

***CITY OF MILLVILLE  
MUNICIPAL  
STORMWATER MANAGEMENT PLAN***



**PREPARED BY  
THE CITY OF MILLVILLE  
ENGINEERING DEPARTMENT**

**2006**

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## **Introduction**

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for the City of Millville to address Stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and Stormwater quality impacts by incorporating Stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

A "build-out" analysis has been included in this plan based upon existing zoning and land available for development. The plan also addresses the review and update of existing ordinances, the City's Master Plan, and other planning documents to allow for project designs that include low impact development techniques. The final component of this plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

## **Goals**

The goals of this MSWMP are to:

- Reduce flood damage, including damage to life and property
- Minimize, to the extent practical, any increase in stormwater runoff from any new development
- Reduce soil erosion from any new development or construction project
- Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures
- Maintain groundwater recharge
- Prevent, to the greatest extent feasible. An increase in Nonpoint pollution
- Maintain the integrity of stream channels for their biological functions, as well as for drainage

- Minimize pollutants in stormwater runoff from new and existing development to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water
- Protect public safety through the proper design and operation of stormwater basins and other stormwater structures as proposed.

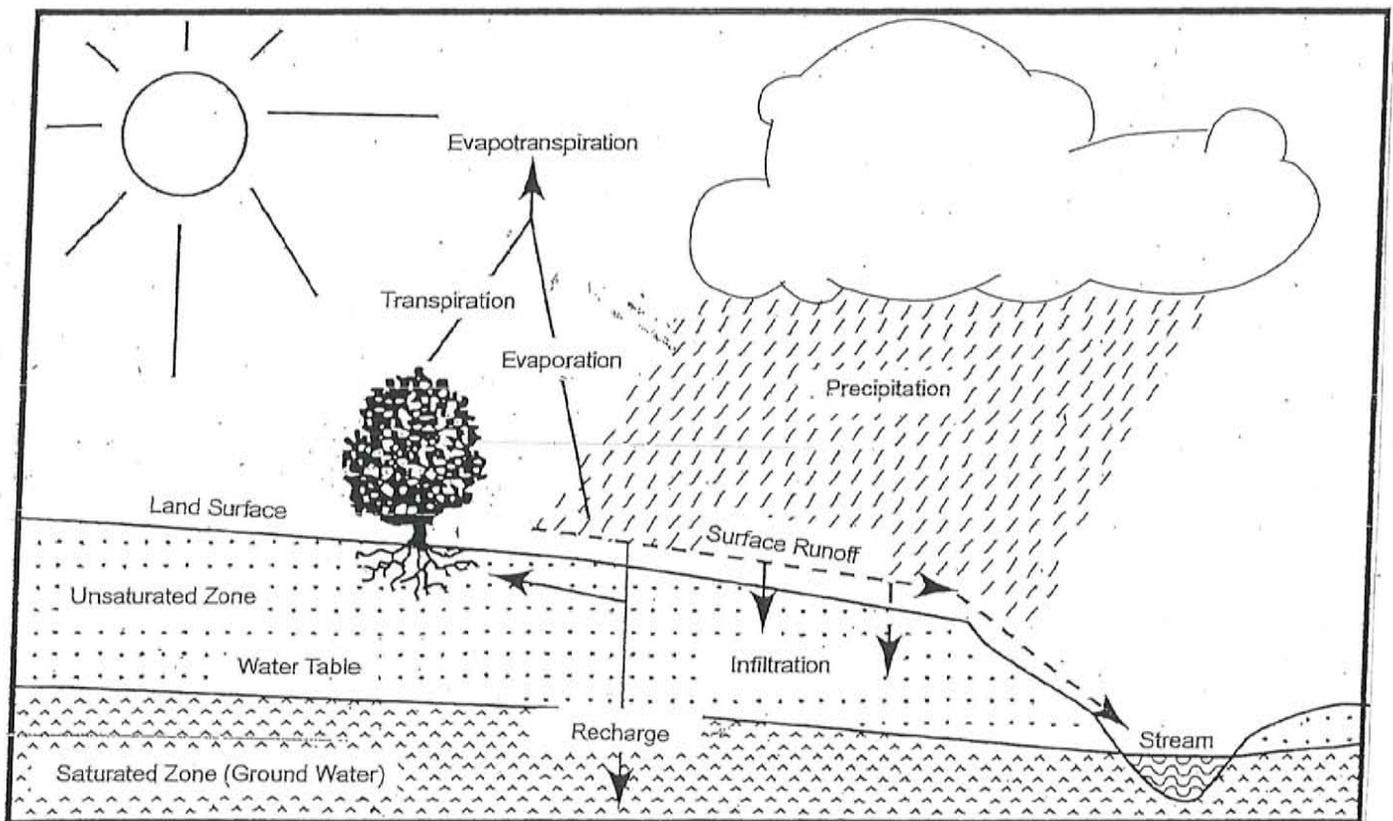
To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

## **Stormwater Discussion**

Land development can dramatically alter the hydrologic cycle (See Figure A) of a site, and ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutant by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion.

Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat from which some species cannot adapt.

Figure A: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients.

In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

## **Background**

Millville is a 44 square-mile city in Cumberland County. Because it is the second largest city in area in New Jersey, it is diverse in nature; comprised of a collection of urban, rural, industrial and business settings. In recent years, the City has been under significant development pressure. This development is occurring as both in-fill and brand new development.

The population of the City has increased from 24,815 in 1980, to 25,992 in 1990, to 26,847 in 2000, to 27,611 in 2004. The population increase has resulted in a considerable demand for new development. Per recent Planning Board applications, 4,900 homes have been proposed. These changes in the landscape have increased stormwater runoff volumes and pollutant loads to the waterways of the City. Figure 8 illustrates the waterways and Figure 2 shows the City boundary on the USGS quadrangle map.

The NJDEP has established an ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state. These sites are samples for benthic macro invertebrates by the NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a NJ Impairment Score (NJIS) which is based on a number of biometrics related to benthic macro invertebrate community dynamics.

The major river that bisects the City is the Maurice River. There are four (4) tributaries; the Petticoat Stream, Buckshutem Stream, Whitemarsh Stream, and Berryman's Branch flowing from north to south that contribute to the major river. At the head waters of the River, is a body of water known as Union Lake. This lake contributes to the river flow via a dam located on Sharp Street. Union Lake is fed with two tributaries known as Parvin's Branch which starts in Vineland and Chatfield's Branch which begins in Deerfield.

In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the state. A TMDL is the amount of a pollutant that can be accepted by a body of water without causing an exceedance of water quality standards or interfering with the ability to use the water for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and non-point source which includes a stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, re-forestration of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303 (d)) (Integrated List) is required by the federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which NJ waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

The integrated list is available from the NJDEP website at [www.nj.gov/dep/wmm/sgwqt/wat/index.html](http://www.nj.gov/dep/wmm/sgwqt/wat/index.html). Specific data on biological monitoring (ANMET data) is available from the NJDEP web site at [www.state.nj.us/dep/wmm/bfbm](http://www.state.nj.us/dep/wmm/bfbm). Additional data can be found on the USGS site at [www.water.usgs.gov](http://www.water.usgs.gov).

In addition to water quality problems, Millville has exhibited minor water quantity problems including flooding, stream bank erosion, and diminished base flow in its streams. Some of the culverts associated with road crossings are undersized. During severe storm events, these undersized culverts do not have adequate capacity which will cause backwater effects and flooding upstream.

## **Design and Performance Standards**

The City will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measurers consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be submitted to the county for review and approval within two years of the effective date of the Stormwater Management rules.

During any construction, the City Engineering inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed.

## **Plan Consistency**

The City of Millville is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the City; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) or any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The City will utilize the most current update of the RSIS in the stormwater management review of residential area. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

The City's Stormwater Management Ordinance requires all new development and redevelopment plant to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, the City inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

## **Nonstructural Stormwater Management Strategies**

The City of Millville has reviewed the master plan and ordinances, and has provided a list of the sections in the City

land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. These are the ordinances identified for revision. Once the ordinance texts are completed, they will be submitted to the county review agency for review and approval two years from the effective date of the Stormwater Management Rules. A copy will be sent to the Department of Environmental Protection at the time of submission. The following items have been incorporated into the Municipal regulations.

1. Buffers: Millville has just changed a portion of the Zoning Regulations to establish buffers and screening between all types of uses, including residential and nonresidential. Buffers are required from all lot lines and street lines. They are required to be planted with vegetation, plantings and natural features. Buffers are considered pervious coverage and count towards open space requirements.

2. Cluster Development: The City's Zoning Ordinance encourages cluster development in the R-20, R-40, LSC, AC and RC zones to prevent development on environmentally sensitive areas, preserve agricultural land, and aid in reducing the costs of providing streets and infrastructure. In this way the cluster option also reduces impervious roads and driveways. This option allows for smaller lots and setbacks than traditional subdivision development. It also minimizes the disturbance of large tracts of land, which is a key nonstructural stormwater management strategy. In some zones, density bonuses are provided for utilizing clustering.

3. Restriction on clear cutting: In several of our planned unit development areas, including the Lakeshore Conservation Zone, there are restriction on clear cutting. In the LSC 70% of the existing vegetation on the tract must remain. The ordinance also states whenever possible all developments should retain as much native vegetation as possible.

4. Curbs and Gutters: The Planning Board has been requiring sidewalks, curbs, and gutters are installed along every street within and fronting on a new development project.

5. Soil Erosion: The Planning Board requires that all developments in excess of 5,000 SF must comply with the soil conservation standards of the state including retention and protection of natural vegetation, minimization of water runoff, installation of diversions and sediment basins and similar structures prior to on-site grading or disturbance.

Future changes will be incorporated as needed and sent to all agencies upon adoption.

## **A. Land Use / Build-Out Analysis:**

### **General:**

Since there is more than one square mile of combined vacant and agricultural lands throughout the municipality, build-out analyses and pollutant loading projections have been included within the MSWMP as required by N.J.A.C. 7:8 and 7:14A-25.

As a municipality matures towards its full land use potential, land development can tend to adversely impact both water quality and quantity. When lands are cleared and land uses become intensified (e.g. constructing housing developments on previously farmed agricultural lands), adverse impacts to water quality and quantity typically are manifested through stormwater runoff due to increases in impervious surface coverage and the accumulation and mobilization of pollutants.

As a result, downstream receiving waterbodies and ecosystems become impaired as flooding events are increased and intensified from the new impervious surface areas. Water quality is further degraded as increased stormwater pollutant loads enter the waterbodies and alter the chemical, physical and biological integrity of the receiving waters.

Therefore the build-out analyses and pollutant loading projections have been developed as a tool that the municipality can use to assess potential impacts from land development and stormwater runoff. The analysis projects and compares pollutant loadings generated by both present and future (built-out) land use covers. The methodology underlying the analysis and projections are generally based on the NJDEP's methodology specified within their regulations and guidance documents.

From the results of the analysis, the municipality is able to quantifiably project the impacts from development onto surface waters. Using this tool, the municipality can then develop better strategies to minimize, manage and/or mitigate these impacts through improved stormwater management and construction practices and via modifications to land use and zoning.

The analysis should be considered a tool to be used as an initial step towards assessing and quantifying adverse impacts from development and stormwater runoff. However as indicated by the following listing of reservations that we have identified in implementing the NJDEP's build-out and pollutant loading methodology, the analysis does have several apparent flaws that need to be realized when evaluating its results:

- The methodology greatly over-simplifies the complex hydrologic and pollutant transport mechanisms associated with these processes.
- The methodology does not account for the transient nature of development within a given watershed as it ignores the differences in time over which build-out will occur (assuming that all development will actually realize its full build-out and that they will all occur at relatively the same the time).

The more probable scenario being one portion of a watershed within a specific zone may take 10 years to reach its build-out potential, while another portion may need 100 years or more to achieve full build-out.

- The impervious surface coverage analysis presumes that all development within a zone will realize its maximum impervious coverage permitted by the zone and that the municipality will not substantially change the maximum coverage permitted.

In addition, there are several zones that do not specify a maximum impervious coverage. In such maximum coverages from similar zones were assigned to these zones.

- The NJDEP presented little information about the origin and conditions that apply to their land cover pollutant loading coefficients for total phosphorus, total nitrogen and total suspended solids.

For example, it is unclear as to what climatic, soils, hydrologic, geologic, topographic, and vegetative conditions these coefficients represent. Also the NJDEP does not specify what stormwater runoff controls were employed in generating the coefficients.

Without this information, it is not possible to fully understand the implications of the pollutant loadings using these coefficients.

As discussed later within the report, the model is largely dependent on only a few input parameters (predominantly land area, zoning parameters and the NJDEP land cover coefficients). Since zoning parameters and land areas can be accurately identified and quantified (via GIS technology), the proper implementation and use of accurate coefficients is essential to the accuracy of the results generated by the model.

- Because the NJDEP methodology projects pollutant loadings for only total phosphorus, total nitrogen and total suspended solids, the pollutant loading projections are biased against agricultural land uses.

Specifically the NJDEP pollutant loading coefficients for agriculture are two to three times greater than those specified for low density residential development. As a result, the annual pollutant loadings are then two to three times lower for land transitioning from agriculture to residential development than if it were to remain as an agricultural use.

This may be misconstrued to imply that the loss of agricultural lands to residential development is somehow desirable. Furthermore, because of the significant amount of agricultural land within the municipality, this methodology implies that residentially and commercially developed lands are less prone to the impacts of non-point source pollution, which is not the case.

It is recognized that agricultural land uses are fundamentally important and vital to society, and as such the municipality does not advocate residential development (or any other development) as being more preferable to agricultural development.

As the NJDEP continues their research and implementation of the build out analyses throughout the state, these coefficients may be refined and loading coefficients for new pollutants published.

Accordingly the build-out analyses and pollutant loading program has been developed to permit adjustments to the values of the coefficients and to allow the model to be expanded to include other contaminant loading coefficients of concern.

- The NJDEP's land cover coefficients do not appear to consider or incorporate the new stormwater management techniques now required by the New Jersey stormwater regulations and the new LID BMP strategies. Furthermore, most developments within the municipality have required some form of stormwater control for 20 years or more.

The NJDEP land cover coefficients therefore may be very conservative with respect to present development conditions and greatly overestimate the adverse impacts at build-out.

- In addition to total phosphorus, total nitrogen and total suspended solids, there are a number of other pollutants associated with non-point source pollution and stormwater runoff that are generated and mobilized through land development. These include among other parameters, petroleum hydrocarbons, metals, and pathogenic organisms which are not currently accounted for by the NJDEP methodology.
- Malfunctioning and/or inadequate onsite wastewater disposal systems are believed to be a major source of non-point source pollution. The NJDEP methodology does not account for pollution resulting from such onsite systems.

Despite these reservations, the build-out analyses and pollutant loading projections are valuable tools for assessing the potential impacts from development and stormwater runoff. The build-out analysis and pollutant loading projections have been developed with the flexibility to easily adjust the pollutant loading coefficients, zoning and other elements of the analysis and projections. The municipality utilized GIS data management and mapping software to perform these analyses in order to create the flexibility to adjust these parameters for each watershed or even HUC14 within the municipality.

#### **Process:**

The following GIS based method was used for the build-out analyses and pollutant loading projections and to prepare the figures presented within this report.

1. Identify and characterize the HUC14 watersheds within the municipality.

Using the NJDEP's GIS mapping data for HUC14s, the 14 HUC14s drainage areas within the City were identified, their boundaries delineated (see Figure 12), and the results saved within a GIS feature layer. However it should be noted that 3 of the HUC14s drainage areas have areas of less than 3 acres.

Then through the use of ESRI's ArcGIS mapping software, the total land areas for each of the HUC14 watersheds were determined (and summarized in Table X below) based on the delineated watershed's digital feature attributes.

**Table X: HUC14 Drainage Areas**

HUC14 ID	HUC14 Sub-Watershed Name	Area (acres)
<b>Manamuskin River:</b>		
02040206190020	Manumuskin River (Rt 49 to Big Neal Br)	50.65
02040206190030	Manumuskin River (below Rt 49)	423.74
	Watershed Total:	474.39
<b>Maurice River:</b>		
02040206140060	Maurice R (Sherman Ave to Blackwater Br)	2.57
02040206160010	Lebanon Branch (Mill Creek)	1.97
02040206160020	Chatfield Branch (Mill Creek)	2,186.85
02040206160030	Maurice River(Union Lake to Sherman Ave)	5,883.07
02040206170010	Hankins Pond trib (Millville)	2,354.39
02040206170020	White Marsh Run (Millville)	4,713.52
02040206170030	Maurice River(Menantico Ck to UnionLake)	6,236.52
02040206170040	Buckshutem Creek (above Rt 555)	2,239.85
02040206170050	Buckshutem Creek (below Rt 555)	994.44
02040206200030	Maurice River (Rt 548 to Menantico Ck)	0.22
	Watershed Total:	24,613.40
<b>Menantico Creek:</b>		
02040206180040	Berryman Branch (Menantico Creek)	442.07
02040206180050	Menantico Creek (below Rt 552)	2,970.57
	Watershed Total:	3,412.64
	Municipal Total:	28,500.43

2. Identify the City's land use zones.

Using the City's GIS mapping data of their land use zoning districts (see both Figure 3 and Attachment 1 for an overview of these zones), the zoning layer was superimposed over the HUC14 drainage areas to identify and delineate the land use zones within each individual HUC14 drainage area.

3. Identify and calculate all existing impervious land covers within each HUC14 watershed.

The existing impervious land covers were determined using photometric mapping techniques on the NJDEP's 2002 digital aerial photography. The amounts of impervious land cover within each HUC14 were then calculated by zone (see Figures 14A-14N and Attachment 5).

4. Identify and calculate all existing constrained lands within each HUC14 drainage area.

Using a combination of both the NJDEP's and the municipality's GIS mapping data, the lands constrained from future development (including such lands identified as surficial waterbodies, wetland areas, Category One resource protection areas and their associated 300 foot buffers, designated open space and protected park areas) were identified and merged into a GIS feature layer (see Figure 5).

This layer was then overlaid on the both the HUC14 and the municipal land use zoning feature layers and the amount of impervious land cover within each HUC14 were then calculated by zone (see Figures 14A-14N and Attachment 5).

5. Calculate the land areas available for development and redevelopment within each HUC14 watershed.

The lands areas available for development and redevelopment were then calculated by subtracting the constrained lands from the total land areas for each HUC14 (see Attachment 5). In essence the land available for development is the agricultural, forest and/or barren lands and the land available for redevelopment consist of the eligible existing residential, commercial and industrially zoned parcels.

6. Calculate the potential additional impervious surface coverage assuming full development.

Using the maximum impervious surface coverage percentages specified within the municipal ordinance, the potential additional impervious surface coverage was calculated by multiplying lands areas available for development and redevelopment by the maximum impervious surface coverage.

7. Estimate non-point source pollutant load for each HUC14 drainage area.

Non-point source pollutant loads were calculated for each HUC14 using the land use pollutant loads published in the NJDEP Stormwater BMP Manual 2004 (see Table XX below) multiplied by the amount of potential maximum developable land areas within each municipality.

For purposes of this analysis, the pollutants were limited to total phosphorus, total nitrogen and total suspended solids. However the analysis can be expanded in the future to include other contaminants of concern.

**Table XX: Pollutant Loads by Land Cover**

Land Cover	Total Phosphorus Load (lbs/acre/year)	Total Nitrogen Load (lbs/acre/year)	Total Suspended Solids Load (lbs/acre/yr)
High, Medium Density Residential	1.4	15	140
Low Density, Rural Residential	0.6	5	100
Commercial	2.1	22	200
Industrial	1.5	16	200

Urban, Mixed Urban, Other Urban	1.0	10	120
Agricultural	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

Source: NJDEP Stormwater BMP Manual 2004 (Appendix C, Table C-2).

### Results:

The results of the land use/build-out analysis are detailed in Attachment 5 and summarized below in Table XXX (for the potential maximum pollutant loadings) and Table XXXXX (for the potential increased impervious surface coverages).

Although not required by the NJDEP, Table XXXX summarizes the calculated pollutant loadings based on the 1995 Land Use coverage information published by the NJDEP (see Attachment 2). The purpose of this information is to provide a baseline and establish an order of magnitude in evaluating the projected increases potential maximum pollutant loadings depicted within Table XXX. Attachment 4 shows in detail the calculations used to develop the summary within Table XXXX.

**Table XXX: Pollutant Loading Summary (Build-out Conditions)**

HUC14 ID	HUC14 Sub-Watershed Name	Area (acres)	TP (lbs/yr)	TN (lbs/yr)	TSS (lbs/yr)
<b>Manamuskin River:</b>					
02040206190020	Manumuskin River (Rt 49 to Big Neal Br)	50.65	5.1	152.0	2,026
02040206190030	Manumuskin River (below Rt 49)	423.74	41.4	1,241.5	16,553
	Watershed Total:	474.39	46.5	1,393.5	18,579
<b>Maurice River:</b>					
02040206140060	Maurice R (Sherman Ave to Blackwater Br)	2.57	0.0	0.0	0
02040206160010	Lebanon Branch (Mill Creek)	1.97	0.0	0.0	0
02040206160020	Chatfield Branch (Mill Creek)	2,186.85	2,374.3	18,412.8	549,051
02040206160030	Maurice River(Union Lake to Sherman Ave)	5,883.07	3,223.3	28,541.1	568,096
02040206170010	Hankins Pond trib (Millville)	2,354.39	3,206.0	34,148.7	351,678
02040206170020	White Marsh Run (Millville)	4,713.52	5,001.5	46,415.4	809,712
02040206170030	Maurice River(Menantico Ck to UnionLake)	6,236.52	4,329.4	46,177.4	535,188
02040206170040	Buckshutem Creek (above Rt 555)	2,239.85	1,801.8	16,605.1	286,636
02040206170050	Buckshutem Creek (below Rt 555)	994.44	368.4	4,672.3	48,988
02040206200030	Maurice River (Rt 548 to Menantico Ck)	0.22	0.0	0.0	0
	Watershed Total:	24,613.40	20,304.7	194,972.8	3,149,349
<b>Menantico Creek:</b>					
02040206180040	Berryman Branch (Menantico Creek)	442.07	479.8	5,035.9	50,927

02040206180050	Menantico Creek (below Rt 552)	2,970.57	1,079.0	12,893.9	169,585
Watershed Total:		3,412.64	1,558.8	17,929.8	220,512
Municipal Total:		28,500.43	21,910.0	214,296.1	3,388,440

TP = Total phosphorous  
 TN = Total nitrogen  
 TSS = Total suspended solids

**Table XXXX: Pollutant Loading Summary (Existing Conditions)**

HUC14 ID	HUC14 Sub-Watershed Name	Area (acres)	TP (lbs/yr)	TN (lbs/yr)	TSS (lbs/yr)
<b>Manamuskin River:</b>					
02040206190020	Manumuskin River (Rt 49 to Big Neal Br)	50.65	7.7	171.2	2,243
02040206190030	Manumuskin River (below Rt 49)	423.74	146.4	1,987.1	31,374
Watershed Total:		474.39	154.1	2,158.3	33,617
<b>Maurice River:</b>					
02040206140060	Maurice R (Sherman Ave to Blackwater Br)	2.57	0.0	0.0	0
02040206160010	Lebanon Branch (Mill Creek)	1.97	0.0	0.0	0
02040206160020	Chatfield Branch (Mill Creek)	2,186.85	1,251.3	11,725.2	290,114
02040206160030	Maurice River(Union Lake to Sherman Ave)	5,883.07	1,231.5	14,970.9	254,265
02040206170010	Hankins Pond trib (Millville)	2,354.39	2,076.1	22,312.3	269,279
02040206170020	White Marsh Run (Millville)	4,713.52	2,342.4	24,977.3	464,573
02040206170030	Maurice River(Menantico Ck to UnionLake)	6,236.52	3,273.7	35,490.9	529,411
02040206170040	Buckshutem Creek (above Rt 555)	2,239.85	975.9	10,471.6	178,948
02040206170050	Buckshutem Creek (below Rt 555)	994.44	276.1	3,469.5	51,722
02040206200030	Maurice River (Rt 548 to Menantico Ck)	0.22	0.0	0.0	0
Watershed Total:		24,613.40	11,427.0	123,417.7	2,038,312
<b>Menantico Creek:</b>					
02040206180040	Berryman Branch (Menantico Creek)	442.07	199.3	2,190.0	39,841
02040206180050	Menantico Creek (below Rt 552)	2,970.57	635.7	9,873.3	132,314
Watershed Total:		3,412.64	835.0	12,063.3	172,155
Municipal Total:		28,500.43	12,416.1	137,639.3	2,244,084

TP = Total phosphorous  
 TN = Total nitrogen  
 TSS = Total suspended solids

**Table XXXXX: Impervious Coverage Calculation Summary**

Total	Existing Imperv.	Buildout Imperv.
-------	------------------	------------------

<u>HUC14 ID</u>	<u>HUC14 Sub-Watershed Name</u>	<u>Area (acres)</u>	<u>Area (acres)</u>	<u>Area (acres)</u>	<u>Imperv Increase</u>
<b>Manamuskin River:</b>					
02040206190020	Manamuskin River (Rt 49 to Big Neal Br)	50.65	1.77	10.13	572.3%
02040206190030	Manamuskin River (below Rt 49)	423.74	15.79	82.77	524.2%
Watershed Total:		474.39	17.56	92.90	529.0%
<b>Maurice River:</b>					
02040206140060	Maurice R (Sherman Ave to Blackwater Br)	2.57	0.00	0.00	0.0%
02040206160010	Lebanon Branch (Mill Creek)	1.97	0.00	0.00	0.0%
02040206160020	Chatfield Branch (Mill Creek)	2,186.85	48.85	370.92	759.3%
02040206160030	Maurice River(Union Lake to Sherman Ave)	5,883.07	178.60	810.92	454.0%
02040206170010	Hankins Pond trib (Millville)	2,354.39	677.05	1,063.40	157.1%
02040206170020	White Marsh Run (Millville)	4,713.52	244.10	1,337.68	548.0%
02040206170030	Maurice River(Menantico Ck to UnionLake)	6,236.52	676.56	1,744.03	257.8%
02040206170040	Buckshutem Creek (above Rt 555)	2,239.85	152.71	783.76	513.2%
02040206170050	Buckshutem Creek (below Rt 555)	994.44	51.04	147.51	289.0%
02040206200030	Maurice River (Rt 548 to Menantico Ck)	0.22	0.00	0.00	0.0%
Watershed Total:		24,613.40	2,028.91	6,258.22	308.5%
<b>Menantico Creek:</b>					
02040206180040	Berryman Branch (Menantico Creek)	442.07	24.09	100.72	418.1%
02040206180050	Menantico Creek (below Rt 552)	2,970.57	95.38	445.44	467.0%
Watershed Total:		3,412.64	119.47	546.16	457.2%
Municipal Total:		28,500.43	2,165.94	6,897.28	318.4%

Imperv. = Impervious  
 Develop. = Developable

As would be expected, land development under build-out conditions will cause pollutant loadings to increase throughout the entire municipality (when compared to pollutant loadings generated by the 1995 Land Use data) by approximately the following magnitude:

1. Manamuskin River Watershed:
  - a.  $\pm$ 108 lbs/year for total phosphorus (or a  $\pm$ 69.8% decrease).
  - b.  $\pm$ 765 lbs/year for total nitrogen (or a  $\pm$ 35% decrease).
  - c.  $\pm$ 15,038 lbs/year for total suspended solids (or a  $\pm$ 45% decrease).
2. Maurice River Watershed:
  - a.  $\pm$ 8,878 lbs/year for total phosphorus (or a  $\pm$ 78% increase).

