner with non-profit organizations to identify funding sources to implement stormwater BMPs;
 - i. Rain gardens;
 - ii. Working with Home Owners Associations to prepare voluntarily compliance nutrient management plans; and
 - iii. Streamside plantings;
 - j. Consideration of municipalities to expand urban service districts in areas identified as experiencing failing septic systems;
 - k. Continue the upgrades of Fruitland and Delmar WWTP to ENR;
 - l. Consideration of preparing a Stormwater Financing Feasibility Study
 - m. Consideration of establishing an urban tree canopy program;

- n. Continue street sweeping program; and
- o. Consider preparing a study identifying the impacts of establishing a water and sewer authority.

DRAFT

APPENDIX II – AREAS WITH FAILING SEPTIC SYSTEMS



APPENDIX III – MAST – BMP ANALYSIS

Chesapeake Bay Model - Land Uses Reduction Pounds of Nitrogen Per Acre Per SW BMP

	CSS Construction	CSS Impervious Developed	CSS Pervious Developed	Muni Phase II MS 4 Impervious	Muni Phase II MS 4 Pervious	Nonregulated Extractive	Nonregulated Impervious Developed	Nonregulated Pervious Developed	Regulated Constructive	Regulated Extractive	Regulated Industrial Facility Impervious	Regulated Industrial Facility Pervious
Bioretenion / Raingarden	N/A	0.00	0.00	7.28	3.95	N/A	7.13	3.89	N/A	N/A	7.28	3.94
Bioswale	N/A	0.00	0.00	7.28	3.95	N/A	7.13	3.89	N/A	N/A	7.28	3.94
Dry Detention Ponds and Hydrodynamic Structures	N/A	0.00	0.00	0.48	0.26	N/A	0.47	0.26	N/A	N/A	0.47	0
Dry Extended Detention Ponds	N/A	0.00	0.00	1.94	1.05	N/A	1.90	0.26	N/A	N/A	0.47	0.25
Erosion and Sediment Control	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.64	N/A	N/A	N/A
Forest Conservation	N/A	N/A	0.00	N/A	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
Impervious Urban Surface Reduction	N/A	0.00	N/A	9.71	N/A	N/A	9.51	N/A	N/A	N/A	9.7	N/A
MS4 Permit - Required SW Retrofit	N/A	0.00	0.00	2.43	1.32	N/A	2.38	1.30	N/A	N/A	2.43	1.30
Permeable Pavement no Sand Veg w/Underdrain A&B Soils	N/A	0.00	0.00	4.85	2.64	N/A	4.75	2.59	N/A	N/A	4.85	2.64
Permeable Pavement with Sand Veg w/Underdrain A&B Soils	N/A	0.00	0.00	4.85	2.64	N/A	4.75	2.59	N/A	N/A	4.85	2.64
Recent Stormwater Management	N/A	0.00	0.00	1.94	1.96	N/A	1.90	1.04	N/A	N/A	1.95	1.05
Stormwater Management by ERA 1985 to 2002 MD	N/A	0.00	0.00	1.65	0.90	N/A	1.62	0.88	N/A	N/A	1.66	0.88
Stormwater Management by ERA 2002 to 2010 MD	N/A	0.00	0.00	2.91	1.58	N/A	2.85	1.56	N/A	N/A	2.9	1.55
Stormwater to Maximum Extent Practicable (SW to MEP)	N/A	0.00	0.00	4.85	2.64	N/A	4.75	2.59	N/A	N/A	4.85	2.64
Street Sweeping Mechanical Monthly	N/A	0.00	N/A	0.29	N/A	N/A	0.28	N/A	N/A	N/A	0.3	N/A
Urban Filtering Practices	N/A	0.00	0.00	3.88	2.11	N/A	3.80	2.08	N/A	N/A	3.91	2.10
Urban Forest Buffers	N/A	N/A	0.00	N/A	6.56	N/A	N/A	6.48	N/A	N/A	N/A	6.58
Urban Grass Buffers	N/A	N/A	0.00	N/A	0.00	N/A	N/A	0.00	N/A	N/A	N/A	0.00
Urban Growth Reduction	N/A	0.00	0.00	9.71	5.27	N/A	9.51	5.19	N/A	N/A	9.7	5.24
Urban Infiltration Practices - No Sand / Veg, No Underdrain	N/A	0.00	0.00	7.77	4.22	N/A	7.61	4.15	N/A	N/A	7.75	4.19
Urban Infiltration Practices - with Sand / Veg, No Underdrain	N/A	0.00	0.00	8.25	4.48	N/A	8.08	4.41	N/A	N/A	7.75	4.48
Urban Nutrient Management	N/A	N/A	0.00	N/A	0.90	N/A	N/A	0.88	N/A	N/A	N/A	0.88
Urban Tree Planting; Urban Tree Canopy	N/A	N/A	0.00	N/A	5.27	N/A	N/A	5.19	N/A	N/A	N/A	5.24
Vegated Open Channel - Urban	N/A	0.00	0.00	4.37	2.37	N/A	4.28	2.33	N/A	N/A	4.38	2.35
Wet Ponds and Wetlands	N/A	0.00	0.00	1.94	1.05	N/A	1.90	1.04	N/A	N/A	1.95	1.05

Chesapeake Bay Model - Land Uses Reduction Pounds of Nitrogen Per 1,000 Feet Per SW BMP

	CSS Construction	CSS Impervious Developed	CSS Pervious Developed	Muni Phase II MS 4 Impervious	Muni Phase II MS 4 Pervious	Nonregulated Extractive	Nonregulated Impervious Developed	Nonregulated Pervious Developed	Regulated Constructive	Regulated Extractive	Regulated Industrial Facility Impervious	Regulated Industrial Facility Pervious
Shoreline Erosion Control*	N/A	0.00	0.00	258.70	178.50	N/A	517.70	1,115.00	N/A	N/A	73.40	74.00
Street Sweeping Feet	N/A	0.00	N/A	73.40	N/A	N/A	71.60	N/A	N/A	N/A	73.40	N/A
Urban Stream Restoration or Regenerative Stormwater Conveyance	N/A	0.00	0.00	18.40	18.50	N/A	17.90	18.20	N/A	N/A	18.40	18.50

Notes:
Was listed in MAST as a SW BMP as of 9/19, not listed as BMP within MAST as of 9/20
N/A indicates the BMP is not applicable to the Land Use per MAST