- b.  $\pm 71,555$  lbs/year for total nitrogen (or a  $\pm 58\%$  increase).
  - c.  $\pm 1,111,037$  lbs/year for total suspended solids (or a  $\pm 55\%$  increase).
3. Menantico Creek Watershed:
- a.  $\pm 724$  lbs/year for total phosphorus (or a  $\pm 87\%$  increase).
  - b.  $\pm 5,867$  lbs/year for total nitrogen (or a  $\pm 49\%$  increase).
  - c.  $\pm 48,357$  lbs/year for total suspended solids (or a  $\pm 28\%$  increase).
4. Entire Municipality (All Watersheds):
- a.  $\pm 9,494$  lbs/year for total phosphorus (or a  $\pm 77\%$  increase).
  - b.  $\pm 76,657$  lbs/year for total nitrogen (or a  $\pm 56\%$  increase).
  - c.  $\pm 1,144,356$  lbs/year for total suspended solids (or a  $\pm 51\%$  increase).

In addition the impervious surface coverages throughout the municipality are expected to more than triple under maximum build-out conditions. The coverage of existing impervious in 1995 was determined to be  $\pm 2,166$  acres (or  $\pm 8\%$  of the total area of the municipality), while the total impervious coverage under build-out conditions is projected to be  $\pm 9,063$  acres (or  $\pm 32\%$  of the total area of the municipality).

It should be noted that within Attachments 4 and 5, there are additional impervious values denoted as increases of 9999.9%. Since there are no impervious areas under present day conditions, this value is not mathematically correct and is only intended to denote an infinite increase in additional area since presently no existing impervious coverages exist in these areas.

In addition, there may be some values within the table that report land areas or pollutant loadings as having zero values. In reality their values may be slightly greater than zero but are reported as zero due to numeric rounding of the value.

### **Conclusions:**

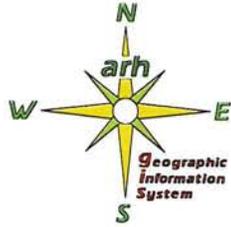
Although the scope of the land use/build-out analysis was limited to total phosphorous, nitrogen and suspended solids, it is evident that stormwater pollutant loadings under full build-out land development conditions shall only cause further degradation of water quality within receiving waterbodies throughout the majority of the municipality.

In addition with the amount of impervious surface coverage expected to more than triple under build-out conditions, stormwater management strategies need to be established to reduce the potential for increased flood frequencies, volumes and soil erosion concerns that accompany dramatic increases in such impervious coverage. In general, impervious coverage percentages greater than 10 to 15% may be indicative of potential watershed impairment from stormwater and land development. Since the total impervious coverage under build-out conditions is projected to be  $\pm 32\%$  of the total area of the municipality, the

## FIGURES



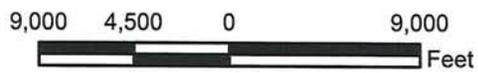
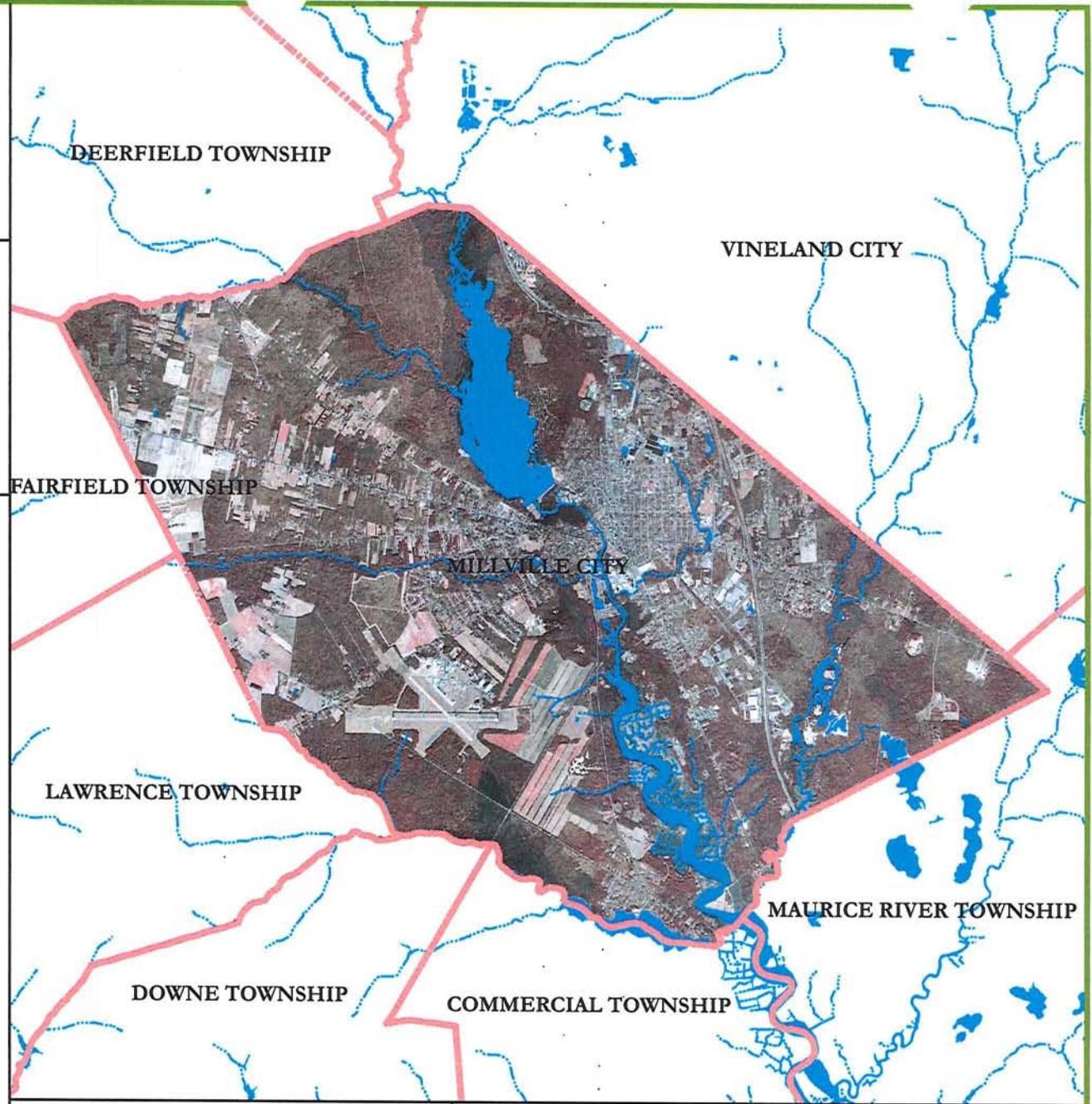
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# Municipal Stormwater Management Plan Figure No. 1 2002 DIGITAL ORTHOPHOTOGRAPHY

## Legend

-  Municipal Boundary
-  Streams (as mapped by NJDEP)
-  Lakes (as mapped by NJDEP)



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

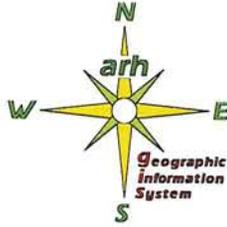
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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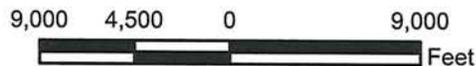
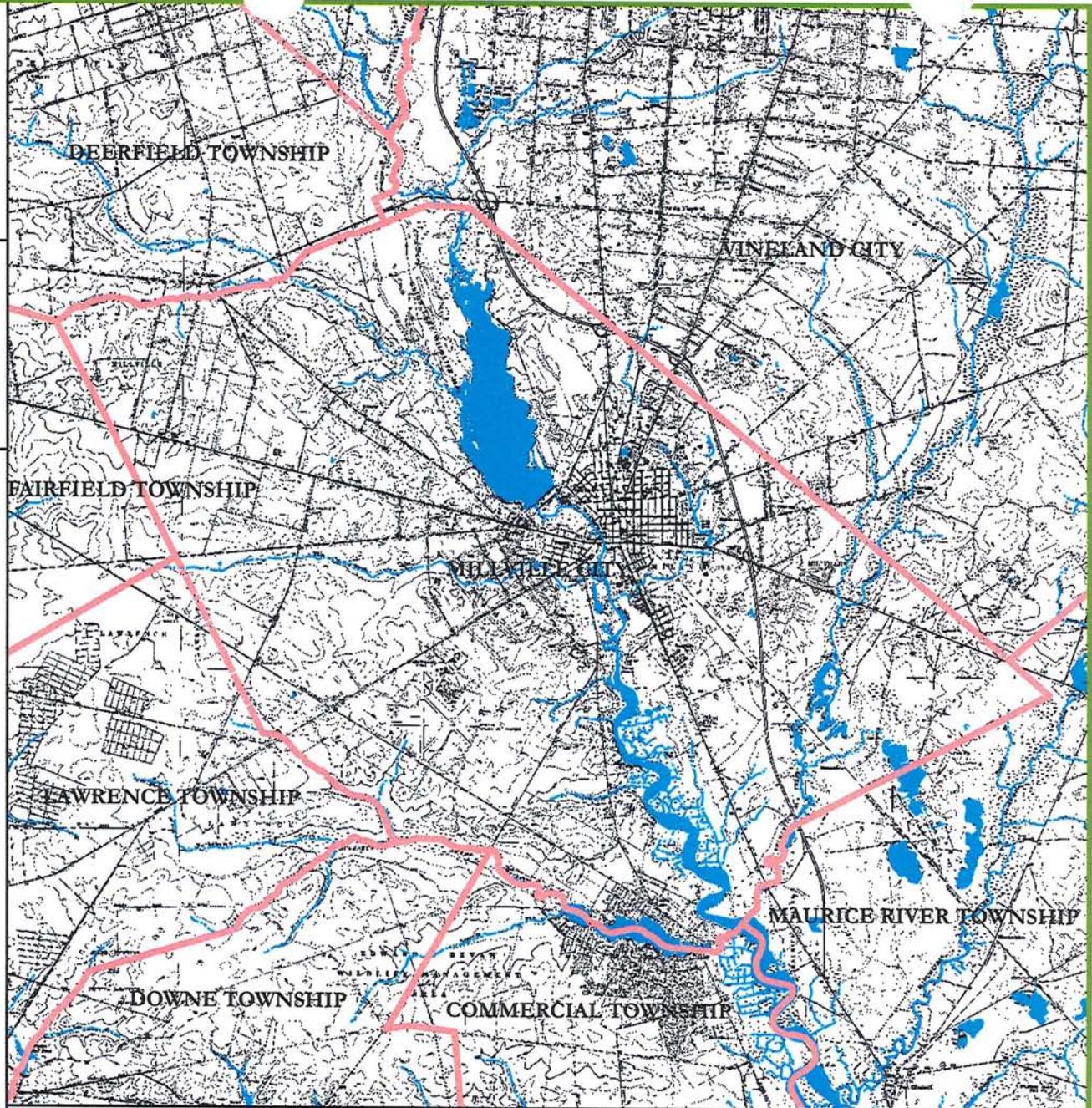
# Municipal Stormwater Management Plan

## Figure No. 2

### QUADRANGLE MAP

#### Legend

-  Municipal Boundary
-  Streams (as mapped by NJDEP)
-  Lakes (as mapped by NJDEP)



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

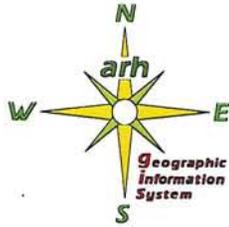
#### Note:

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# Municipal Stormwater Management Plan

## Figure No. 3

### ZONING MAP

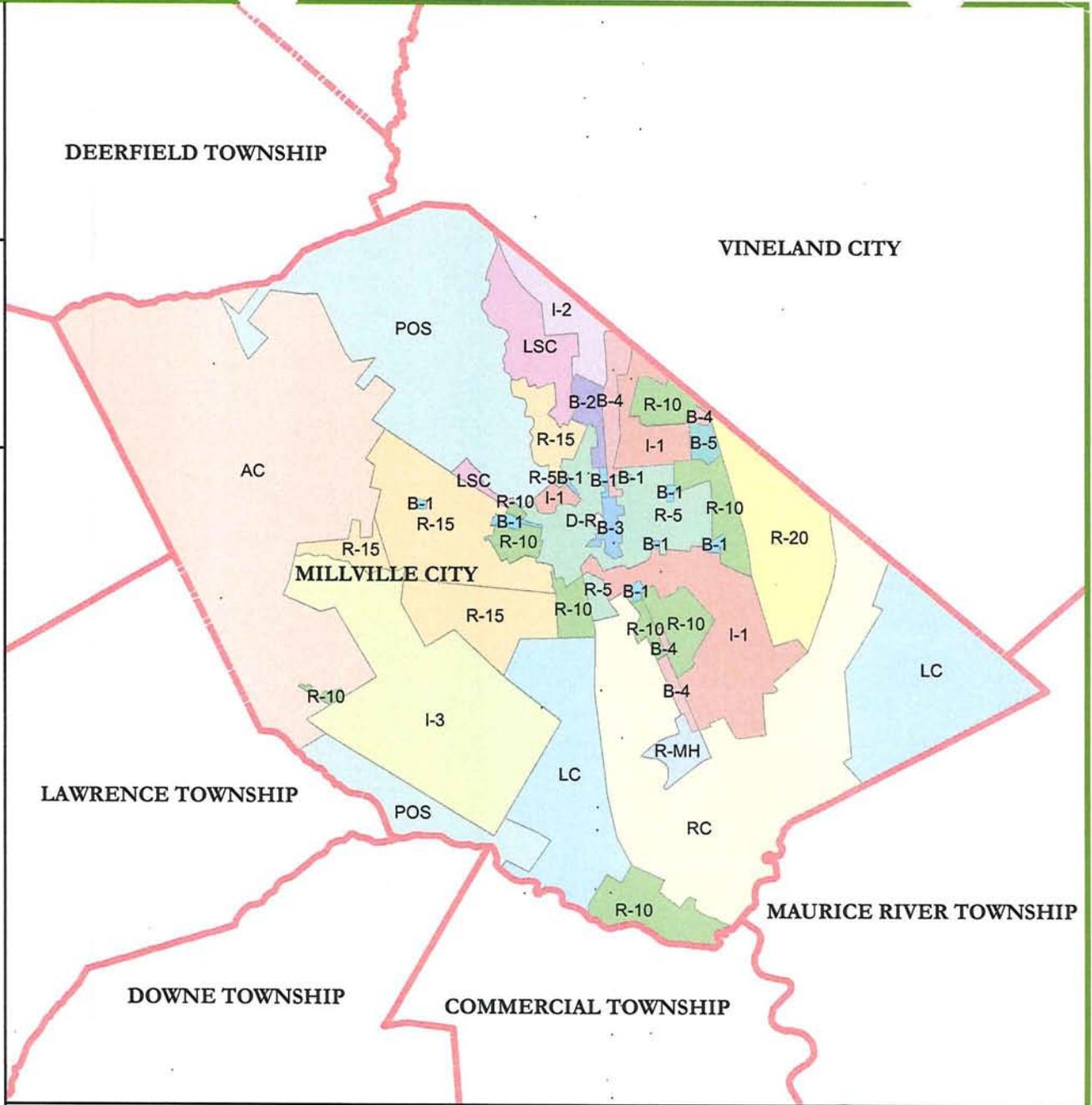
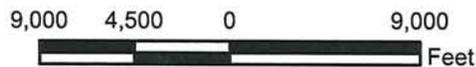
#### Legend

Municipal Boundary

#### Millville City Zoning

ZONE\_ID, ZONE\_NAME

- AC, AGRICULTURAL CONSERVATION
- B-1, NEIGHBORHOOD BUSINESS
- B-2, PROFESSIONAL SERVICE
- B-3, CENTRAL BUSINESS
- B-4, GENERAL BUSINESS
- B-5, TOURISM SERVICES
- D-R, DOWNTOWN RIVERFRONT
- I-1, GENERAL INDUSTRY
- I-2, INTERCHANGE MIXED-USE
- I-3, AIR PARK INDUSTRY
- LC, LAND CONSERVATION
- LSC, LAKESHORE CONSERVATION
- POS, PUBLIC OPEN SPACE
- R-10, RESIDENTIAL 10
- R-15, RESIDENTIAL 15
- R-20, RESIDENTIAL 20
- R-5, RESIDENTIAL 5
- R-MH, RESIDENTIAL MOBILE HOME
- RC, RIVER CONSERVATION



County - Cumberland Dated: 04/11/06  
Township - Millville Drawn by: SEB

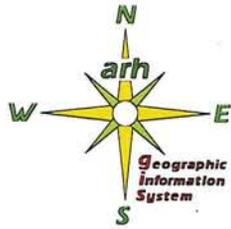
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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# Municipal Stormwater Management Plan

## Figure No. 4

### LAND USE MAP

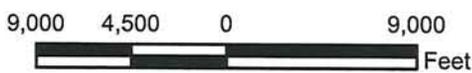
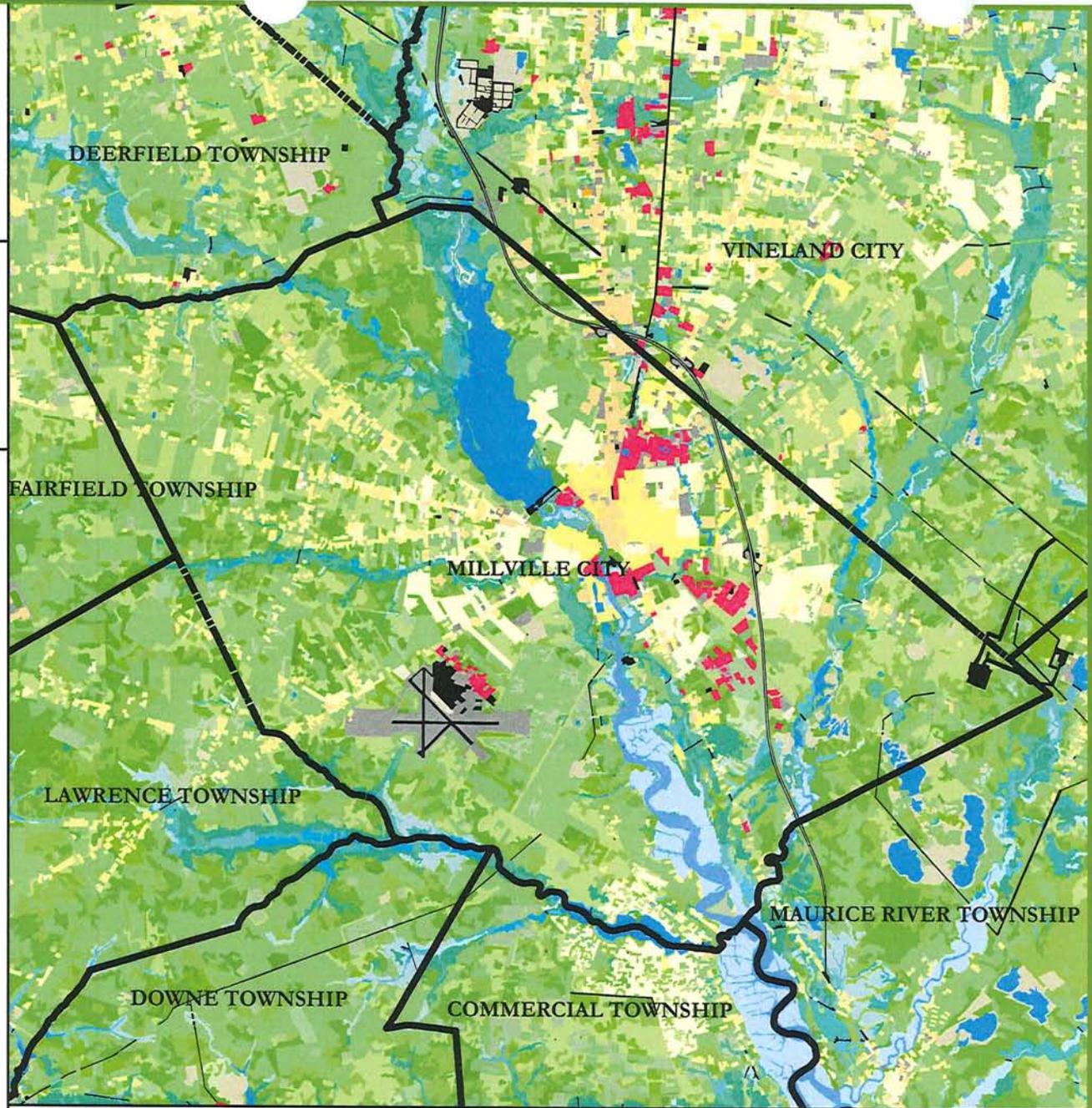
**Legend**

Municipal Boundary

**1995 Land Use**

**LULUs, LABELS**

- 1110, RESIDENTIAL, HIGH DENS., MULT. DWELLING
- 1120, RESIDENTIAL, SINGLE UNIT, MED. DENS.
- 1130, RESIDENTIAL, SINGLE UNIT, LOW DENS.
- 1140, RESIDENTIAL, RURAL, SINGLE UNIT
- 1150, MIXED RESIDENTIAL
- 1200, COMMERCIAL/SERVICES
- 1211, MILITARY RESERVATIONS
- 1300, INDUSTRIAL
- 1400, TRANS./COMM./UTILITIES
- 1461, WETLAND ROW (MODIFIED)
- 1600, MIXED URBAN / BUILT-UP LAND
- 1700, OTHER URBAN / BUILT-UP LAND
- 1750, MANAGED WETLAND IN MAIN LAWN
- 1800, RECREATIONAL LAND
- 1804, ATHLETIC FIELDS (SCHOOLS)
- 1850, MANAGED WETLAND IN BUILT-UP MAIN REC.
- 2100, CROPLAND AND PASTURELAND
- 2140, AGRICULTURAL WETLANDS (MODIFIED)
- 2150, FORMER AG. WETLAND (NOT BUILT-UP)
- 2200, ORCH./VINE/NURS./HORT. AREAS
- 2300, CONFINED FEEDING OPERATIONS
- 2400, OTHER AGRICULTURE
- 4110, DECIDUOUS FOREST (10-50% CROWN)
- 4120, DECIDUOUS FOREST (>50% CROWN)
- 4210, CONIFEROUS FOREST (10-50% CROWN)
- 4220, CONIFEROUS FOREST (>50% CROWN)
- 4230, PLANTATION
- 4311, MIX FOREST (>50% CONIF. 10%-50% CROWN)
- 4312, MIX FOREST (>50% CONIF. >50% CROWN)
- 4321, MIX FOREST (>50% DECID. 10-50% CROWN)
- 4322, MIX FOREST (>50% DECID. >50% CROWN)
- 4410, OLD FIELD (< 25% BRUSH COVERED)
- 4420, DECIDUOUS BRUSH/SHRUBLAND
- 4430, CONIFEROUS BRUSH/SHRUBLAND
- 4440, MIXED DECID/CONIF BRUSH/SHRUBLAND
- 4500, SEVERE BURNED UPLAND VEGETATION
- 5100, STREAMS AND CANALS
- 5200, NATURAL LAKES
- 5300, ARTIFICIAL LAKES
- 5410, TIDAL RIVERS, INLAND BAYS, OTHER TIDAL
- 5411, OPEN TIDAL BAYS
- 6110, SALINE MARSHES
- 6120, FRESHWATER TIDAL MARSHES
- 6210, DECIDUOUS WOODED WETLANDS
- 6220, CONIFEROUS WOODED WETLANDS
- 6221, ATLANTIC WHITE CEDAR SWAMP
- 6231, DECIDUOUS SCRUB/SHRUB WETLANDS
- 6232, CONIFEROUS SCRUB/SHRUB WETLANDS
- 6233, MIXED SCRUB/SHRUB WETLANDS (DECID. DOM.)
- 6234, MIXED SCRUB/SHRUB WETLANDS (CONIF. DOM.)
- 6240, HERBACEOUS WETLANDS
- 6251, MIXED FORESTED WETLANDS (DECID. DOM.)
- 6252, MIXED FORESTED WETLANDS (CONIF. DOM.)
- 7100, BEACHES
- 7300, EXTRACTIVE MINING
- 7400, ALTERED LANDS
- 7430, DISTURBED WETLANDS (MODIFIED)
- 7500, TRANSITIONAL AREAS
- 7600, UNDIFFERENTIATED BARREN LANDS



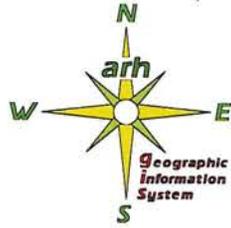
County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.  
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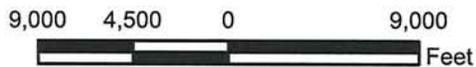
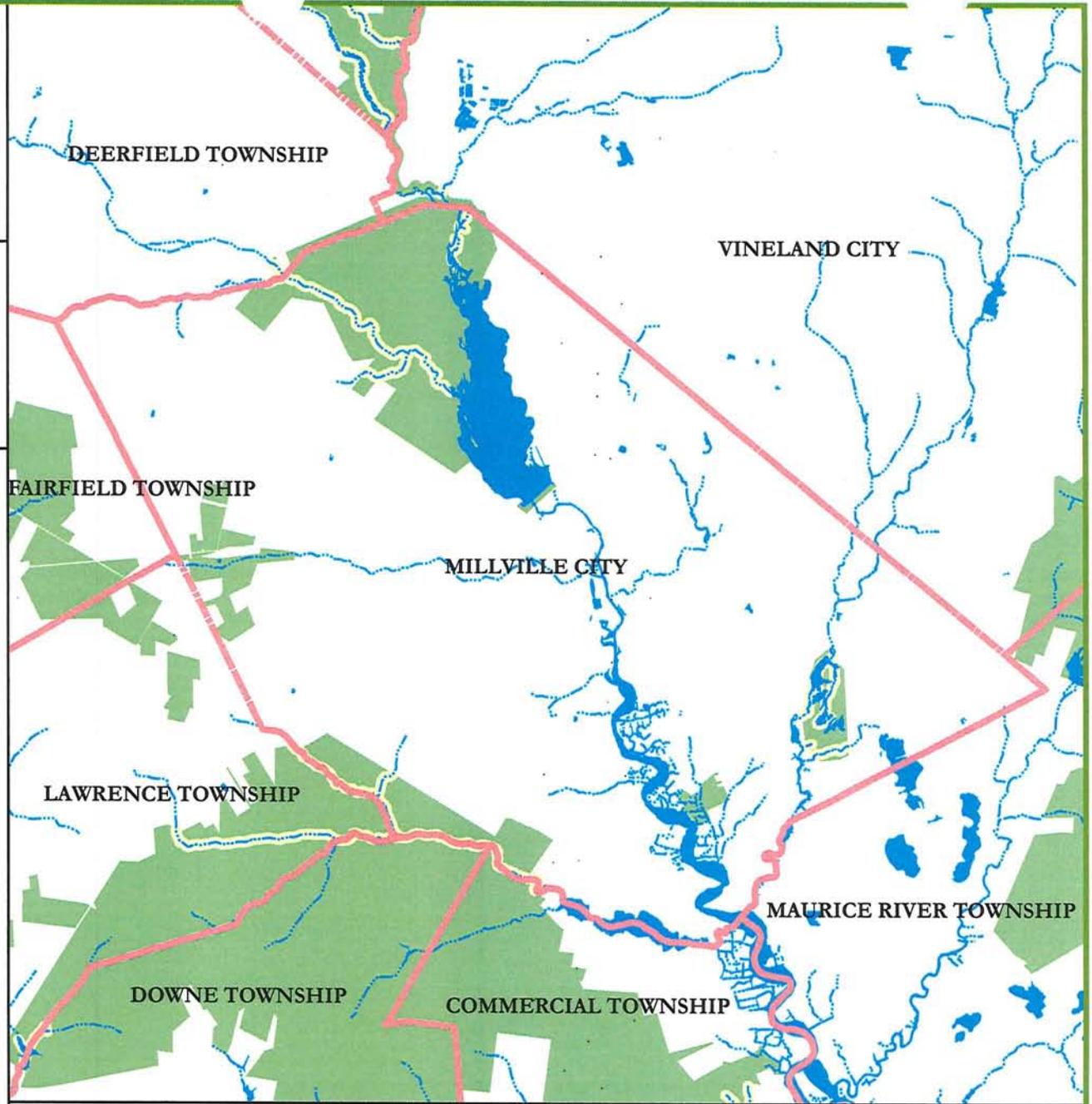
# Municipal Stormwater Management Plan

## Figure No. 5

### CONSTRAINED AREAS

#### Legend

-  Municipal Boundary
-  Streams (as mapped by NJDEP)
-  Lakes (as mapped by NJDEP)
-  Category One 300 Foot Buffer Area
-  Open Space (as mapped by NJDEP)



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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# Municipal Stormwater Management Plan

Figure No. 6  
**SOILS MAP**

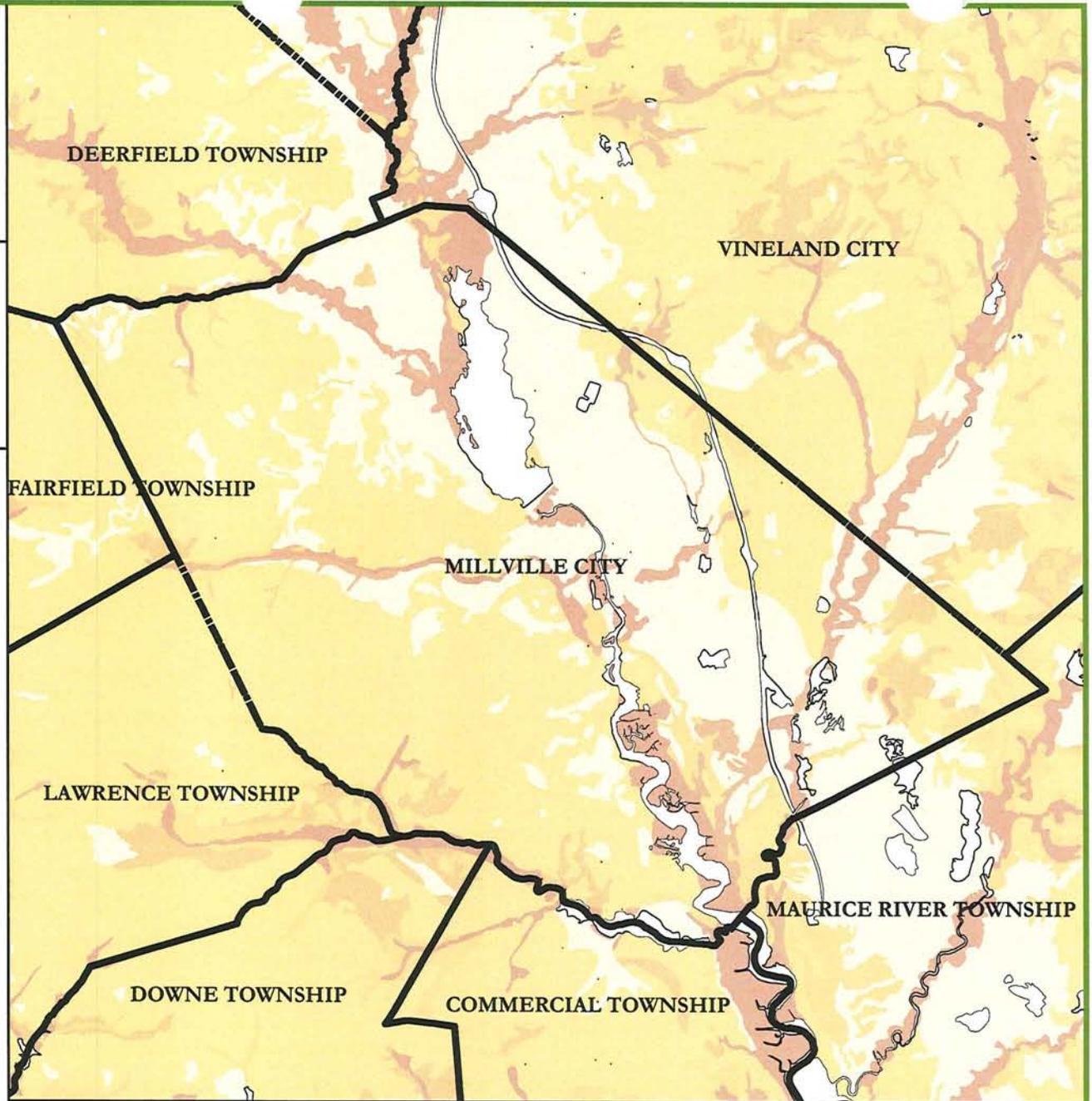
## Legend

Municipal Boundary

**Soils (as mapped by SSURGO)**

### Hydrology

- A
- B
- B/D
- C
- C/D
- D
- No Data Available



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

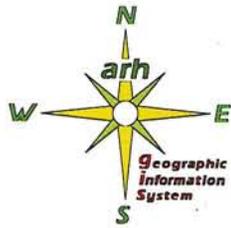
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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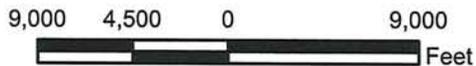
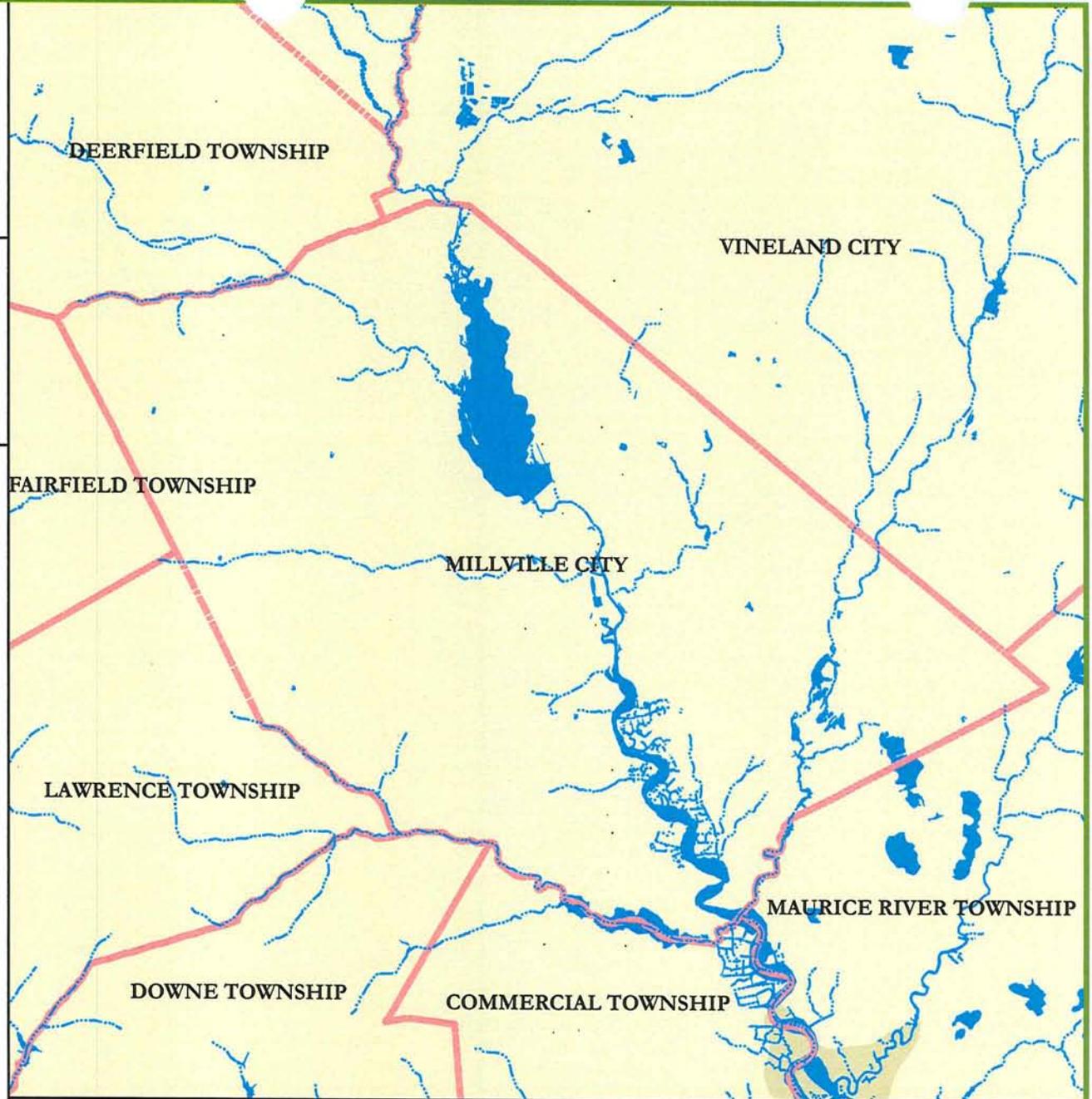
# Municipal Stormwater Management Plan

Figure No. 7

## GEOLOGY MAP

### Legend

-  Municipal Boundary
-  Streams (as mapped by NJDEP)
-  Lakes (as mapped by NJDEP)
- Geology (as mapped by NJDEP)**
-  Cohansey Formation
-  Belleplaine Member



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

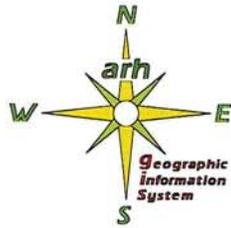
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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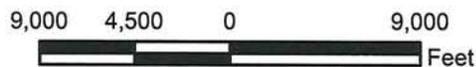
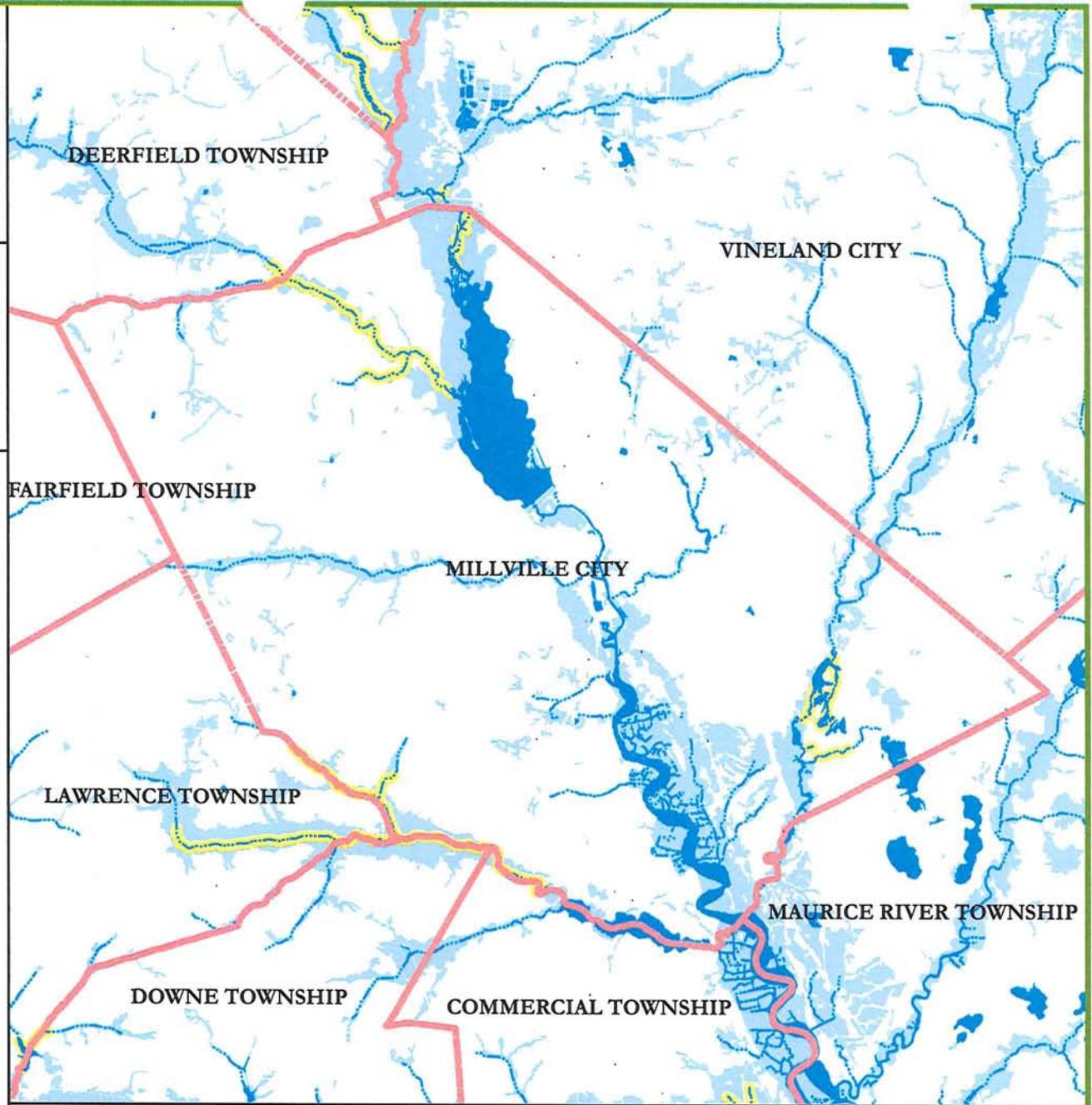
# Municipal Stormwater Management Plan

Figure No. 8

## WATERWAYS MAP

### Legend

-  Municipal Boundary
-  Streams (as mapped by NJDEP)
-  Lakes (as mapped by NJDEP)
-  Wetlands (as mapped by NJDEP)
-  Category One 300 Foot Buffer Area



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

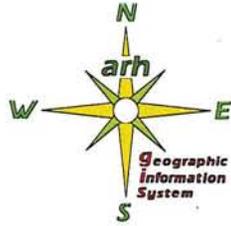
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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# Municipal Stormwater Management Plan

Figure No. 9

## FLOODPLAIN MAP

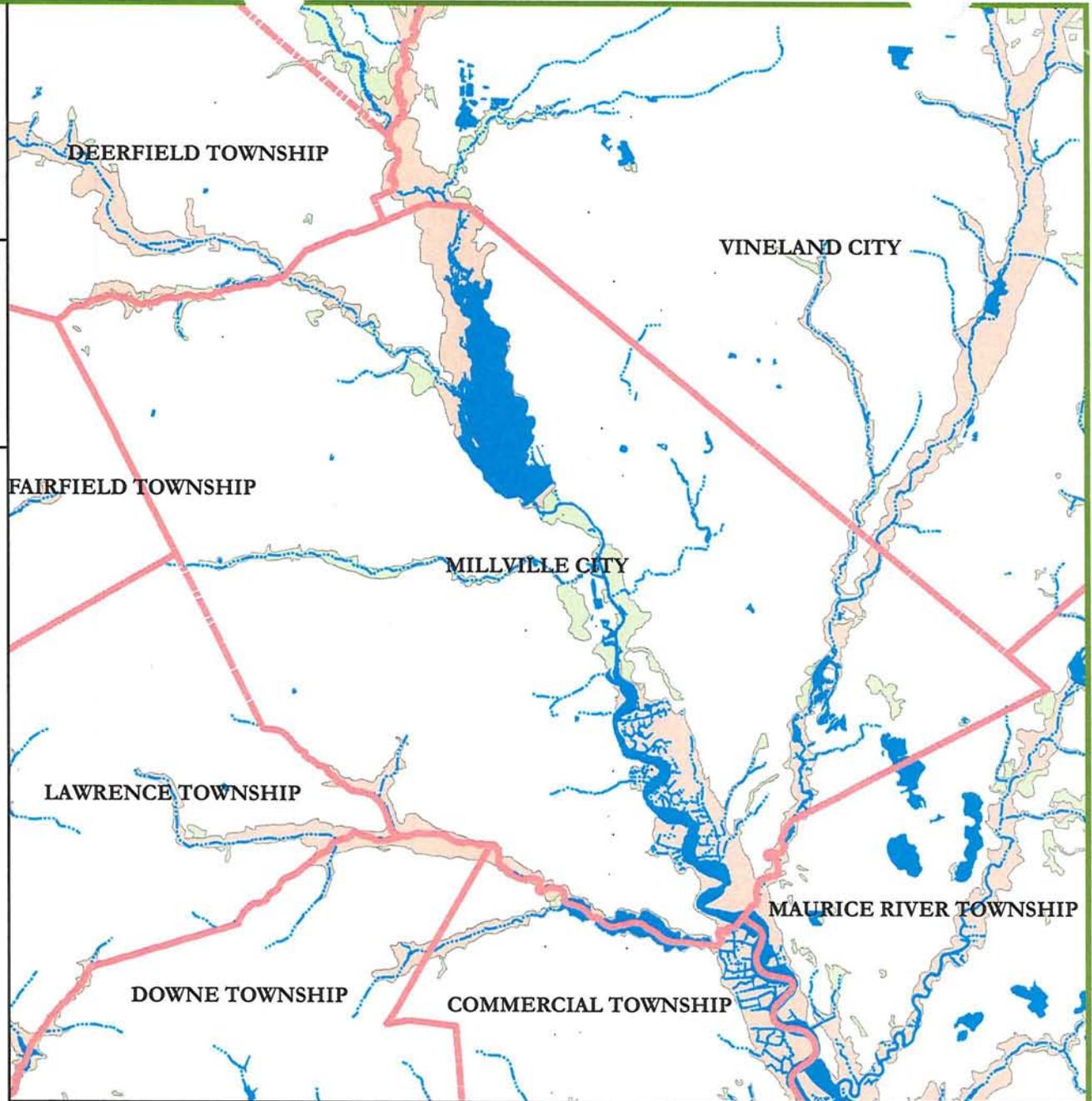
### Legend

- Municipal Boundary
- Streams (as mapped by NJDEP)
- Lakes (as mapped by NJDEP)

### Floodprone Areas (as mapped by NJDEP)

#### FLOODPRONE

- USGS Documented Floodprone Area
- Undocumented Floodprone Area
- Water



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

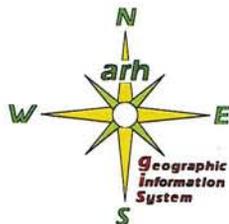
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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# Municipal Stormwater Management Plan

Figure No. 10

## WELLHEAD PROTECTION AREAS

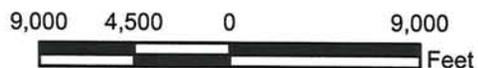
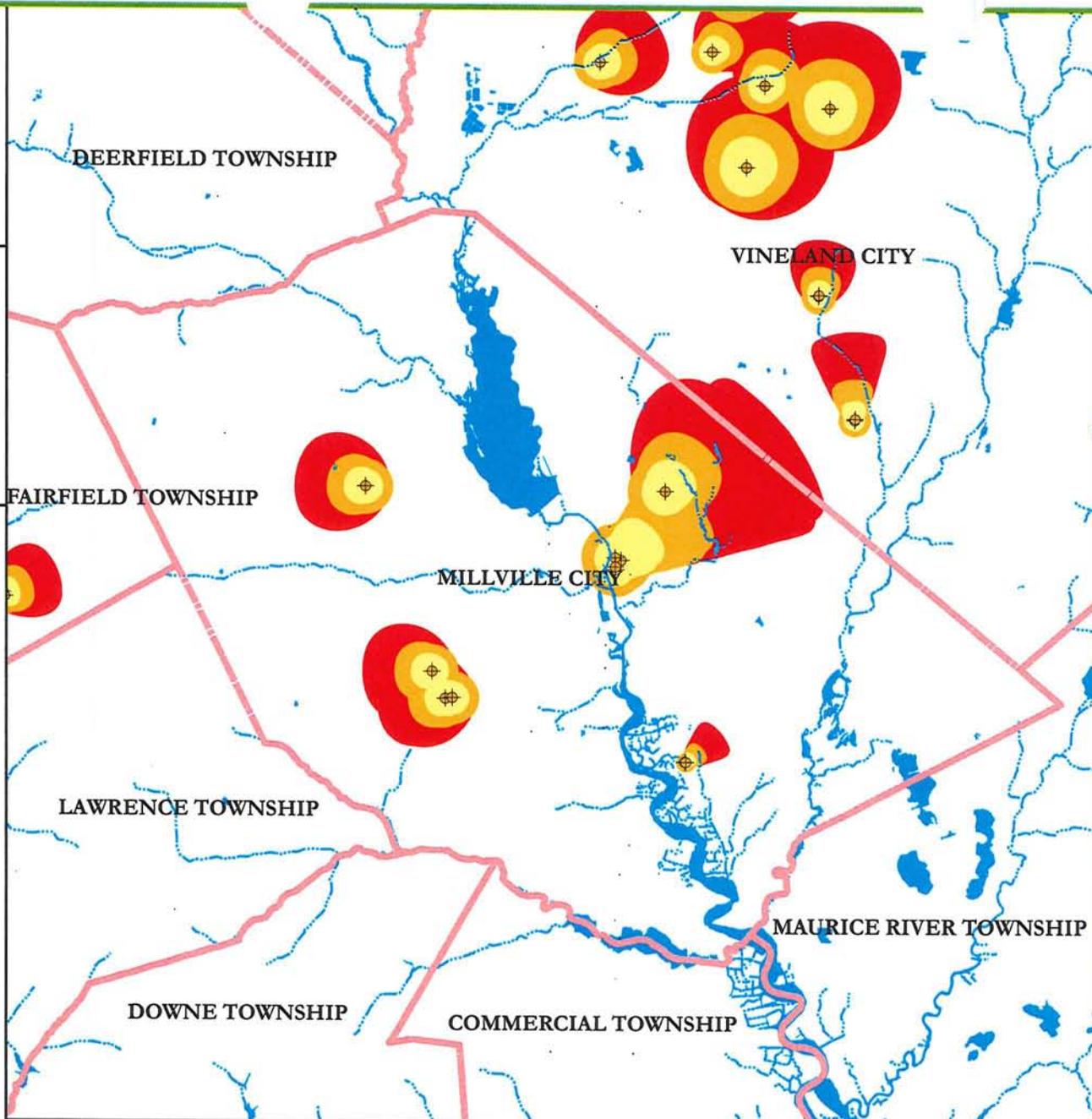
### Legend

- Municipal Boundary
- Streams (as mapped by NJDEP)
- Lakes (as mapped by NJDEP)
- Public Community Water Supply Wells

### Wellhead Protection Areas

#### TIER

- Tier 1 (2 years)
- Tier 2 (5 years)
- Tier 3 (12 years)



County - Cumberland Dated: 04/11/06  
Township - Millville Drawn by: SEB

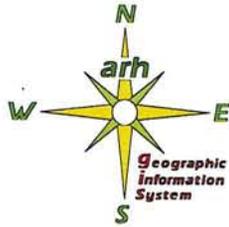
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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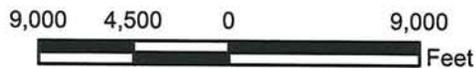
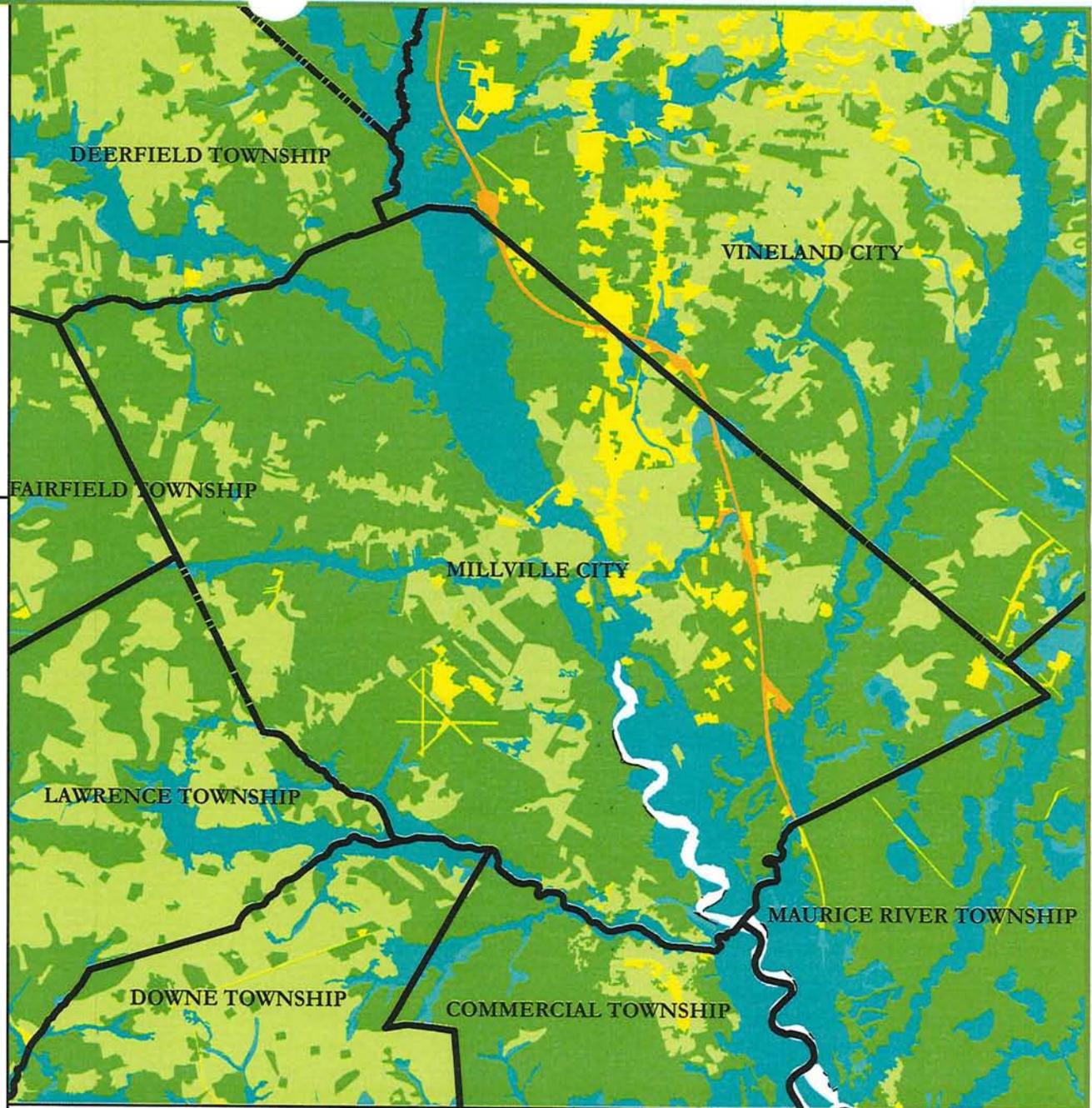
# Municipal Stormwater Management Plan

Figure No. 11

## GROUNDWATER RECHARGE AREAS

### Legend

-  Municipal Boundary
- Groundwater Recharge (as mapped by NJGS)**
- State Ranking**
-  16 to 12 in/yr
-  11 to 15 in/yr
-  8 to 10 in/yr
-  1 to 7 in/yr
-  0 in/yr
-  Hydric Soils
-  Wetlands and Open Water
-  No Recharge Calculated



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

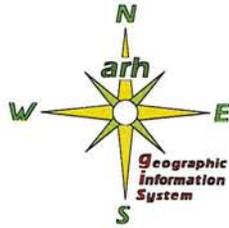
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
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# Municipal Stormwater Management Plan

## Figure No. 12

### HUC14 DRAINAGE AREAS

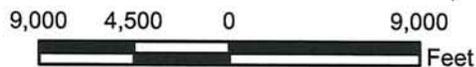
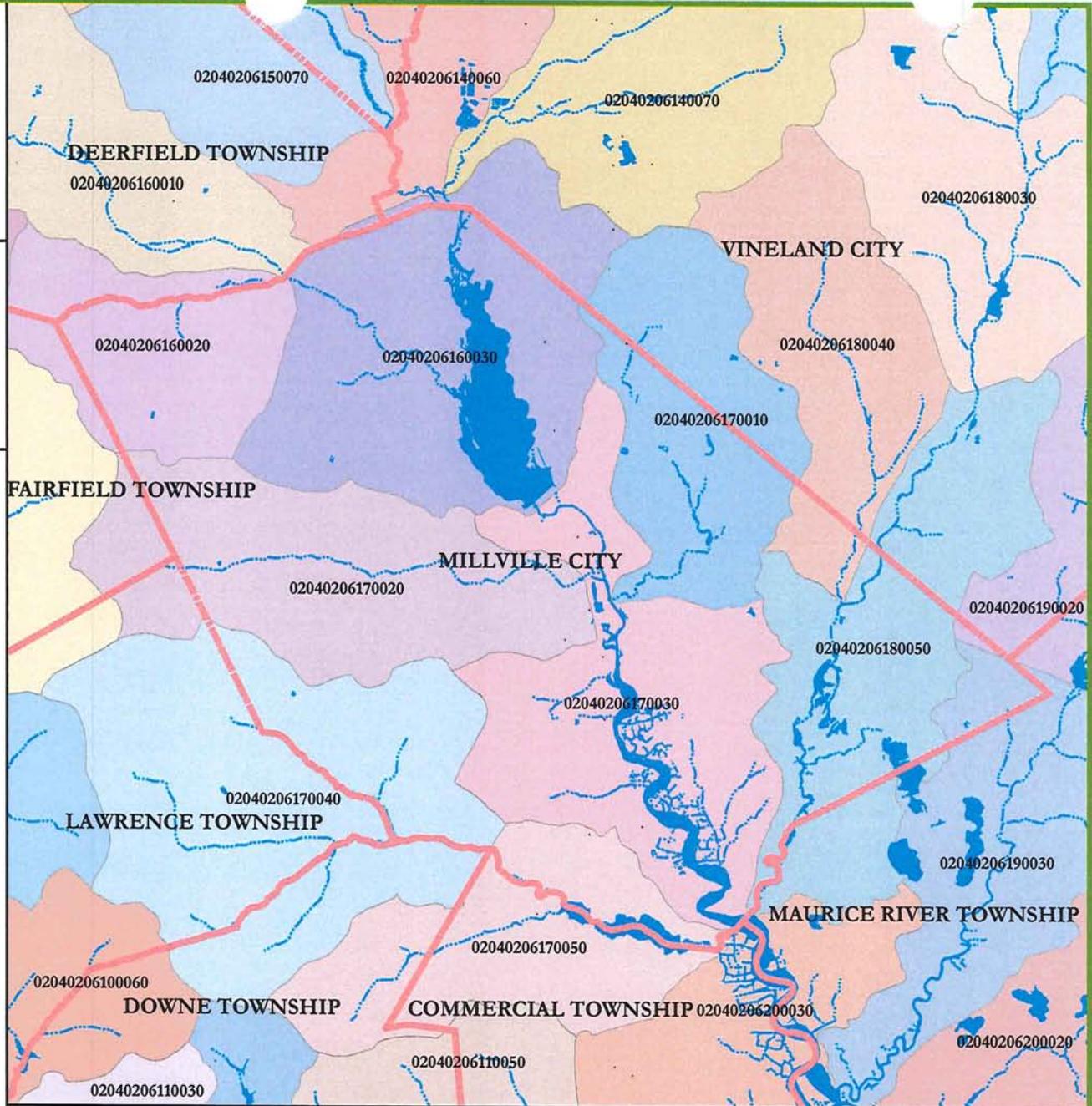
#### Legend

- Municipal Boundary
- Streams (as mapped by NJDEP)
- Lakes (as mapped by NJDEP)

#### Hydrologic Units

##### HUC14

02040206090020	02040206170010
02040206090040	02040206170020
02040206100040	02040206170030
02040206100060	02040206170040
02040206110030	02040206170050
02040206110040	02040206180010
02040206110050	02040206180020
02040206140060	02040206180030
02040206140070	02040206180040
02040206150060	02040206180050
02040206150070	02040206190020
02040206160010	02040206190030
02040206160020	02040206200020
02040206160030	02040206200030



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

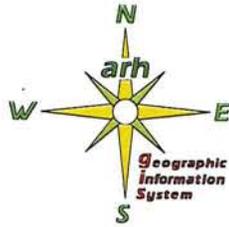
Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

ARH Project # 50-51832



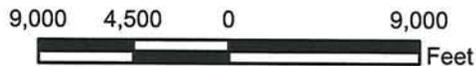
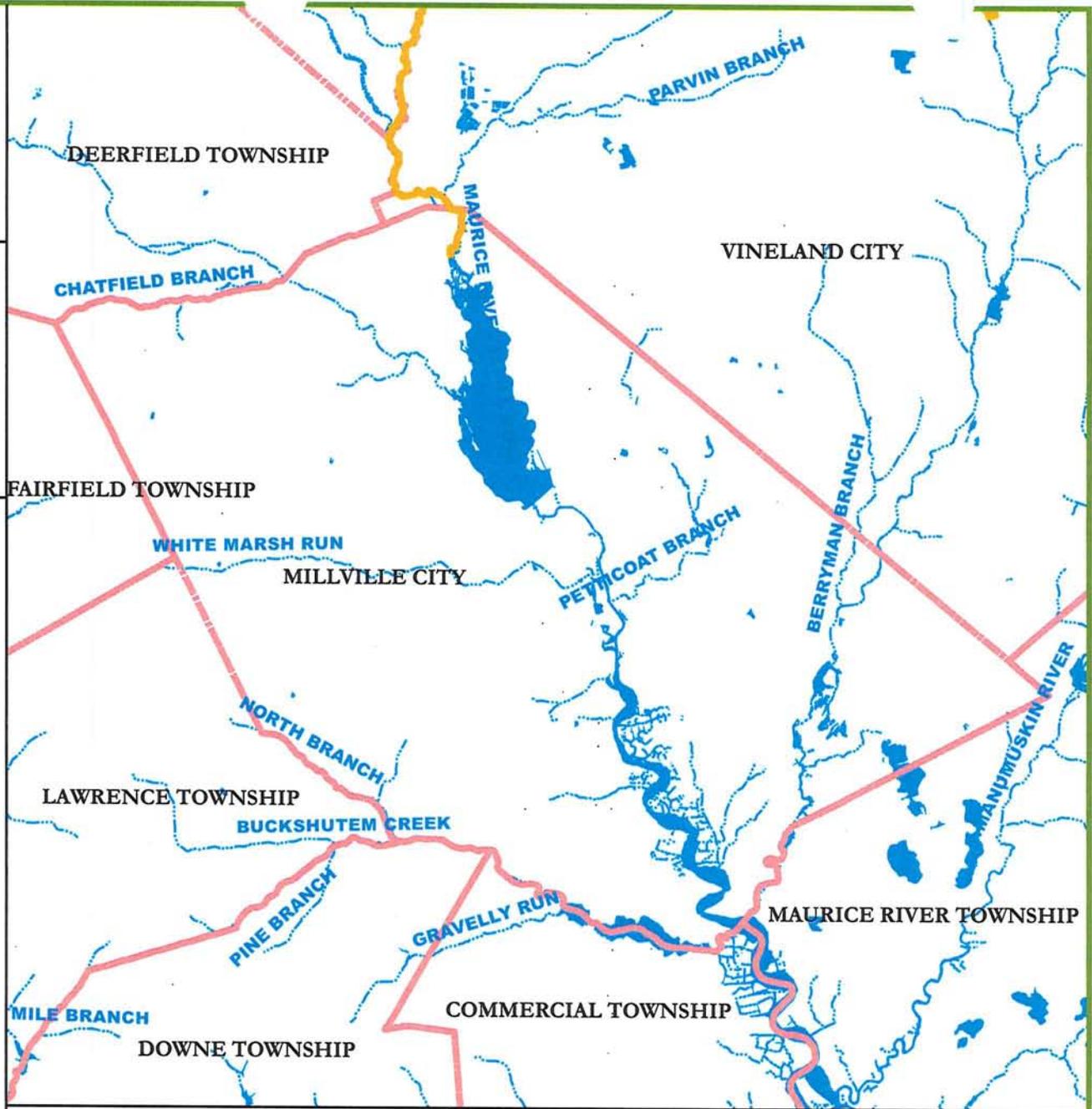
**Civil Solutions**  
a division of **arh**



# Municipal Stormwater Management Plan Figure No. 13 TOTAL MAXIMUM DAILY LOADS MAP

## Legend

-  Municipal Boundary
-  Streams (as mapped by NJDEP)
-  Lakes (as mapped by NJDEP)
-  Total Maximum Daily Loads for Streams
-  Total Maximum Daily Loads for Lakes



County - Cumberland    Dated: 04/11/06  
Township - Millville    Drawn by: SEB

Millville, NJ Quadrangle #153  
Dividing Creek, NJ Quadrangle #163

Note:  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

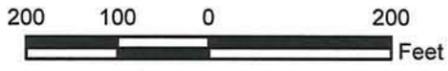
ARH Project # 50-51832

**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

-  POS



**Municipal Stormwater  
Management Plan  
Figure No. 14-A  
HUC# 02040206140060  
HUC14 DRAINAGE AREAS**



**Civil Solutions**  
a division of *arh*



**County - Cumberland  
Township - Millville**

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

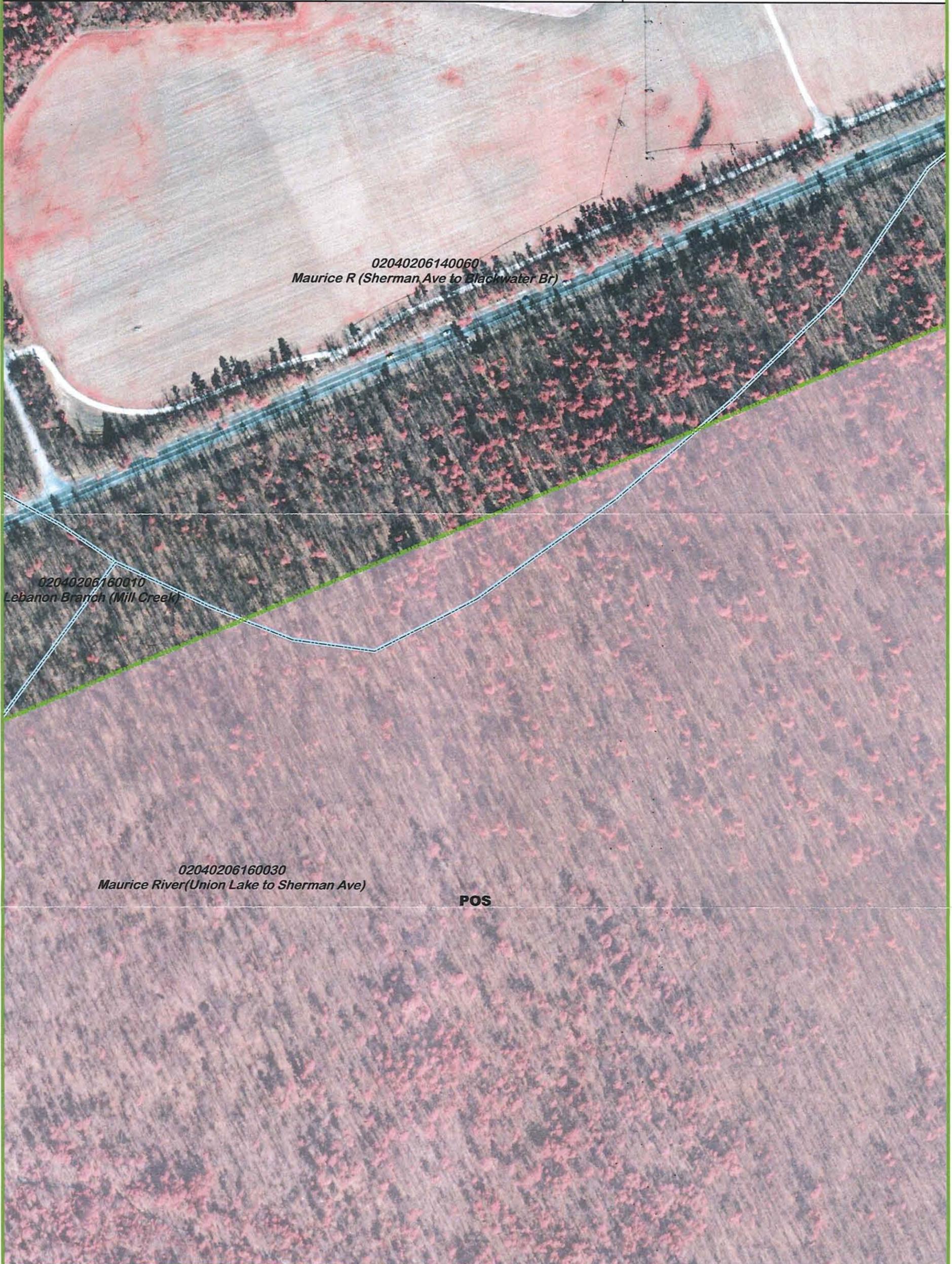
**Dated: 4/4/06  
Drawn by: SEB**

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

**ARH Project # 50-51832**

**Note:**  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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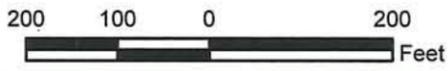


**Legend**

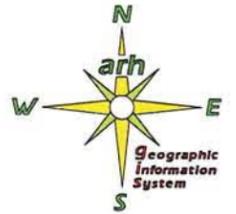
-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

-  POS



**Municipal Stormwater  
Management Plan  
Figure No. 14-B  
HUC# 02040206160010  
HUC14 DRAINAGE AREAS**



County - Cumberland  
Township - Millville

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

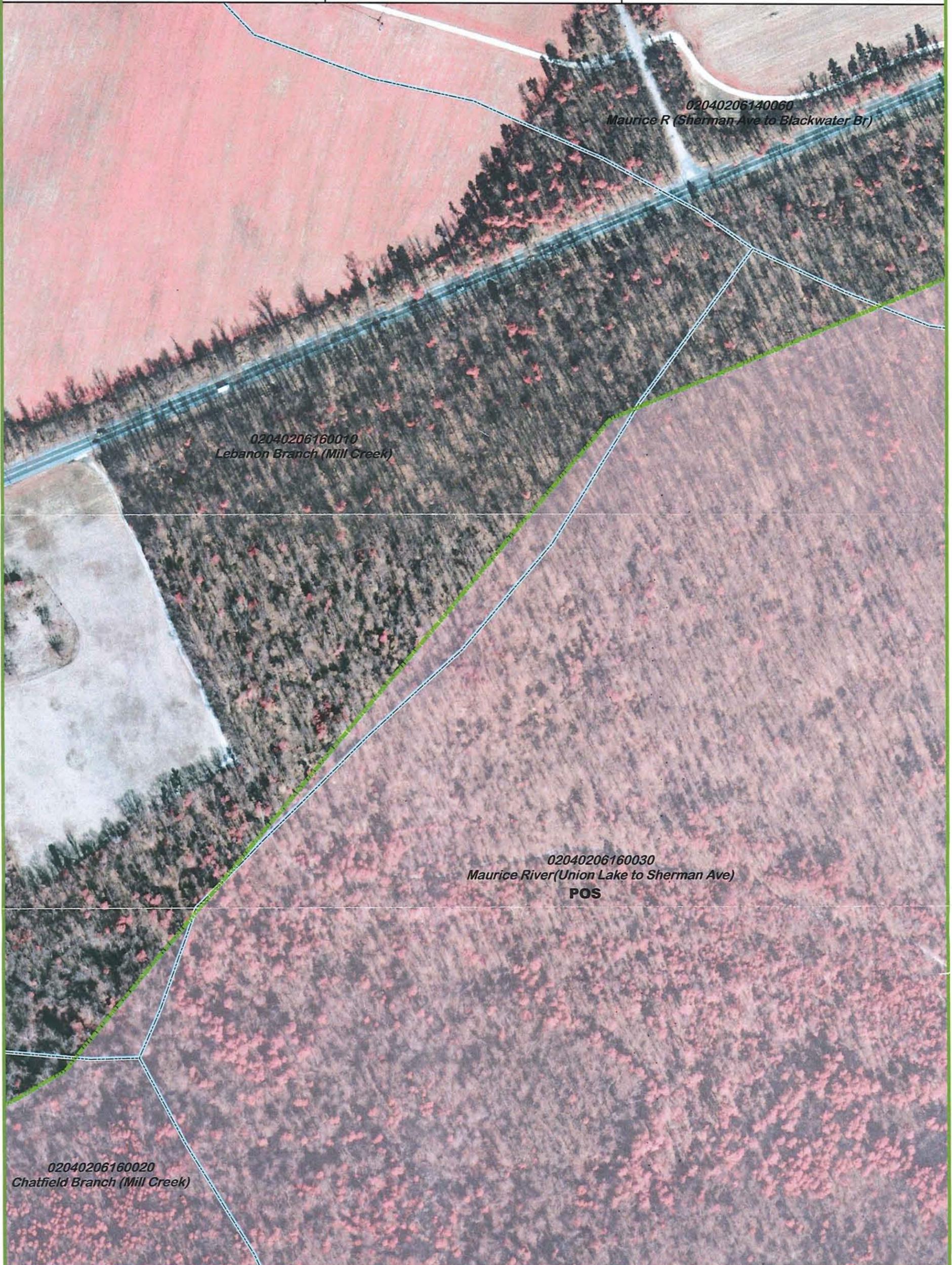
Dated: 4/4/06  
Drawn by: SEB

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

ARH Project # 50-51832

Note:  
This map was developed using New Jersey Department  
of Environmental Protection Geographic Information System  
digital data, but this secondary product has not been verified  
by NJDEP and is not state-authorized.

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**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

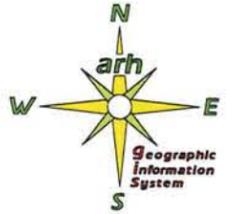
-  AC
-  POS



**Municipal Stormwater  
Management Plan  
Figure No. 14-C  
HUC# 02040206160020  
HUC14 DRAINAGE AREAS**



**Civil Solutions**  
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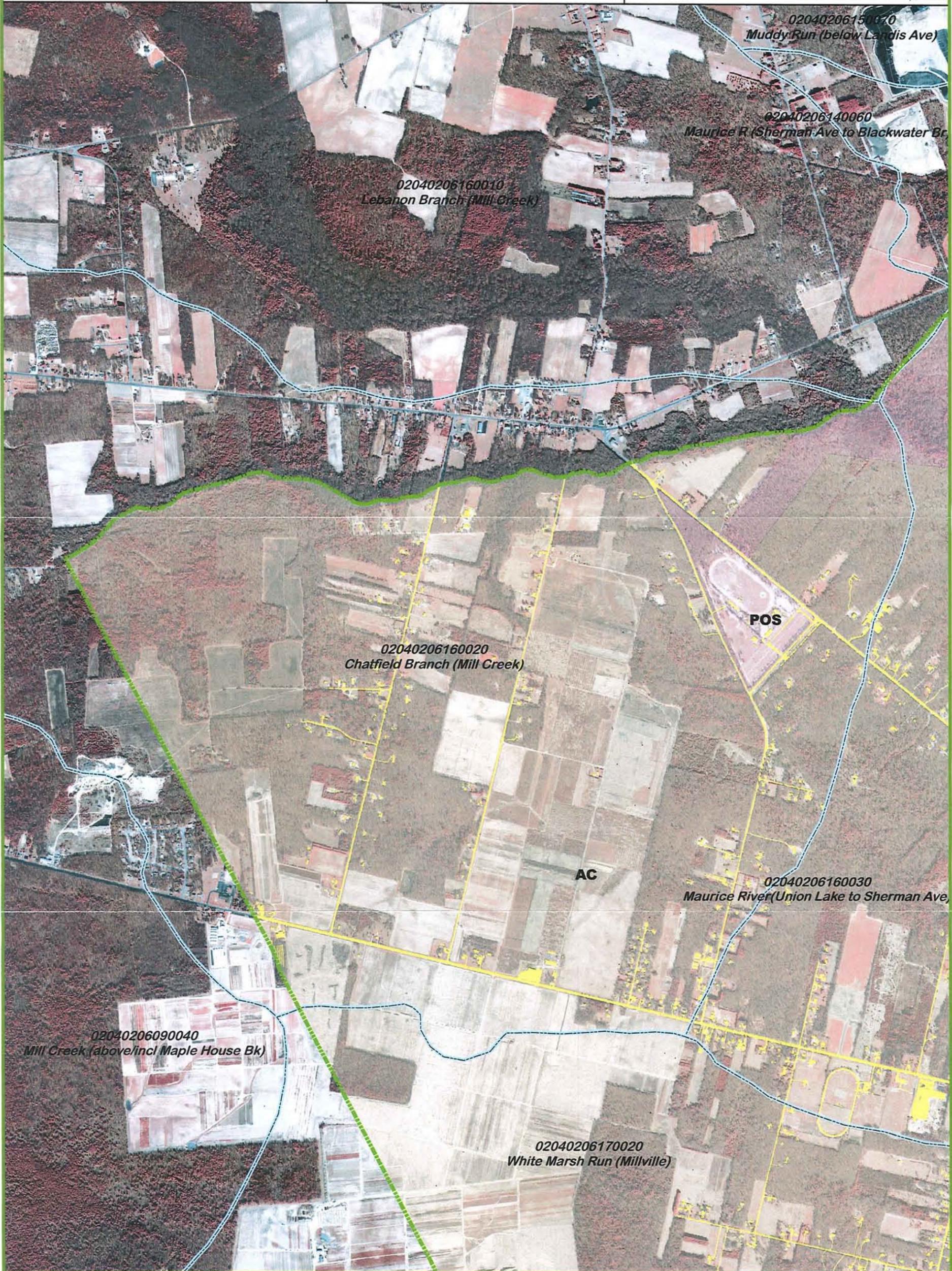


County - Cumberland  
Township - Millville  
Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dated: 4/4/06  
Drawn by: SEB  
Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

Note: ARH Project # 50-51832  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

- |   |   |   |  |  |
|---|---|---|--|--|
|  AC  |  B-3 |  I-1 |  LSC  |  R-15 |
|  B-1 |  B-4 |  I-2 |  POS  |  R-5  |
|  B-2 |  D-R |  I-3 |  R-10 |  |

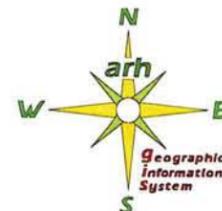


# Municipal Stormwater Management Plan

## Figure No. 14-D

HUC# 02040206160030

### HUC14 DRAINAGE AREAS



County - Cumberland  
Township - Millville

Dated: 4/4/06  
Drawn by: SEB

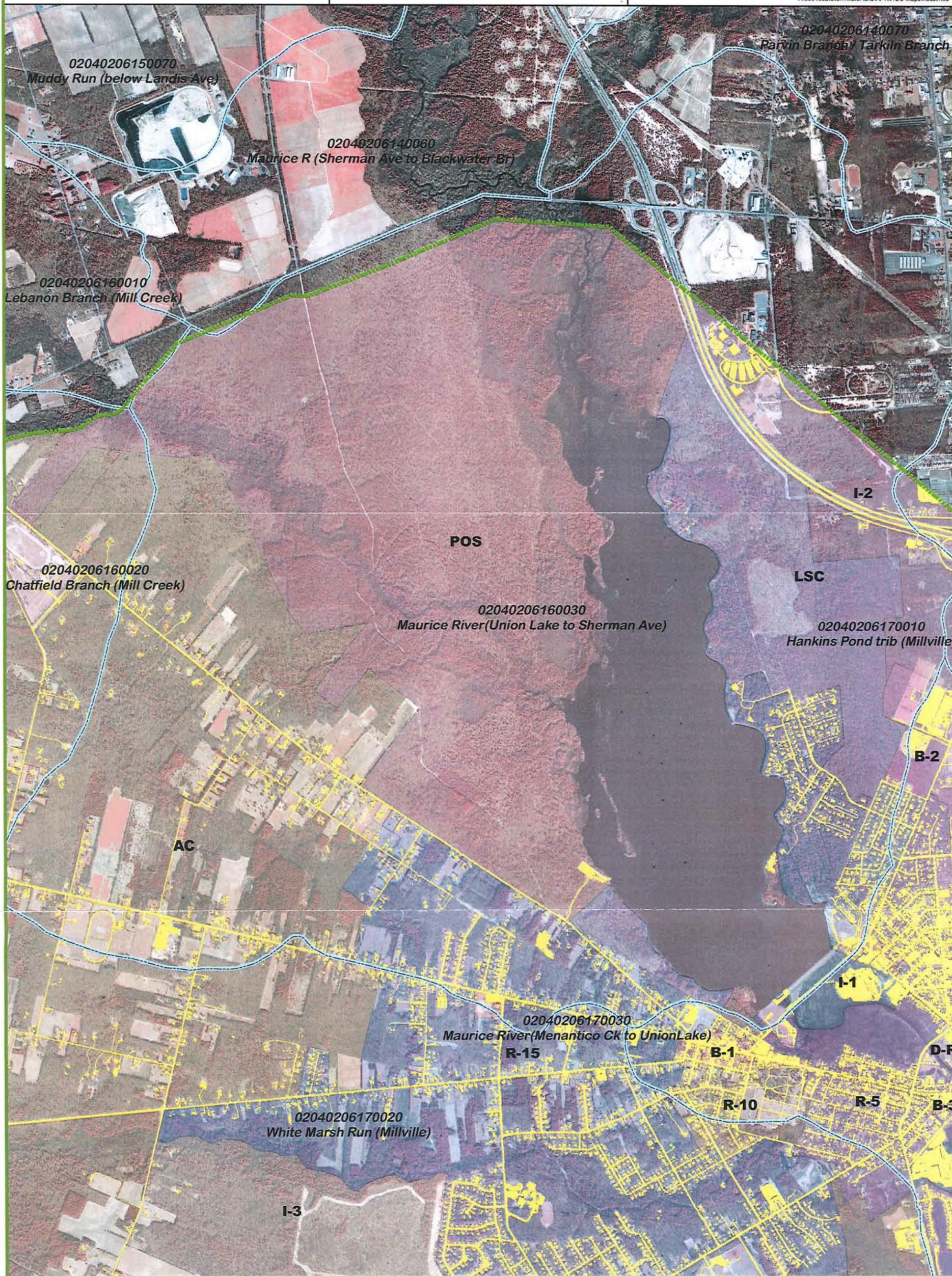
Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

Note: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

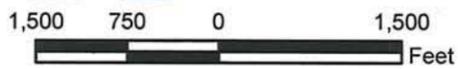
ARH Project # 50-51832

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**Legend**

-  Millville Municipal Boundary
  -  Huc14 Watersheds (as mapped by NJDEP)
  -  Mapped Impervious Cover
- Millville Zoning**
- |   |   |  |  |
|---|---|--|--|
|  B-1 |  B-5 |  LC   |  R-20 |
|  B-2 |  D-R |  LSC  |  R-5  |
|  B-3 |  I-1 |  R-10 |  RC   |
|  B-4 |  I-2 |  R-15 |  |



# Municipal Stormwater Management Plan

## Figure No. 14-E

### HUC# 02040206170010

## HUC14 DRAINAGE AREAS



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**County - Cumberland**  
**Township - Millville**

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

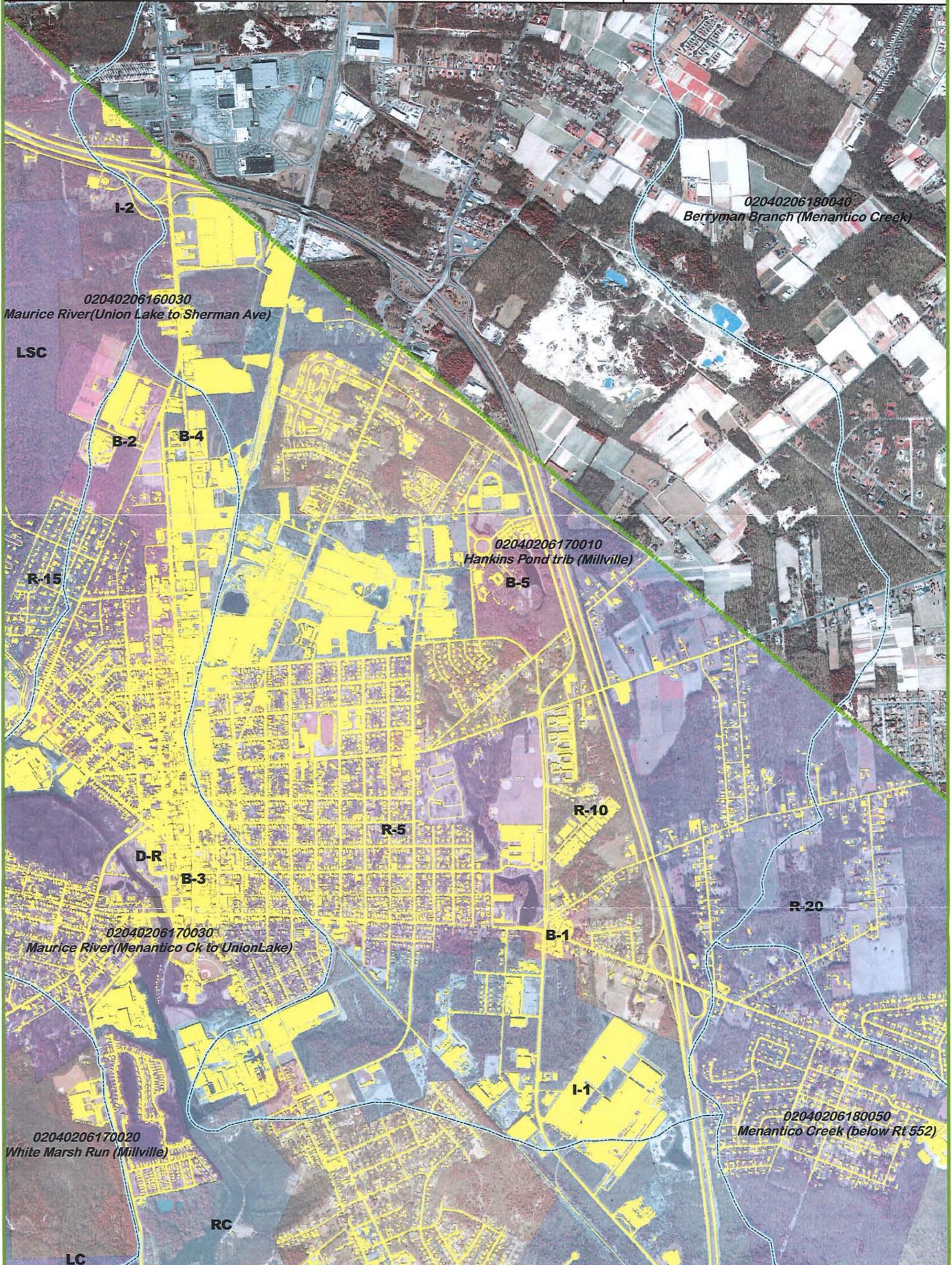
**Dated: 4/4/06**  
**Drawn by: SEB**

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

**ARH Project # 50-51832**

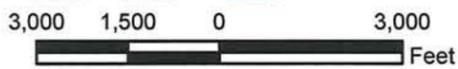
**Note:**  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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**Legend**

-  Millville Municipal Boundary
  -  Huc14 Watersheds (as mapped by NJDEP)
  -  Mapped Impervious Cover
- Millville Zoning**
- |   |   |   |  |
|---|---|---|--|
|  AC  |  B-4 |  I-3 |  R-10 |
|  B-1 |  D-R |  LC  |  R-15 |
|  B-2 |  I-1 |  LSC |  R-5  |
|  B-3 |  I-2 |  POS |  RC   |

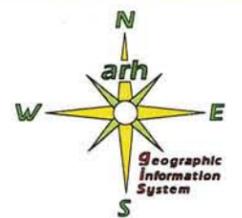


# Municipal Stormwater Management Plan

## Figure No. 14-F

### HUC# 02040206170020

## HUC14 DRAINAGE AREAS



**County - Cumberland**  
**Township - Millville**

**Dated: 4/4/06**  
**Drawn by: SEB**

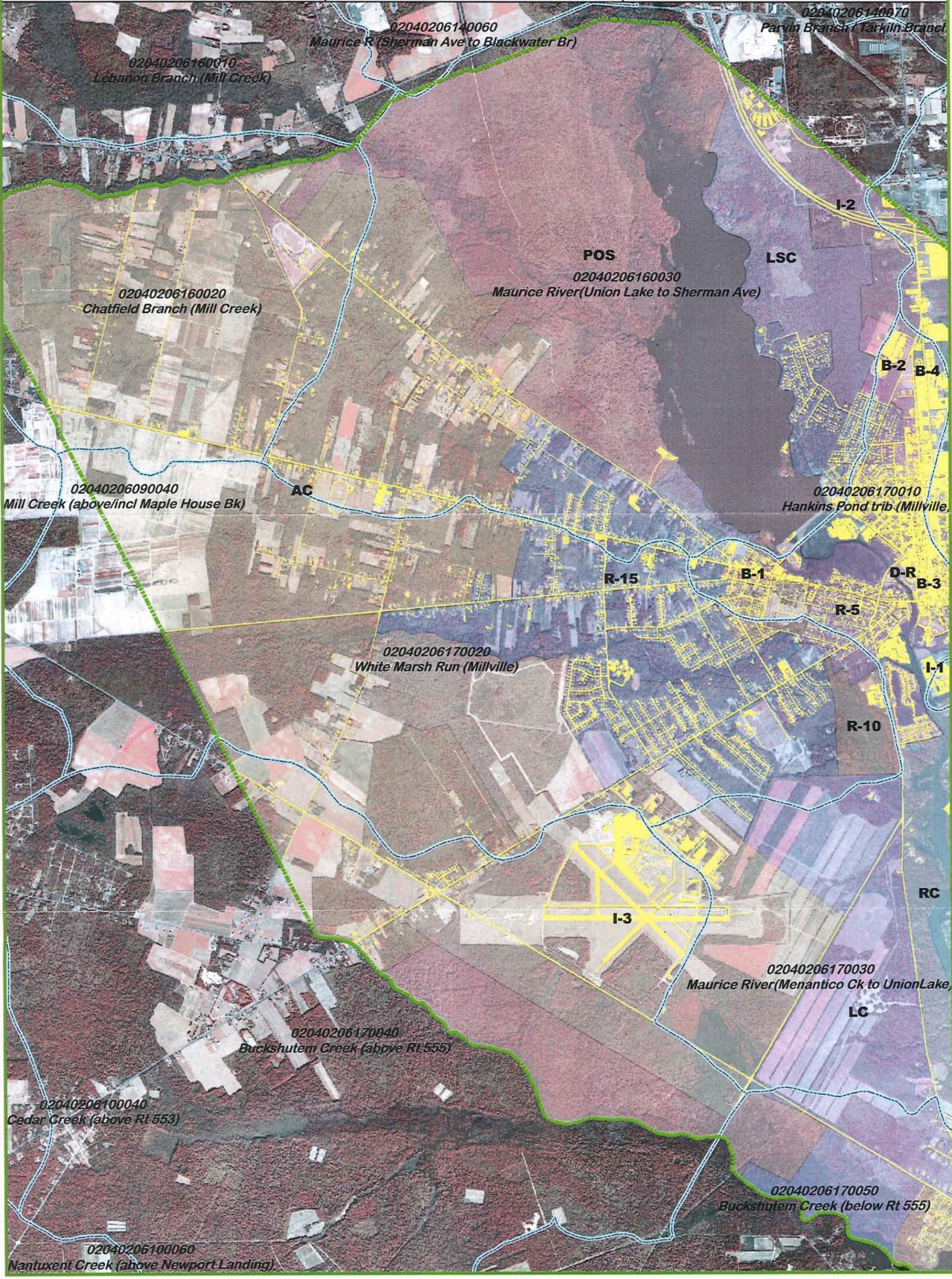
Quadrangles  
 Millville, NJ # 153  
 Five Points, NJ #154

Dividing Creek, NJ #163  
 Port Elizabeth, NJ #164

**ARH Project # 50-51832**

Note: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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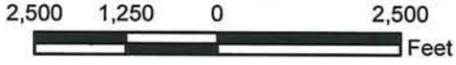


**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

- |   |   |   |  |  |
|---|---|---|--|--|
|  B-1 |  B-5 |  I-3 |  R-10 |  R-MH |
|  B-2 |  D-R |  LC  |  R-15 |  RC   |
|  B-3 |  I-1 |  LSC |  R-20 |  |
|  B-4 |  I-2 |  POS |  R-5  |  |

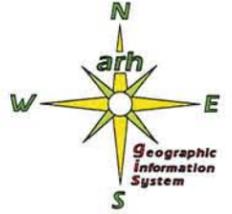


# Municipal Stormwater Management Plan

Figure No. 14-G  
HUC# 02040206170030  
**HUC14 DRAINAGE AREAS**



**Civil Solutions**  
a division of *arh*



County - Cumberland  
Township - Millville

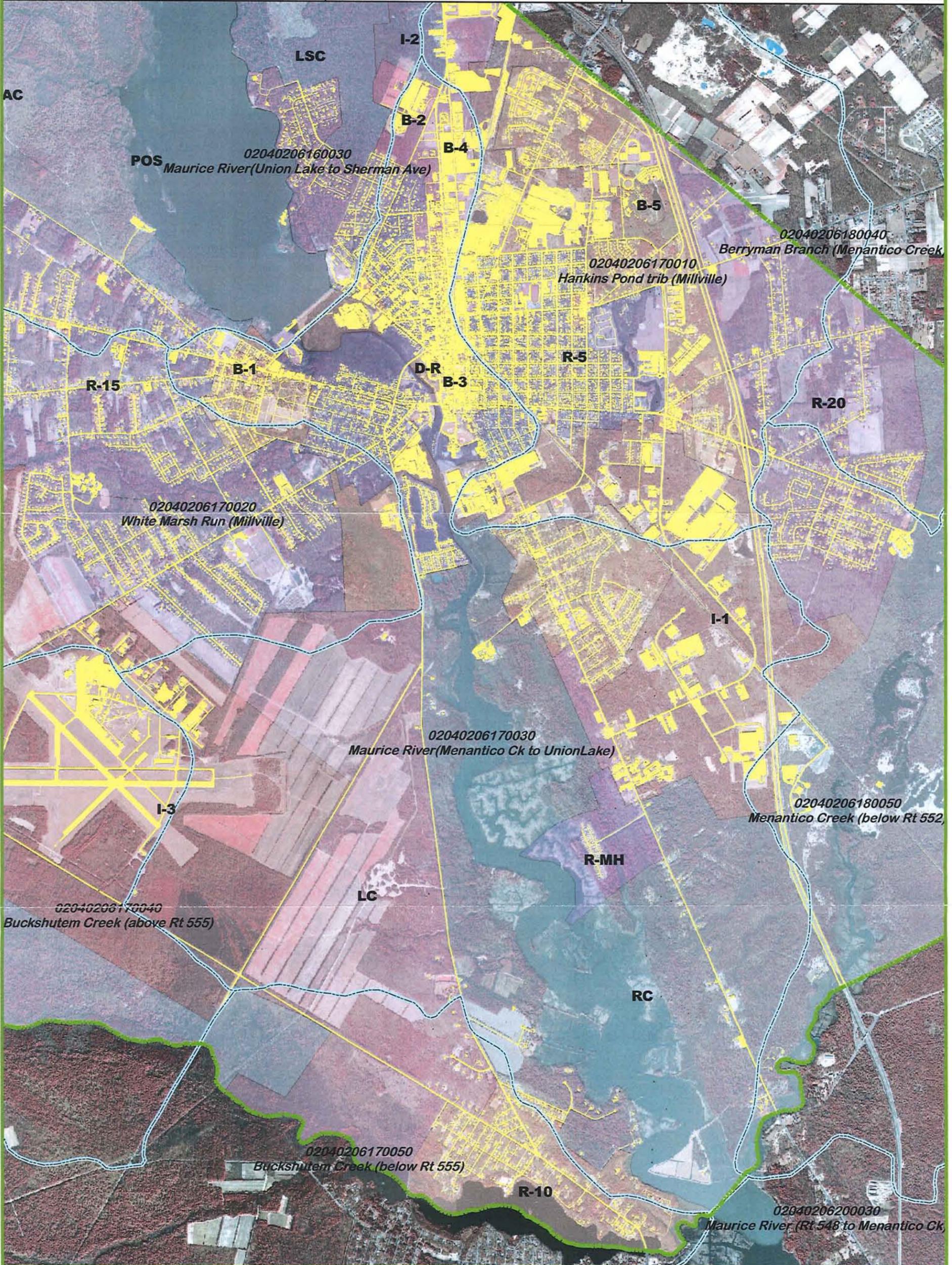
Dated: 4/4/06  
Drawn by: SEB

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

Note: ARH Project # 50-51832  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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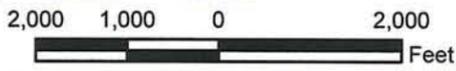


**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

- |   |   |  |
|---|---|--|
|  AC  |  LC  |  R-10 |
|  I-3 |  POS |  R-15 |

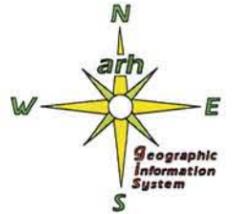


# Municipal Stormwater Management Plan

## Figure No. 14-H

### HUC# 02040206170040

## HUC14 DRAINAGE AREAS



County - Cumberland  
Township - Millville

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dated: 4/4/06  
Drawn by: SEB

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

ARH Project # 50-51832

Note:  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

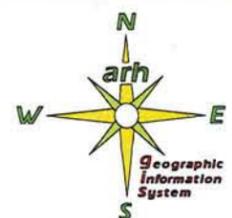
- |   |   |  |  |
|---|---|--|--|
|  B-4 |  LC  |  R-10 |  RC |
|  I-1 |  POS |  R-MH |  |



**Municipal Stormwater  
Management Plan  
Figure No. 14-I  
HUC# 02040206170050  
HUC14 DRAINAGE AREAS**



**Civil Solutions**  
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**County - Cumberland  
Township - Millville**

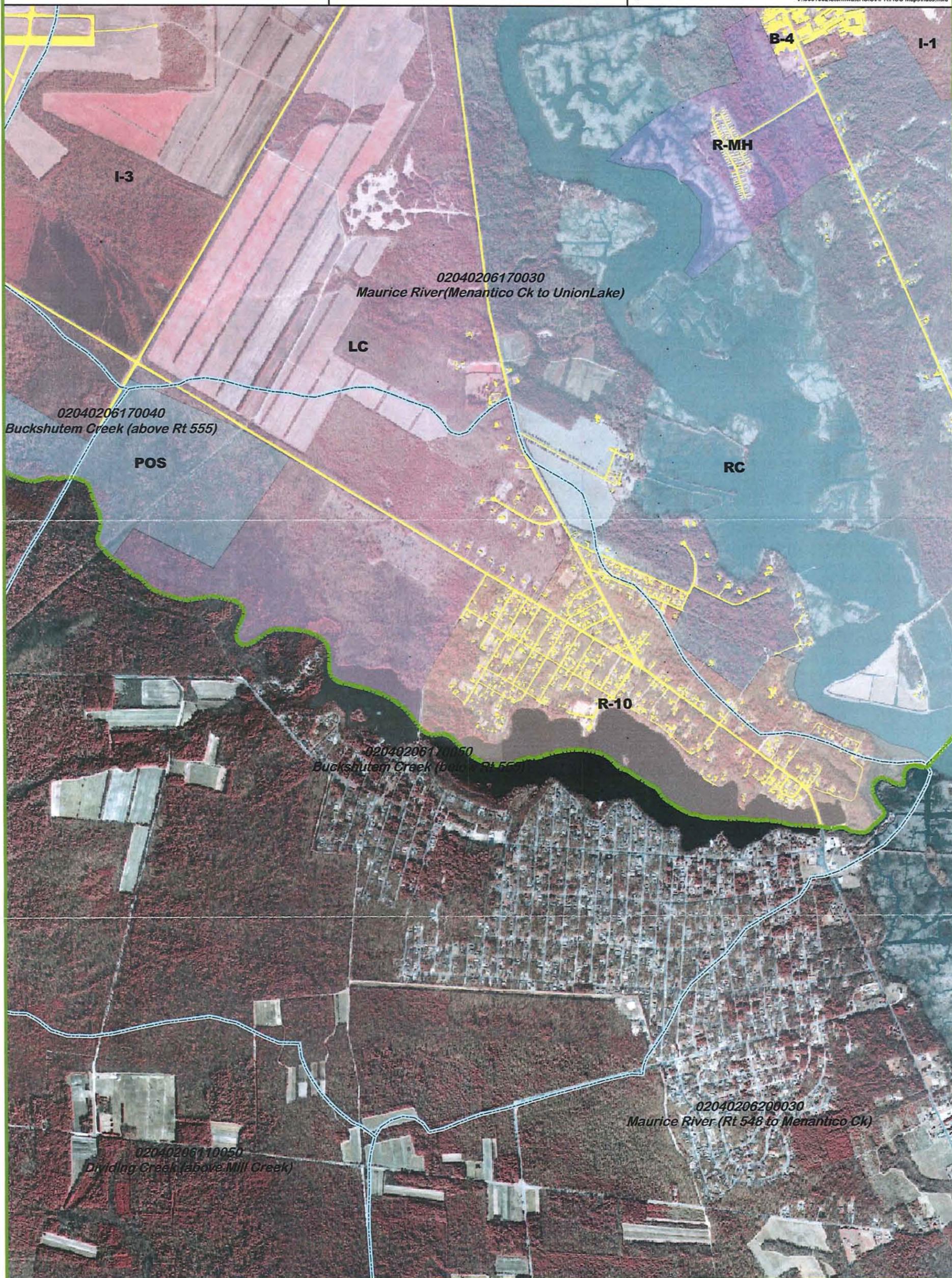
Quadrangles  
Millville, NJ #153  
Five Points, NJ #154

**Dated: 4/4/06  
Drawn by: SEB**

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

**ARH Project # 50-51832**  
Note: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

-  I-1
-  R-10
-  RC
-  LC
-  R-20



**Municipal Stormwater  
Management Plan  
Figure No. 14-J  
HUC# 02040206180040  
HUC14 DRAINAGE AREAS**



County - Cumberland  
Township - Millville

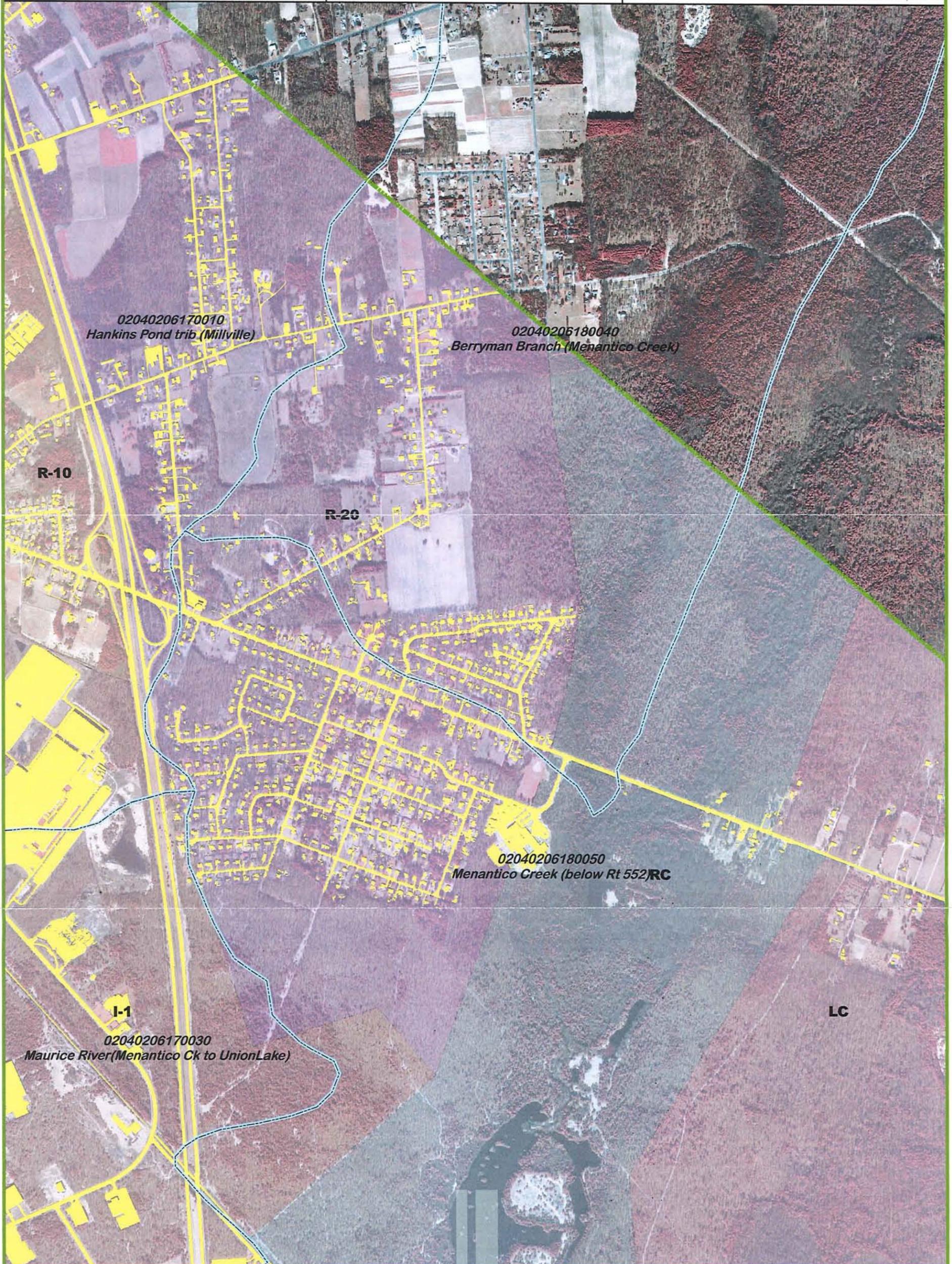
Dated: 4/4/06  
Drawn by: SEB

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

Note: ARH Project # 50-51832  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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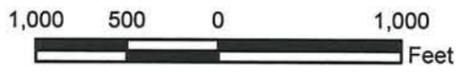


**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

-  LC



**Municipal Stormwater  
Management Plan**  
Figure No. 14-K  
HUC# 02040206180050  
**HUC14 DRAINAGE AREAS**



**Civil Solutions**  
a division of *arh*



County - Cumberland  
Township - Millville

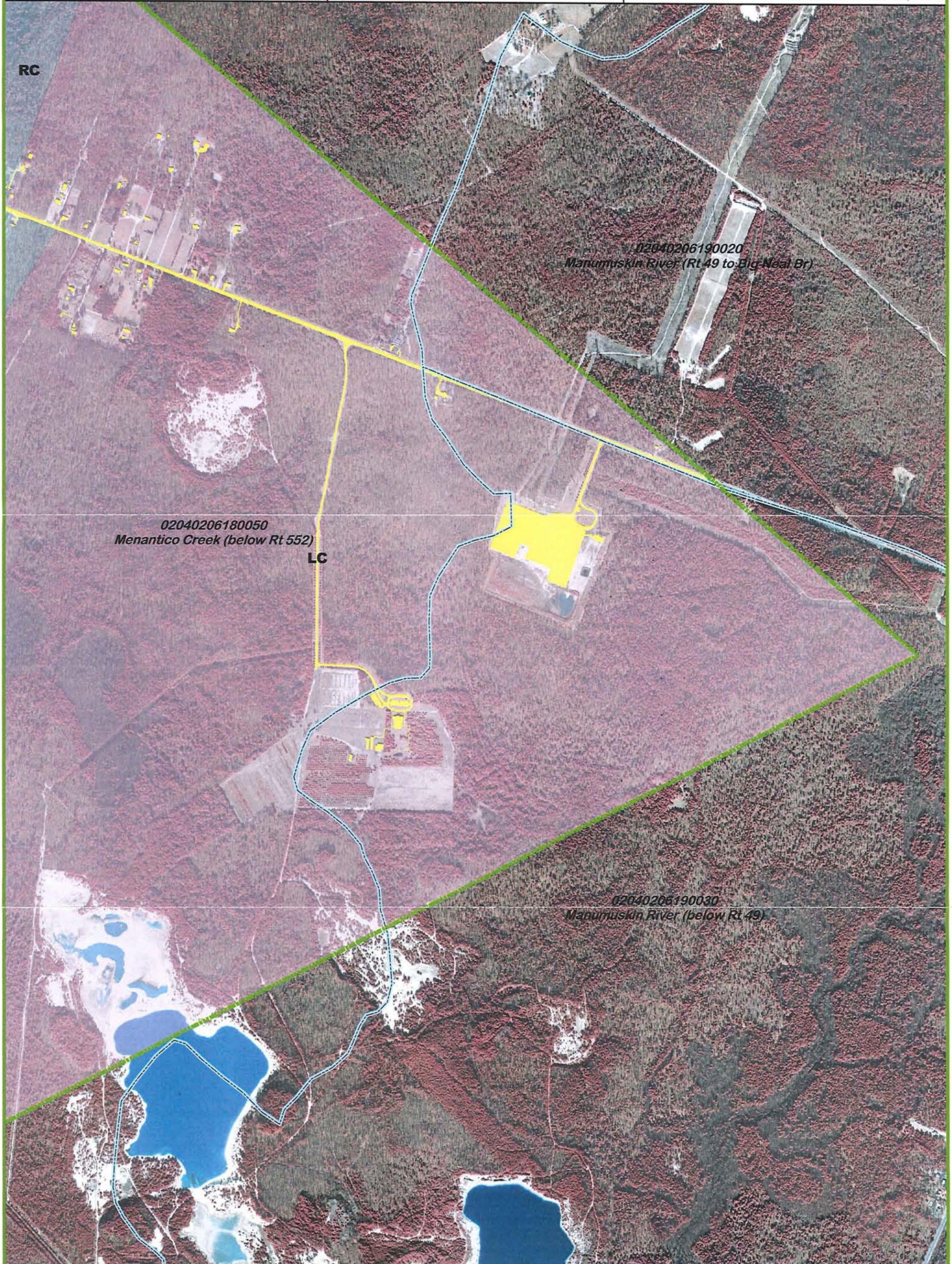
Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dated: 4/4/06  
Drawn by: SEB

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

ARH Project # 50-51832  
Note: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

V:\5051832\Stormwater\GIS\APR\HUC Maps\hucs.mxd



**Legend**

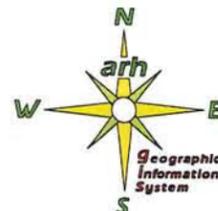
-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

-  LC



**Municipal Stormwater Management Plan**  
**Figure No. 14-L**  
**HUC# 02040206190020**  
**HUC14 DRAINAGE AREAS**



County - Cumberland  
Township - Millville

Dated: 4/4/06  
Drawn by: SEB

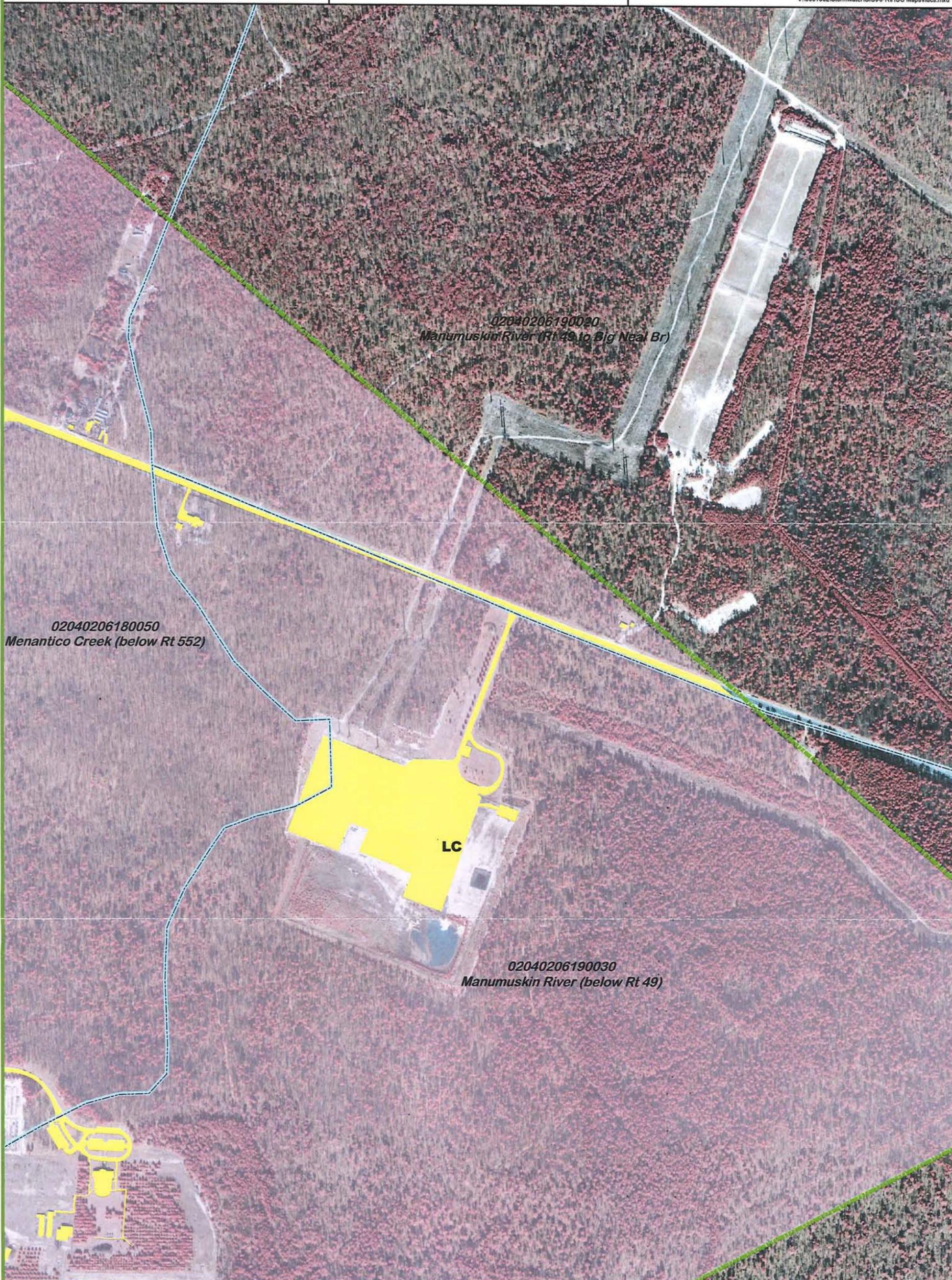
Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

Note: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

ARH Project # 50-51832

V:\5051832\Stormwater\GIS\APRHUC Maps\hucs.mxd



**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

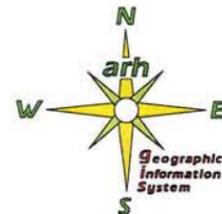
-  LC



**Municipal Stormwater  
Management Plan**  
Figure No. 14-M  
HUC# 02040206190030  
**HUC14 DRAINAGE AREAS**



**Civil Solutions**  
a division of *arh*



County - Cumberland  
Township - Millville

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

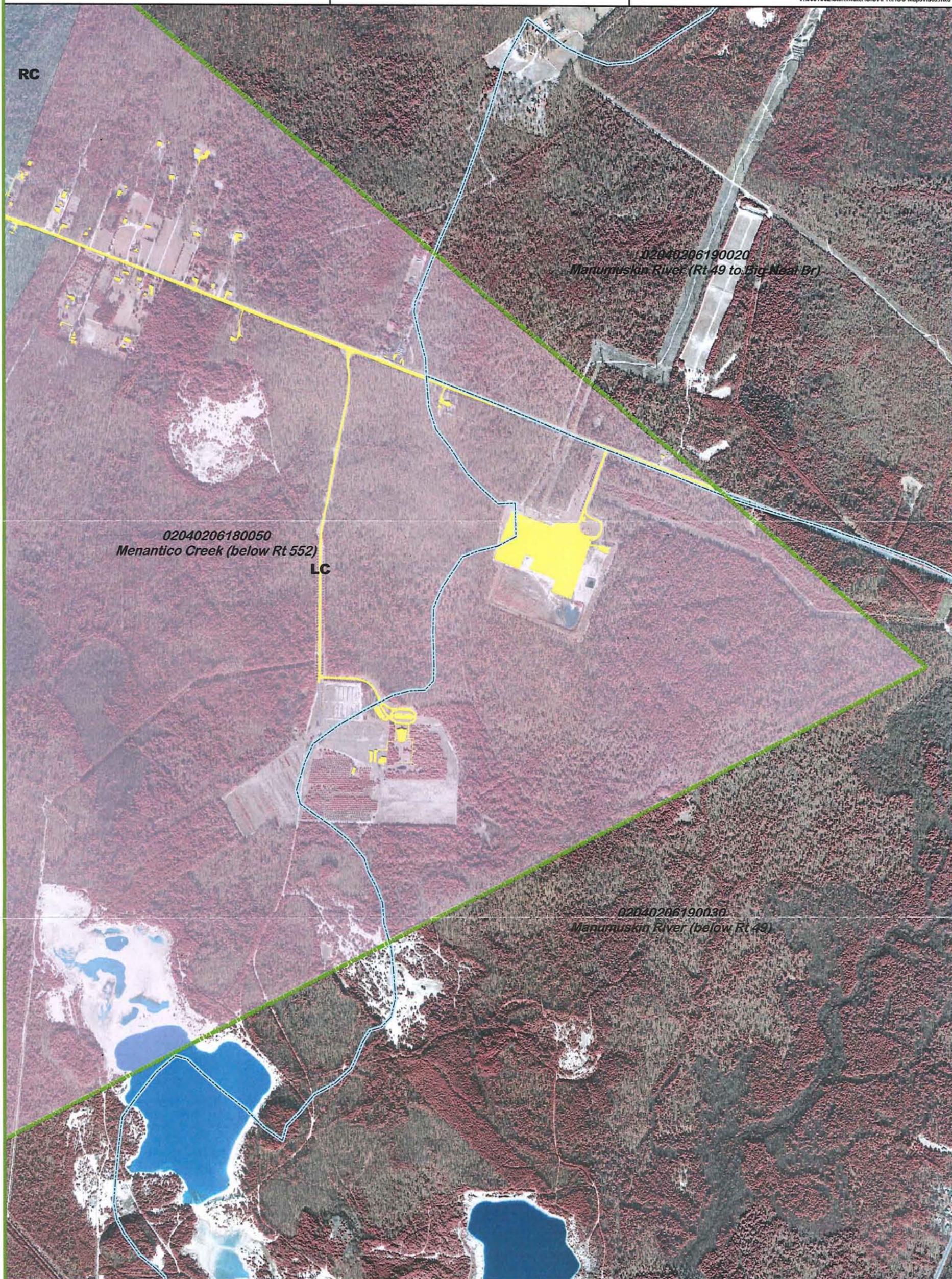
Dated: 4/4/06  
Drawn by: SEB

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

ARH Project # 50-51832

Note:  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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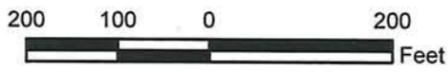


**Legend**

-  Millville Municipal Boundary
-  Huc14 Watersheds (as mapped by NJDEP)
-  Mapped Impervious Cover

**Millville Zoning**

-  R-10
-  RC



**Municipal Stormwater  
Management Plan**  
Figure No. 14-N  
HUC# 02040206200030  
**HUC14 DRAINAGE AREAS**



County - Cumberland  
Township - Millville

Quadrangles  
Millville, NJ # 153  
Five Points, NJ #154

Dated: 4/4/06  
Drawn by: SEB

Dividing Creek, NJ #163  
Port Elizabeth, NJ #164

ARH Project # 50-51832

Note:  
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

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## ATTACHMENTS

**Land Use / Buildout Analysis**  
**City of Millville**  
**HUC14s Summary**

<u>No.</u>	<u>HUC14 ID</u>	<u>HUC14 Watershed Name</u>	<u>HUC14 Sub-Watershed Name</u>	<u>Area (sf)</u>	<u>Area (acres)</u>	<u>Area (sq. miles)</u>
Manamuskin River:						
1	02040206190020	Manamuskin River	Manamuskin River (Rt 49 to Big Neal Br)	2,206,475	50.7	0.079
2	02040206190030	Manamuskin River	Manamuskin River (below Rt 49)	18,457,906	423.7	0.662
				20,664,381	474.4	0.741
Maurice River:						
1	02040206140060	Maurice River (above Sherman Ave Bridge)	Maurice R (Sherman Ave to Blackwater Br)	112,131	2.6	0.004
2	02040206160010	Maurice River (Union Lk to Sherman Ave)	Lebanon Branch (Mill Creek)	86,002	2.0	0.003
3	02040206160020	Maurice River (Union Lk to Sherman Ave)	Chatfield Branch (Mill Creek)	95,259,388	2,186.9	3.417
4	02040206160030	Maurice River (Union Lk to Sherman Ave)	Maurice River(Union Lake to Sherman Ave)	256,266,717	5,883.1	9.192
5	02040206170010	Maurice River (Menantico Ck to Union Lk)	Hankins Pond trib (Millville)	102,557,357	2,354.4	3.679
6	02040206170020	Maurice River (Menantico Ck to Union Lk)	White Marsh Run (Millville)	205,320,875	4,713.5	7.365
7	02040206170030	Maurice River (Menantico Ck to Union Lk)	Maurice River(Menantico Ck to UnionLake)	271,662,787	6,236.5	9.745
8	02040206170040	Maurice River (Menantico Ck to Union Lk)	Buckshutem Creek (above Rt 555)	97,567,667	2,239.8	3.500
9	02040206170050	Maurice River (Menantico Ck to Union Lk)	Buckshutem Creek (below Rt 555)	43,317,817	994.4	1.554
10	02040206200030	Maurice River (below Menantico Creek)	Maurice River (Rt 548 to Menantico Ck)	9,530	0.2	0.000
				1,072,160,271	24,613.4	38.458

**Land Use / Buildout Analysis**  
**City of Millville**  
**Zoning Information**

Source: Municipal Zoning Map

<u>No.</u>	<u>Land Zoning ID</u>	<u>Zone</u>	<u>NJDEP Land Cover</u>	<u>Maximum Lot Cover (%)</u>	<u>Comments</u>
<b>Millville City:</b>					
1	AC	Agricultural Conservation District	A	20%	Max Coverage For Agriculture
2	I-3	Air Park Industry District	UM	60%	Max Coverage, Primary Uses
3	B-3	Central Business District	C	100%	Max Coverage
4	D-R	Downtown Riverfront	U	90%	Max Coverage For Primary Uses
5	DR	Downtown Riverfront District	U	90%	Max Coverage
6	B-4	General Business District	C	75%	Max Coverage Averaged
7	I-1	General Industry District	I	65%	Max Coverage Averaged
8	I-2	Interchange Mixed Use District	UM	75%	Max Coverage
9	LSC	Lakeshore Conservation District	RR	10%	Max Coverage For Residential, Clusters
10	LC	Land Conservation District	F	20%	Max Coverage For Primary Use, Residential Use Minimal
11	B-1	Neighborhood Business District	C	80%	Max Coverage Averaged
12	B-2	Professional Services District	C	80%	Max Coverage
13	POS	Public Open Space District	F	10%	Assigned Based On Assumed Uses, Recreation
14	R-10	Residential District	RHD	30%	Max Coverage For Residential
15	R-15	Residential District	RMD	40%	Max Coverage For Residential
16	R-20	Residential District	RMD	30%	Max Coverage For Residential
17	R-5	Residential District	RHD	45%	Max Coverage For Residential

***Land Use / Buildout Analysis***  
***City of Millville***  
***Land Use Information***

Source: NJDEP 2000 Land Use Data

<u>No.</u>	<u>Land Zoning ID</u>	<u>Zone</u>	<u>NJDEP Land Cover</u>	<u>Comments</u>
1	2140	Agricultural Wetlands (Modified)	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
2	10000	Agriculture	A	Civil Solutions chose to associate with NJDEP 'Agriculture' land cover description.
3	10010	Agriculture:Agricultural Bog	A	Civil Solutions chose to associate with NJDEP 'Agriculture' land cover description.
4	7400	Altered Lands	BL	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
5	5300	Artificial Lakes	W	Civil Solutions chose to associate with NJDEP 'Water' land cover description.
6	1804	Athletic Fields (Schools)	TA	Civil Solutions chose to associate with NJDEP 'Transitional Areas' land cover description.
7	6221	Atlantic White Cedar Swamp	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
8	06000	Commercial	C	Civil Solutions chose to associate with NJDEP 'Commercial' land cover description.
9	1200	Commercial/Services	C	Civil Solutions chose to associate with NJDEP 'Commercial' land cover description.
10	07000	Community Services	U	Civil Solutions chose to associate with NJDEP 'Urban' land cover description.
11	4430	Coniferous Brush/Shrubland	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.
12	4220	Coniferous Forest (>50% Crown Closure)	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.
13	4210	Coniferous Forest (10-50% Crown Closure)	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.
14	6232	Coniferous Scrub/Shrub Wetlands	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
15	6220	Coniferous Wooded Wetlands	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
16	2100	Cropland and Pastureland	A	Civil Solutions chose to associate with NJDEP 'Agriculture' land cover description.
17	4420	Deciduous Brush/Shrubland	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.

***Land Use / Buildout Analysis***  
***City of Millville***  
***Land Use Information***

Source: NJDEP 2000 Land Use Data

<u>No.</u>	<u>Land Zoning ID</u>	<u>Zone</u>	<u>NJDEP Land Cover</u>	<u>Comments</u>
35	4312	Mixed Forest (>50% Coniferous with >50%	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.
36	4311	Mixed Forest (>50% Coniferous with 10%-50	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.
37	4322	Mixed Forest (>50% Deciduous with >50% C	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.
38	4321	Mixed Forest (>50% Deciduous with 10-50%	F	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
39	6252	Mixed Forested Wetlands (Coniferous Dom.)	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
40	6251	Mixed Forested Wetlands (Deciduous Dom.)	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
41	6234	Mixed Scrub/Shrub Wetlands (Coniferous Do	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
42	6233	Mixed Scrub/Shrub Wetlands (Deciduous Do	WT	Civil Solutions chose to associate with NJDEP 'Wetlands and Wetland Buffers' land cover d
43	1600	Mixed Urban or Built-Up Land	UM	Civil Solutions chose to associate with NJDEP 'Mixed Urban' land cover description.
44	5200	Natural Lakes	W	Civil Solutions chose to associate with NJDEP 'Water' land cover description.
45	4410	Old Field (< 25% Brush Covered)	BL	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
46	2200	Orchards/Vineyards/Nurseries/Horticultural	A	Civil Solutions chose to associate with NJDEP 'Agriculture' land cover description.
47	2400	Other Agriculture	A	Civil Solutions chose to associate with NJDEP 'Agriculture' land cover description.
48	1700	Other Urban or Built-Up Land	UO	Civil Solutions chose to associate with NJDEP 'Other Urban' land cover description.
49	06009	Parking:Commercial	C	Civil Solutions chose to associate with NJDEP 'Commercial' land cover description.
50	07009	Parking:Community Services	UO	Civil Solutions chose to associate with NJDEP 'Other Urban' land cover description.
51	03019	Parking:Heavy Manufacturing	I	Civil Solutions chose to associate with NJDEP 'Industrial' land cover description.

**Land Use / Buildout Analysis**  
**City of Millville**  
**Land Use Information**

Source: NJDEP 2000 Land Use Data

<u>No.</u>	<u>Land Zoning ID</u>	<u>Zone</u>	<u>NJDEP Land Cover</u>	<u>Comments</u>
69	01000	Residential:Single-Family Detached	RLD	Civil Solutions chose to associate with NJDEP 'Low Density Residential' land cover descrip
70	6110	Saline Marshes	W	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
71	5100	Streams and Canals	W	Civil Solutions chose to associate with NJDEP 'Water' land cover description.
72	5410	Tidal Rivers, Inland Bays, and other Tidal W	W	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
73	7500	Transitional Areas	TA	Civil Solutions chose to associate with NJDEP 'Transitional Areas' land cover description.
74	04000	Transportation	UO	Civil Solutions chose to associate with NJDEP 'Other Urban' land cover description.
75	1400	Transportation/Communications/Utilities	UO	Civil Solutions chose to associate with NJDEP 'Other Urban' land cover description.
76	7600	Undifferentiated Barren Lands	BL	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
77	05000	Utility	UM	Civil Solutions chose to associate with NJDEP 'Mixed Urban' land cover description.
78	12010	Vacant	BL	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
79	13000	Water	W	Civil Solutions chose to associate with NJDEP 'Water' land cover description.
80	1461	Wetlands Rights-of-Way (Modified)	TA	Civil Solutions chose to associate with NJDEP 'Barren Land' land cover description.
81	12000	Wooded	F	Civil Solutions chose to associate with NJDEP 'Forest' land cover description.

**Land Use / Buildout Analysis (Existing Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Manamuskin River:</b>																		
<b>HUC14 #02040206190020</b>																		
Manamuskin River (Rt 49 to Big Neal Br)																		
Manamuskin River																		
Total HUC Area: 50.56 acres																		
													<b>Existing Conditions</b>					
1	Transportation/Communications/Ut	2.53	5.9%	0.15	0.00	0.00	0.00	2.53	0%	0.00	0.0%	Other Urban	1	2.5	10	25.3	120	304
2	Deciduous Forest (>50% Crown Clo	34.76	2.2%	0.76	0.00	0.00	0.00	34.76	0%	0.00	0.0%	Forest	0.1	3.5	3	104.3	40	1,390
3	Mixed Forest (>50% Deciduous. Wit	12.37	6.8%	0.84	0.00	0.00	0.00	12.37	0%	0.00	0.0%	Forest	0.1	1.2	3	37.1	40	495
4	Altered Lands (7400)	0.91	0.0%	0.00	0.00	0.00	0.00	0.91	0%	0.00	9999.9%	Barren Land	0.5	0.5	5	4.5	60	54
HUC Subtotals (4 items):		50.56	3.5%	1.75	0.00	0.00	0.00	50.56		0.00	0.0%			7.7		171.2		2,243
<b>HUC14 #02040206190030</b>																		
Manamuskin River (below Rt 49)																		
Manamuskin River																		
Total HUC Area: 423.74 acres																		
													<b>Existing Conditions</b>					
	Residential, Rural, Single Unit (114	1.47	20.2%	0.30	0.00	0.00	0.00	1.47	0%	0.00	0.0%	Rural Residential	0.6	0.9	5	7.4	100	147
	Commercial/Services (1200)	3.39	41.1%	1.39	0.00	0.00	0.00	3.39	0%	0.00	0.0%	Commercial	2.1	7.1	22	74.5	200	677
3	Transportation/Communications/Ut	58.10	21.5%	12.47	0.00	0.00	0.00	58.10	0%	0.00	0.0%	Other Urban	1	58.1	10	581.0	120	6,972
4	Other Urban Or Built-Up Land (170	1.51	0.0%	0.00	0.00	0.00	0.00	1.51	0%	0.00	9999.9%	Other Urban	1	1.5	10	15.1	120	182
5	Cropland And Pastureland (2100)	14.68	0.0%	0.01	0.00	0.00	0.00	14.68	0%	0.00	0.0%	Agriculture	1.3	19.1	10	146.8	300	4,404
6	Orchards/Vineyards/Nurseries/Horti	19.31	0.3%	0.05	0.00	0.00	0.00	19.31	0%	0.00	0.0%	Agriculture	1.3	25.1	10	193.1	300	5,794
7	Other Agriculture (2400)	1.70	21.0%	0.36	0.00	0.00	0.00	1.70	0%	0.00	0.0%	Agriculture	1.3	2.2	10	17.0	300	511
8	Deciduous Forest (>50% Crown Clo	45.05	2.3%	1.06	0.00	0.00	0.00	45.05	0%	0.00	0.0%	Forest	0.1	4.5	3	135.2	40	1,802
9	Coniferous Forest (>50% Crown Cl	91.05	0.1%	0.05	0.00	0.00	0.00	91.05	0%	0.00	0.0%	Forest	0.1	9.1	3	273.1	40	3,642
10	Mixed Forest (>50% Coniferous Wi	90.77	0.0%	0.02	0.00	0.00	0.00	90.77	0%	0.00	0.0%	Forest	0.1	9.1	3	272.3	40	3,631
11	Mixed Forest (>50% Deciduous Wit	80.91	0.1%	0.06	0.00	0.00	0.00	80.91	0%	0.00	0.0%	Forest	0.1	8.1	3	242.7	40	3,236
12	Coniferous Brush/Shrubland (4430)	3.13	1.2%	0.04	0.00	0.00	0.00	3.13	0%	0.00	0.0%	Forest	0.1	0.3	3	9.4	40	125
13	Mixed Deciduous/Coniferous Brush	2.12	0.0%	0.00	0.00	0.00	0.00	2.12	0%	0.00	9999.9%	Forest	0.1	0.2	3	6.4	40	85
14	Natural Lakes (5200)	0.97	0.0%	0.00	0.00	0.00	0.00	0.97	0%	0.00	9999.9%	Water	0.1	0.1	3	2.9	40	39
15	Coniferous Wooded Wetlands (6220	6.58	0.0%	0.00	6.58	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
16	Herbaceous Wetlands (6240)	2.36	0.0%	0.00	2.36	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
17	Extractive Mining (7300)	0.64	0.0%	0.00	0.00	0.00	0.00	0.64	0%	0.00	9999.9%	Industrial	1.5	1.0	16	10.2	200	127
HUC Subtotals (17 items):		423.74	3.7%	15.79	8.93	0.00	0.00	414.80		0.00	0.0%			146.4		1,987.1		31,374

**Land Use / Buildout Analysis (Existing Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206140060</b>																		
Maurice R (Sherman Ave to Blackwater Br)																		
Maurice River (above Sherman Ave Bridge)																		
Total HUC Area: 2.57 acres																		
													<b>Existing Conditions</b>					
1	Deciduous Forest (>50% Crown Clo	0.95	0.0%	0.00	0.00	0.95	0.00	0.00	0%	0.00	0.0%	Forest	0.1	0.0	3	0.0	40	0
2	Coniferous Forest (>50% Crown Cl	0.39	0.0%	0.00	0.00	0.39	0.00	0.00	0%	0.00	0.0%	Forest	0.1	0.0	3	0.0	40	0
3	Mixed Forest (>50% Deciduous Wit	1.23	0.0%	0.00	0.00	1.23	0.00	0.00	0%	0.00	0.0%	Forest	0.1	0.0	3	0.0	40	0
HUC Subtotals (3 items):		2.57	0.0%	0.00	0.00	2.57	0.00	0.00		0.00	0.0%			0.0		0.0		0
<b>HUC14 #02040206160010</b>																		
Lebanon Branch (Mill Creek)																		
Maurice River (Union Lk to Sherman Ave)																		
Total HUC Area: 1.90 acres																		
													<b>Existing Conditions</b>					
1	Deciduous Forest (>50% Crown Clo	1.43	0.0%	0.00	0.00	1.43	0.00	0.00	0%	0.00	9999.9%	Forest	0.1	0.0	3	0.0	40	0
	Deciduous Wooded Wetlands (6210	0.47	0.0%	0.00	0.47	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
HUC Subtotals (2 items):		1.90	0.0%	0.00	0.47	1.43	0.00	0.00		0.00	0.0%			0.0		0.0		0
<b>HUC14 #02040206160020</b>																		
Chatfield Branch (Mill Creek)																		
Maurice River (Union Lk to Sherman Ave)																		
Total HUC Area: 2,186.85 acres																		
													<b>Existing Conditions</b>					
1	Residential, Single Unit, Low Densi	37.18	12.6%	4.67	0.00	0.00	0.00	37.18	0%	0.00	0.0%	Low Density Residential	0.6	22.3	5	185.9	100	3,718
2	Residential, Rural, Single Unit (114	154.61	9.8%	15.22	0.98	4.15	0.00	149.48	0%	0.00	0.0%	Rural Residential	0.6	89.7	5	747.4	100	14,948
3	Commercial/Services (1200)	3.39	24.3%	0.82	0.00	0.00	0.00	3.39	0%	0.00	0.0%	Commercial	2.1	7.1	22	74.6	200	678
4	Transportation/Communications/Ut	0.94	32.2%	0.30	0.00	0.00	0.00	0.94	0%	0.00	0.0%	Other Urban	1	0.9	10	9.4	120	113
5	Other Urban Or Built-Up Land (170	7.31	5.9%	0.43	0.00	0.00	0.00	7.31	0%	0.00	0.0%	Other Urban	1	7.3	10	73.1	120	877
6	Recreational Land (1800)	65.21	6.6%	4.31	0.00	0.00	0.00	65.21	0%	0.00	0.0%	Transitional Areas	0.5	32.6	5	326.1	60	3,913
7	Cropland And Pastureland (2100)	421.90	1.4%	5.80	0.00	3.51	0.00	418.39	0%	0.00	0.0%	Agriculture	1.3	543.9	10	4,183.9	300	125,518
8	Agricultural Wetlands (Modified) (2	59.39	0.0%	0.00	59.39	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
9	Orchards/Vineyards/Nurseries/Horti	283.37	1.3%	3.78	0.00	0.00	0.00	283.37	0%	0.00	0.0%	Agriculture	1.3	368.4	10	2,833.7	300	85,010
10	Other Agriculture (2400)	34.76	7.9%	2.76	0.00	0.00	0.00	34.76	0%	0.00	0.0%	Agriculture	1.3	45.2	10	347.6	300	10,429
11	Deciduous Forest (10-50% Crown C	4.81	0.0%	0.00	2.90	0.00	0.00	1.91	0%	0.00	9999.9%	Forest	0.1	0.2	3	5.7	40	77
	Deciduous Forest (>50% Crown Clo	635.36	1.3%	8.23	1.24	100.59	0.00	533.52	0%	0.00	0.0%	Forest	0.1	53.4	3	1,600.6	40	21,341
13	Coniferous Forest (10-50% Crown	3.67	0.0%	0.00	0.00	0.00	0.00	3.67	0%	0.00	9999.9%	Forest	0.1	0.4	3	11.0	40	147
14	Coniferous Forest (>50% Crown Cl	17.38	2.1%	0.37	0.00	2.47	0.00	14.91	0%	0.00	0.0%	Forest	0.1	1.5	3	44.7	40	596
15	Plantation (4230)	34.24	0.1%	0.04	0.00	0.00	0.00	34.24	0%	0.00	0.0%	Agriculture	1.3	44.5	10	342.4	300	10,272

**Land Use / Buildout Analysis (Existing Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206160030</b>																		
<b>Maurice River(Union Lake to Sherman Ave)</b>																		
<b>Maurice River (Union Lk to Sherman Ave)</b>																		
<b>Total HUC Area: 5,883.07 acres</b>																		
<b>Existing Conditions</b>																		
12	Former Agricultural Wetland (Beco	2.59	4.5%	0.12	2.59	0.00	0.00	0.00	0%	0.00	0.0%	Agriculture	1.3	0.0	10	0.0	300	0
13	Orchards/Vineyards/Nurseries/Horti	12.34	20.5%	2.53	0.00	0.00	0.00	12.34	0%	0.00	0.0%	Agriculture	1.3	16.0	10	123.4	300	3,702
14	Other Agriculture (2400)	31.26	12.4%	3.88	0.00	0.00	0.00	31.26	0%	0.00	0.0%	Agriculture	1.3	40.6	10	312.6	300	9,379
15	Deciduous Forest (10-50% Crown C	8.71	4.1%	0.36	0.00	0.00	0.00	8.71	0%	0.00	0.0%	Forest	0.1	0.9	3	26.1	40	348
16	Deciduous Forest (>50% Crown Clo	952.08	1.1%	10.04	3.48	296.31	0.00	652.28	0%	0.00	0.0%	Forest	0.1	65.2	3	1,956.8	40	26,091
17	Coniferous Forest (10-50% Crown	31.84	0.3%	0.09	0.00	13.57	0.00	18.26	0%	0.00	0.0%	Forest	0.1	1.8	3	54.8	40	731
18	Coniferous Forest (>50% Crown Cl	533.26	0.9%	4.81	6.83	65.89	0.00	460.54	0%	0.00	0.0%	Forest	0.1	46.1	3	1,381.6	40	18,421
19	Plantation (4230)	173.88	0.1%	0.09	0.00	129.45	0.00	44.43	0%	0.00	0.0%	Agriculture	1.3	57.8	10	444.3	300	13,330
20	Mixed Forest (>50% Coniferous Wi	521.33	0.2%	0.95	0.40	221.67	0.00	299.26	0%	0.00	0.0%	Forest	0.1	29.9	3	897.8	40	11,970
21	Mixed Forest (>50% Deciduous Wit	48.87	0.8%	0.38	0.40	4.15	0.00	44.32	0%	0.00	0.0%	Forest	0.1	4.4	3	133.0	40	1,773
22	Mixed Forest (>50% Deciduous Wit	611.25	0.2%	1.27	1.04	399.02	0.00	211.19	0%	0.00	0.0%	Forest	0.1	21.1	3	633.6	40	8,448
23	Old Field (< 25% Brush Covered) (	48.81	3.4%	1.67	0.00	0.00	0.00	48.81	0%	0.00	0.0%	Barren Land	0.5	24.4	5	244.1	60	2,929
24	Deciduous Brush/Shrubland (4420)	64.50	1.2%	0.78	0.00	0.00	0.00	64.50	0%	0.00	0.0%	Forest	0.1	6.4	3	193.5	40	2,580
25	Coniferous Brush/Shrubland (4430)	104.66	1.4%	1.45	0.00	46.06	0.00	58.60	0%	0.00	0.0%	Forest	0.1	5.9	3	175.8	40	2,344
26	Mixed Deciduous/Coniferous Brush	83.86	0.7%	0.61	0.00	11.12	0.00	72.74	0%	0.00	0.0%	Forest	0.1	7.3	3	218.2	40	2,909
27	Streams And Canals (5100)	22.36	0.0%	0.00	3.14	0.00	0.00	19.22	0%	0.00	9999.9%	Water	0.1	1.9	3	57.6	40	769
28	Artificial Lakes (5300)	829.16	0.0%	0.02	828.28	0.00	0.00	0.88	0%	0.00	0.0%	Water	0.1	0.1	3	2.6	40	35
29	Tidal Rivers, Inland Bays, And Oth	0.97	19.8%	0.19	0.96	0.00	0.00	0.01	0%	0.00	0.0%	Water	0.1	0.0	3	0.0	40	0
30	Deciduous Wooded Wetlands (6210	336.59	0.1%	0.25	336.59	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
31	Coniferous Wooded Wetlands (6220	55.77	0.0%	0.00	55.77	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
32	Atlantic White Cedar Swamp (6221	46.99	0.0%	0.00	46.99	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
33	Deciduous Scrub/Shrub Wetlands (6	105.41	0.1%	0.11	87.34	0.00	0.00	18.06	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	1.8	3	54.2	40	722
34	Mixed Scrub/Shrub Wetlands (Deci	5.71	0.0%	0.00	5.71	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
35	Mixed Scrub/Shrub Wetlands (Coni	4.14	0.0%	0.00	4.14	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
36	Herbaceous Wetlands (6240)	4.15	0.0%	0.00	4.15	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
37	Mixed Forested Wetlands (Deciduo	45.75	0.0%	0.00	45.75	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
38	Mixed Forested Wetlands (Conifero	253.38	0.1%	0.19	253.38	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
39	Transitional Areas (7500)	5.17	18.9%	0.98	0.00	0.00	0.00	5.17	0%	0.00	0.0%	Transitional Areas	0.5	2.6	5	25.9	60	310
40	Undifferentiated Barren Lands (760	17.33	13.0%	2.25	0.00	0.00	0.00	17.33	0%	0.00	0.0%	Barren Land	0.5	8.7	5	86.7	60	1,040

**Land Use / Buildout Analysis (Existing Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206170010</b>																		
Hankins Pond trib (Millville)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 2,354.39 acres																		
													<b>Existing Conditions</b>					
26	Deciduous Brush/Shrubland (4420)	27.97	10.5%	2.94	0.00	0.00	0.00	27.97	0%	0.00	0.0%	Forest	0.1	2.8	3	83.9	40	1,119
27	Coniferous Brush/Shrubland (4430)	28.60	12.8%	3.65	0.00	0.00	0.00	28.60	0%	0.00	0.0%	Forest	0.1	2.9	3	85.8	40	1,144
28	Mixed Deciduous/Coniferous Brush	48.99	6.5%	3.20	0.00	0.00	0.00	48.99	0%	0.00	0.0%	Forest	0.1	4.9	3	147.0	40	1,959
29	Artificial Lakes (5300)	23.16	2.1%	0.49	23.16	0.00	0.00	0.00	0%	0.00	0.0%	Water	0.1	0.0	3	0.0	40	0
30	Tidal Rivers, Inland Bays, And Oth	0.92	0.0%	0.00	0.00	0.00	0.00	0.92	0%	0.00	9999.9%	Water	0.1	0.1	3	2.8	40	37
31	Deciduous Wooded Wetlands (6210)	52.50	0.3%	0.17	52.50	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
32	Coniferous Wooded Wetlands (6220)	8.45	0.0%	0.00	8.45	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
33	Deciduous Scrub/Shrub Wetlands (6	18.09	7.9%	1.44	18.09	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
34	Mixed Scrub/Shrub Wetlands (Coni	0.80	0.0%	0.00	0.80	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
35	Herbaceous Wetlands (6240)	11.28	0.2%	0.02	11.28	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
36	Mixed Forested Wetlands (Deciduo	10.70	7.6%	0.81	10.70	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
37	Mixed Forested Wetlands (Conifero	26.94	2.0%	0.53	26.94	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
38	Extractive Mining (7300)	8.40	10.0%	0.84	0.00	0.00	0.00	8.40	0%	0.00	0.0%	Industrial	1.5	12.6	16	134.5	200	1,681
39	Altered Lands (7400)	13.26	38.1%	5.05	0.00	0.00	0.00	13.26	0%	0.00	0.0%	Barren Land	0.5	6.6	5	66.3	60	795
40	Disturbed Wetlands (Modified) (743	2.28	12.5%	0.28	1.72	0.00	0.00	0.56	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.1	3	1.7	40	22
41	Transitional Areas (7500)	7.84	13.4%	1.05	0.00	0.00	0.00	7.84	0%	0.00	0.0%	Transitional Areas	0.5	3.9	5	39.2	60	470
42	Undifferentiated Barren Lands (760	1.17	0.0%	0.00	0.00	0.00	0.00	1.17	0%	0.00	9999.9%	Barren Land	0.5	0.6	5	5.9	60	70
HUC Subtotals (42 items):		2,354.39	28.8%	677.05	188.32	0.00	0.00	2,166.08		0.00	0.0%			2,076.1		22,312.3		269,279
<b>HUC14 #02040206170020</b>																		
White Marsh Run (Millville)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 4,713.52 acres																		
													<b>Existing Conditions</b>					
1	Residential, High Density, Multiple	5.19	68.6%	3.56	0.00	0.00	0.00	5.19	0%	0.00	0.0%	High Density Residential	1.4	7.3	15	77.9	140	727
2	Residential, Single Unit, Medium D	391.06	25.1%	98.27	2.89	0.00	0.00	388.17	0%	0.00	0.0%	Medium Density Residential	1.4	543.4	15	5,822.5	140	54,344
3	Residential, Single Unit, Low Densi	153.89	20.6%	31.65	0.71	0.00	0.00	153.17	0%	0.00	0.0%	Low Density Residential	0.6	91.9	5	765.9	100	15,317
4	Residential, Rural, Single Unit (114	247.98	13.0%	32.27	0.50	1.67	0.00	245.81	0%	0.00	0.0%	Rural Residential	0.6	147.5	5	1,229.0	100	24,581
5	Commercial/Services (1200)	29.58	53.2%	15.74	2.28	0.00	0.00	27.29	0%	0.00	0.0%	Commercial	2.1	57.3	22	600.5	200	5,459
6	Industrial (1300)	11.62	41.9%	4.87	0.00	0.00	0.00	11.62	0%	0.00	0.0%	Industrial	1.5	17.4	16	186.0	200	2,325
7	Transportation/Communications/Ut	5.11	31.2%	1.59	0.00	0.00	0.00	5.11	0%	0.00	0.0%	Other Urban	1	5.1	10	51.1	120	614
8	Mixed Urban Or Built-Up Land (16	2.28	37.0%	0.84	0.00	0.00	0.00	2.28	0%	0.00	0.0%	Mixed Urban	1	2.3	10	22.8	120	273

**Land Use / Buildout Analysis (Existing Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206170020</b>																		
White Marsh Run (Millville)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 4,713.52 acres																		
													<b>Existing Conditions</b>					
39	Mixed Forested Wetlands (Conifero	198.14	0.2%	0.46	198.14	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
40	Extractive Mining (7300)	26.23	0.9%	0.24	0.00	0.00	0.00	26.23	0%	0.00	0.0%	Industrial	1.5	39.3	16	419.7	200	5,246
41	Altered Lands (7400)	3.27	0.0%	0.00	0.00	0.00	0.00	3.27	0%	0.00	9999.9%	Barren Land	0.5	1.6	5	16.3	60	196
42	Disturbed Wetlands (Modified) (743	5.72	0.0%	0.00	5.72	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
43	Transitional Areas (7500)	8.80	11.5%	1.01	0.00	0.00	0.00	8.80	0%	0.00	0.0%	Transitional Areas	0.5	4.4	5	44.0	60	528
HUC Subtotals (43 items):		4,713.52	5.2%	244.10	482.28	300.35	0.00	3,930.89		0.00	0.0%			2,342.4		24,977.3		464,573
<b>HUC14 #02040206170030</b>																		
Maurice River (Menantico Ck to Union Lake)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 6,236.51 acres																		
													<b>Existing Conditions</b>					
	Residential, High Density, Multiple	301.04	45.2%	136.12	11.79	0.00	0.00	289.25	0%	0.00	0.0%	High Density Residential	1.4	404.9	15	4,338.7	140	40,495
2	Residential, Single Unit, Medium D	341.86	24.5%	83.88	0.00	0.00	0.00	341.86	0%	0.00	0.0%	Medium Density Residential	1.4	478.6	15	5,127.9	140	47,860
3	Residential, Single Unit, Low Densi	65.14	19.3%	12.55	2.26	0.00	0.00	62.88	0%	0.00	0.0%	Low Density Residential	0.6	37.7	5	314.4	100	6,288
4	Residential, Rural, Single Unit (114	92.21	15.1%	13.95	5.85	1.27	0.00	85.09	0%	0.00	0.0%	Rural Residential	0.6	51.1	5	425.5	100	8,509
5	Commercial/Services (1200)	246.27	71.6%	176.28	0.00	0.00	0.00	246.27	0%	0.00	0.0%	Commercial	2.1	517.2	22	5,417.9	200	49,254
6	Industrial (1300)	178.53	61.0%	108.92	1.44	0.00	0.00	177.09	0%	0.00	0.0%	Industrial	1.5	265.6	16	2,833.5	200	35,418
7	Transportation/Communications/Ut	56.21	45.0%	25.29	2.15	0.00	0.00	54.06	0%	0.00	0.0%	Other Urban	1	54.1	10	540.6	120	6,487
8	Wetland Rights-Of-Way (Modified)	0.65	0.0%	0.00	0.65	0.00	0.00	0.00	0%	0.00	0.0%	Transitional Areas	0.5	0.0	5	0.0	60	0
9	Mixed Urban Or Built-Up Land (16	11.41	62.1%	7.08	0.00	0.00	0.00	11.41	0%	0.00	0.0%	Mixed Urban	1	11.4	10	114.1	120	1,369
10	Other Urban Or Built-Up Land (170	195.88	9.2%	17.96	0.00	0.00	0.00	195.87	0%	0.00	0.0%	Other Urban	1	195.9	10	1,958.7	120	23,505
11	Managed Wetland In Maintained L	1.27	0.0%	0.00	1.27	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
12	Recreational Land (1800)	30.59	26.3%	8.04	0.00	0.00	0.00	30.59	0%	0.00	0.0%	Transitional Areas	0.5	15.3	5	153.0	60	1,836
13	Managed Wetland In Built-Up Mai	2.48	5.1%	0.13	2.48	0.00	0.00	0.00	0%	0.00	0.0%	Agriculture	1.3	0.0	10	0.0	300	0
14	Cropland And Pastureland (2100)	715.89	0.3%	2.04	5.32	0.00	0.00	710.57	0%	0.00	0.0%	Agriculture	1.3	923.7	10	7,105.7	300	213,172
15	Agricultural Wetlands (Modified) (2	110.44	0.0%	0.02	110.44	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
16	Former Agricultural Wetland (Beco	7.32	0.3%	0.02	7.32	0.00	0.00	0.00	0%	0.00	0.0%	Agriculture	1.3	0.0	10	0.0	300	0
	Other Agriculture (2400)	5.50	13.4%	0.74	1.34	0.00	0.00	4.16	0%	0.00	0.0%	Agriculture	1.3	5.4	10	41.6	300	1,249
	Deciduous Forest (10-50% Crown C	119.79	12.5%	14.94	2.68	0.00	0.00	117.11	0%	0.00	0.0%	Forest	0.1	11.7	3	351.3	40	4,684
19	Deciduous Forest (>50% Crown Clo	428.38	5.3%	22.59	18.56	1.54	0.00	408.27	0%	0.00	0.0%	Forest	0.1	40.8	3	1,224.8	40	16,331
20	Coniferous Forest (10-50% Crown	27.98	7.7%	2.16	0.00	0.00	0.00	27.98	0%	0.00	0.0%	Forest	0.1	2.8	3	83.9	40	1,119

**Land Use / Buildout Analysis (Existing Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206170040</b>																		
<b>Buckshutem Creek (above Rt 555)</b>																		
<b>Maurice River (Menantico Ck to Union Lk)</b>																		
<b>Total HUC Area: 2,239.78 acres</b>																		
<b>Existing Conditions</b>																		
1	Residential, Single Unit, Low Densi	32.05	22.0%	7.05	0.00	0.00	0.00	32.05	0%	0.00	0.0%	Low Density Residential	0.6	19.2	5	160.3	100	3,205
2	Residential, Rural, Single Unit (114	70.09	12.6%	8.85	0.00	0.00	0.00	70.09	0%	0.00	0.0%	Rural Residential	0.6	42.1	5	350.5	100	7,009
3	Commercial/Services (1200)	4.82	38.8%	1.87	0.00	0.00	0.00	4.82	0%	0.00	0.0%	Commercial	2.1	10.1	22	106.0	200	964
4	Industrial (1300)	0.18	76.5%	0.14	0.00	0.00	0.00	0.18	0%	0.00	0.0%	Industrial	1.5	0.3	16	2.9	200	36
5	Transportation/Communications/Ut	136.53	66.9%	91.36	0.00	0.05	0.00	136.48	0%	0.00	0.0%	Other Urban	1	136.5	10	1,364.8	120	16,377
6	Other Urban Or Built-Up Land (170	339.87	7.8%	26.43	0.00	0.00	0.00	339.87	0%	0.00	0.0%	Other Urban	1	339.9	10	3,398.7	120	40,785
7	Managed Wetland In Maintained L	0.35	0.0%	0.00	0.35	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
8	Cropland And Pastureland (2100)	250.64	3.1%	7.76	0.00	21.40	0.00	229.24	0%	0.00	0.0%	Agriculture	1.3	298.0	10	2,292.4	300	68,773
9	Agricultural Wetlands (Modified) (2	17.68	0.0%	0.00	17.68	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
10	Former Agricultural Wetland (Beco	1.91	0.0%	0.00	1.91	0.00	0.00	0.00	0%	0.00	9999.9%	Agriculture	1.3	0.0	10	0.0	300	0
11	Orchards/Vineyards/Nurseries/Horti	1.26	4.2%	0.05	0.00	0.00	0.00	1.26	0%	0.00	0.0%	Agriculture	1.3	1.6	10	12.6	300	379
12	Other Agriculture (2400)	13.37	4.8%	0.65	0.00	0.00	0.00	13.37	0%	0.00	0.0%	Agriculture	1.3	17.4	10	133.7	300	4,012
13	Deciduous Forest (>50% Crown Clo	361.05	0.9%	3.28	1.98	40.81	0.00	318.26	0%	0.00	0.0%	Forest	0.1	31.8	3	954.8	40	12,730
14	Coniferous Forest (10-50% Crown	7.41	0.0%	0.00	0.00	5.52	0.00	1.89	0%	0.00	9999.9%	Forest	0.1	0.2	3	5.7	40	76
15	Coniferous Forest (>50% Crown Cl	270.67	0.9%	2.51	10.12	79.05	0.00	181.49	0%	0.00	0.0%	Forest	0.1	18.1	3	544.5	40	7,260
16	Plantation (4230)	13.60	0.1%	0.02	0.00	0.00	0.00	13.60	0%	0.00	0.0%	Agriculture	1.3	17.7	10	136.0	300	4,081
17	Mixed Forest (>50% Coniferous Wi	252.86	0.1%	0.25	10.13	110.21	0.00	132.52	0%	0.00	0.0%	Forest	0.1	13.3	3	397.6	40	5,301
18	Mixed Forest (>50% Deciduous Wit	2.03	0.2%	0.00	0.00	0.00	0.00	2.03	0%	0.00	0.0%	Forest	0.1	0.2	3	6.1	40	81
19	Mixed Forest (>50% Deciduous Wit	142.94	0.8%	1.10	5.87	49.60	0.00	87.47	0%	0.00	0.0%	Forest	0.1	8.7	3	262.4	40	3,499
20	Old Field (< 25% Brush Covered) (	6.61	0.0%	0.00	0.00	2.12	0.00	4.49	0%	0.00	9999.9%	Barren Land	0.5	2.2	5	22.4	60	269
21	Deciduous Brush/Shrubland (4420)	3.27	0.0%	0.00	0.00	0.00	0.00	3.27	0%	0.00	9999.9%	Forest	0.1	0.3	3	9.8	40	131
22	Coniferous Brush/Shrubland (4430)	26.23	0.7%	0.18	0.00	2.55	0.00	23.68	0%	0.00	0.0%	Forest	0.1	2.4	3	71.0	40	947
23	Mixed Deciduous/Coniferous Brush	40.49	0.3%	0.12	0.00	0.26	0.00	40.24	0%	0.00	0.0%	Forest	0.1	4.0	3	120.7	40	1,610
24	Artificial Lakes (5300)	1.03	0.0%	0.00	1.03	0.00	0.00	0.00	0%	0.00	9999.9%	Water	0.1	0.0	3	0.0	40	0
25	Deciduous Wooded Wetlands (6210	41.82	0.0%	0.02	41.82	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
26	Coniferous Wooded Wetlands (6220	59.47	0.0%	0.00	59.47	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
27	Atlantic White Cedar Swamp (6221	19.45	0.0%	0.00	19.45	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
28	Deciduous Scrub/Shrub Wetlands (6	15.57	0.0%	0.00	15.57	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
29	Coniferous Scrub/Shrub Wetlands (	8.63	0.0%	0.00	8.63	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
30	Mixed Scrub/Shrub Wetlands (Coni	7.80	0.0%	0.00	7.80	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0

**Land Use / Buildout Analysis (Existing Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206170050</b>																		
Buckshutem Creek (below Rt 555)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 994.44 acres																		
													<b>Existing Conditions</b>					
21	Tidal Rivers, Inland Bays, And Oth	3.13	0.0%	0.00	3.13	0.00	0.00	0.00	0%	0.00	9999.9%	Water	0.1	0.0	3	0.0	40	0
22	Saline Marshes (6110)	5.74	0.0%	0.00	5.65	0.00	0.00	0.09	0%	0.00	9999.9%	Water	0.1	0.0	3	0.3	40	3
23	Deciduous Wooded Wetlands (6210)	31.14	0.0%	0.00	31.14	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
24	Atlantic White Cedar Swamp (6221)	8.48	0.0%	0.00	8.48	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
25	Deciduous Scrub/Shrub Wetlands (6	6.25	0.4%	0.02	6.25	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
26	Coniferous Scrub/Shrub Wetlands (	4.39	0.0%	0.00	4.39	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
27	Mixed Scrub/Shrub Wetlands (Deci	3.72	0.0%	0.00	3.72	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
28	Herbaceous Wetlands (6240)	1.32	0.0%	0.00	1.32	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
29	Mixed Forested Wetlands (Deciduo	8.50	0.0%	0.00	8.50	0.00	0.00	0.00	0%	0.00	9999.9%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
	Mixed Forested Wetlands (Conifero	38.20	0.1%	0.06	38.20	0.00	0.00	0.00	0%	0.00	0.0%	Wetlands & Wetland Buffers	0.1	0.0	3	0.0	40	0
	HUC Subtotals (30 items):	994.44	5.1%	51.04	233.54	131.07	0.00	629.82		0.00	0.0%			276.1		3,469.5		51,722
<b>HUC14 #02040206200030</b>																		
Maurice River (Rt 548 to Menantico Ck)																		
Maurice River (below Menantico Creek)																		
Total HUC Area: 0.20 acres																		
													<b>Existing Conditions</b>					
1	Tidal Rivers, Inland Bays, And Oth	0.20	0.0%	0.00	0.20	0.00	0.00	0.00	0%	0.00	0.0%	Water	0.1	0.0	3	0.0	40	0
	HUC Subtotals (1 item):	0.20	0.0%	0.00	0.20	0.00	0.00	0.00		0.00	0.0%			0.0		0.0		0
	Watershed #17 Subtotals (273 items): (Maurice River)	24,613.25	8.2%	2,028.91	4,948.95	2,067.92	0.00	17,596.38		0.00	0.0%			11,427.0		123,417.8		2,038,314

**Land Use / Buildout Analysis (Buildout Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Manamuskin River:</b>																		
<b>HUC14 #02040206190020</b>																		
Manamuskin River (Rt 49 to Big Neal Br)																		
Manamuskin River																		
Total HUC Area: 50.65 acres																		
														<b>Buildout Conditions</b>				
1	Land Conservation (LC)	50.65	3.5%	1.77	0.00	0.00	0.00	50.65	20%	10.13	571.1%	Forest	0.1	5.1	3	152.0	40	2,026
HUC Subtotals (1 item):		50.65	3.5%	1.77	0.00	0.00	0.00	50.65		10.13	571.1%			5.1		152.0		2,026
<b>HUC14 #02040206190030</b>																		
Manamuskin River (below Rt 49)																		
Manamuskin River																		
Total HUC Area: 423.74 acres																		
														<b>Buildout Conditions</b>				
1	Land Conservation (LC)	423.74	3.7%	15.79	9.90	0.00	0.00	413.83	20%	82.77	524.0%	Forest	0.1	41.4	3	1,241.5	40	16,553
HUC Subtotals (1 item):		423.74	3.7%	15.79	9.90	0.00	0.00	413.83		82.77	524.0%			41.4		1,241.5		16,553
Watershed #17 Subtotals (2 items): (Manamuskin River)		474.39	3.7%	17.57	9.90	0.00	0.00	464.48		92.90	528.8%			46.4		1,393.5		18,579

**Land Use / Buildout Analysis (Buildout Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206160030</b>																		
Maurice River(Union Lake to Sherman Ave)																		
Maurice River (Union Lk to Sherman Ave)																		
Total HUC Area: 5,883.07 acres																		
													<b>Buildout Conditions</b>					
HUC Subtotals (10 items):		5,883.07	3.0%	178.60	1,746.14	1,322.44	0.00	2,814.50		810.92	454.0%		3,223.3		28,541.1		568,096	
<b>HUC14 #02040206170010</b>																		
Hankins Pond trib (Millville)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 2,354.39 acres																		
													<b>Buildout Conditions</b>					
1	Neighborhood Business (B-1)	46.80	43.5%	20.34	2.35	0.00	0.00	44.45	80%	35.56	174.9%	Commercial	2.1	93.3	22	977.8	200	8,889
2	Central Business (B-3)	8.05	68.9%	5.55	0.00	0.00	0.00	8.05	100%	8.05	145.0%	Commercial	2.1	16.9	22	177.0	200	1,609
3	General Business (B-4)	122.68	46.5%	57.02	28.80	0.00	0.00	93.88	75%	70.41	123.5%	Commercial	2.1	197.1	22	2,065.4	200	18,776
4	Tourism Services (B-5)	71.60	18.3%	13.09	14.95	0.00	0.00	56.66	80%	45.33	346.2%	Commercial	2.1	119.0	22	1,246.5	200	11,331
	General Industry (I-1)	698.76	37.0%	258.64	67.61	0.00	0.00	631.15	65%	410.25	158.6%	Industrial	1.5	946.7	16	10,098.4	200	126,230
6	Interchange Mixed-Use (I-2)	70.31	23.2%	16.31	0.00	0.00	0.00	70.31	75%	52.73	323.3%	Mixed Urban	1	70.3	10	703.1	120	8,437
7	Residential 10 (R-10)	477.56	20.9%	99.96	20.75	0.00	0.00	456.81	30%	137.04	137.1%	High Density Residential	1.4	639.5	15	6,852.2	140	63,954
8	Residential 20 (R-20)	407.40	9.8%	40.04	29.81	0.00	0.00	377.59	30%	113.28	282.9%	Medium Density Residential	1.4	528.6	15	5,663.8	140	52,863
9	Residential 5 (R-5)	445.86	37.3%	166.11	22.73	0.00	0.00	423.13	45%	190.41	114.6%	High Density Residential	1.4	592.4	15	6,347.0	140	59,238
10	River Conservation (RC)	5.37	0.0%	0.00	1.88	0.00	0.00	3.49	10%	0.35	9999.9%	Rural Residential	0.6	2.1	5	17.5	100	349
HUC Subtotals (10 items):		2,354.39	28.8%	677.05	188.87	0.00	0.00	2,165.52		1,063.40	157.1%		3,206.0		34,148.7		351,678	
<b>HUC14 #02040206170020</b>																		
White Marsh Run (Millville)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 4,713.52 acres																		
													<b>Buildout Conditions</b>					
1	Agricultural Conservation (AC)	2,193.48	1.5%	33.85	157.64	300.35	0.00	1,735.49	20%	347.10	1025.5%	Agriculture	1.3	2,256.1	10	17,354.9	300	520,647
2	Neighborhood Business (B-1)	2.56	1.6%	0.04	0.00	0.00	0.00	2.56	80%	2.05	4938.5%	Commercial	2.1	5.4	22	56.3	200	512
3	Air Park Industry (I-3)	735.27	1.8%	13.24	90.99	0.00	0.00	644.28	60%	386.57	2919.9%	Mixed Urban	1	644.3	10	6,442.8	120	77,314
4	Land Conservation (LC)	65.53	0.0%	0.00	9.95	0.00	0.00	55.58	20%	11.12	9999.9%	Forest	0.1	5.6	3	166.7	40	2,223
5	Residential 10 (R-10)	175.52	6.7%	11.68	90.18	0.00	0.00	85.34	30%	25.60	219.3%	High Density Residential	1.4	119.5	15	1,280.1	140	11,947
6	Residential 15 (R-15)	1,491.79	12.0%	178.94	127.99	0.00	0.00	1,363.80	40%	545.52	304.9%	Medium Density Residential	1.4	1,909.3	15	20,457.0	140	190,932
	Residential 5 (R-5)	49.37	12.9%	6.36	5.53	0.00	0.00	43.84	45%	19.73	310.3%	High Density Residential	1.4	61.4	15	657.6	140	6,137
HUC Subtotals (7 items):		4,713.52	5.2%	244.10	482.28	300.35	0.00	3,930.89		1,337.68	548.0%		5,001.5		46,415.4		809,712	

**Land Use / Buildout Analysis (Buildout Conditions)**  
**City of Millville**

No.	HUC14 Zone	Total Area (acres)	Existing Impervious (%)	Existing Impervious (acres)	Wetlands and Water Areas (acres)	Parks and Open Space (acres)	Other Restricted Areas (acres)	Potential Developable Areas (acres)	Allowable Impervious (%)	Potential Build-Out Impervious (acres)	Additional Impervious (%)	Land Cover For Build-Out Zoning	Total Phosphorus (lbs/acre/yr)	Total Phosphorus (lbs/yr)	Total Nitrogen (lbs/acre/yr)	Total Nitrogen (lbs/yr)	Total Suspended Solids (lbs/acre/yr)	Total Suspended Solids (lbs/yr)
<b>Maurice River:</b>																		
<b>HUC14 #02040206170050</b>																		
Buckshutem Creek (below Rt 555)																		
Maurice River (Menantico Ck to Union Lk)																		
Total HUC Area: 994.44 acres																		
													<b>Buildout Conditions</b>					
1	Land Conservation (LC)	468.61	2.1%	9.75	77.88	4.63	0.00	386.10	20%	77.22	791.7%	Forest	0.1	38.6	3	1,158.3	40	15,444
2	Public Open Space (POS)	139.62	0.1%	0.13	12.99	126.44	0.00	0.19	10%	0.02	14.7%	Forest	0.1	0.0	3	0.6	40	8
3	Residential 10 (R-10)	372.25	10.7%	40.00	142.67	0.00	0.00	229.57	30%	68.87	172.2%	High Density Residential	1.4	321.4	15	3,443.6	140	32,140
4	River Conservation (RC)	13.96	8.3%	1.16	0.00	0.00	0.00	13.96	10%	1.40	120.3%	Rural Residential	0.6	8.4	5	69.8	100	1,396
HUC Subtotals (4 items):		994.44	5.1%	51.04	233.54	131.07	0.00	629.82		147.51	289.0%			368.4		4,672.3		48,988
<b>HUC14 #02040206200030</b>																		
Maurice River (Rt 548 to Menantico Ck)																		
Maurice River (below Menantico Creek)																		
Total HUC Area: 0.22 acres																		
													<b>Buildout Conditions</b>					
1	Residential 10 (R-10)	0.12	0.0%	0.00	0.12	0.00	0.00	0.00	30%	0.00	0.0%	High Density Residential	1.4	0.0	15	0.0	140	0
2	River Conservation (RC)	0.10	0.0%	0.00	0.10	0.00	0.00	0.00	10%	0.00	0.0%	Rural Residential	0.6	0.0	5	0.0	100	0
HUC Subtotals (2 items):		0.22	0.0%	0.00	0.22	0.00	0.00	0.00		0.00	0.0%			0.0		0.0		0
Watershed #17 Subtotals (58 items): (Maurice River)		24,613.41	8.2%	2,028.91	5,033.10	2,196.37	0.00	17,383.95		6,258.23	308.5%			20,304.8		194,972.9		3,149,349

City should investigate methods to reduce/manage future amounts of impervious cover resulting from land development.

This analysis is the first step in understanding the impacts that future development will have on water quality and quantity. The City should therefore be proactive in developing strategies to minimize, manage and/or mitigate these impacts through such mechanisms as additional stormwater management control techniques and possible changes to the land use zoning.

Included within this plan, and also in the New Jersey Stormwater Management Regulations and guidance documentation, are strategies to minimize, manage and/or mitigate build-out impacts through the use of improved stormwater management techniques and construction practices. In addition, modifications to current land use and zoning will change the build-out impacts and the municipality's GIS data can be used to evaluate the results of such changes.

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