

Salem County Wastewater Management Plan

Municipality	Status	Municipality	Status
Alloway Township	<u>Included</u>	Upper Pittsgrove Township	<u>Included</u>
Carneys Point Township	<u>Included</u>	Woodstown Borough	<u>Included</u>
Elmer Borough	<u>Included</u>		
Elsinboro Township	<u>Included</u>		
Lower Alloways Creek Township	<u>Included</u>		
Mannington Township	<u>Included</u>		
Oldmans Township	<u>Included</u>		
Penns Grove Borough	<u>Included</u>		
Pennsville Township	<u>Current</u>		
Pilesgrove Township	<u>Included</u>		
Pittsgrove Township	<u>Included</u>		
Quinton Township	<u>Included</u>		
Salem City	<u>Included</u>		

Amending the Following Areawide Water Quality Management Plans:

Lower Delaware Water Quality Management Planning Area

Submitted by the Board of Chosen Freeholders of the County of Salem
Date of Current Submittal: _____

Approved by the New Jersey Department of Environmental Protection:
Date of Approval: _____

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I. Introduction

The purpose of this document is to provide a comprehensive Wastewater Management Plan (WMP) for Salem County. The WMP has been submitted to the New Jersey Department of Environmental Protection (Department) for approval so that it may be incorporated into the Lower Delaware Water Quality Management Planning Area via the plan amendment procedure at N.J.A.C. 7:15-3.

The Future Wastewater Service Area (FWSA) was determined through a methodical process in collaboration with the NJDEP, County and the municipalities identified within this report. The FWSA map was adopted with corrections by the Department on September 19, 2013.

In 2008, the New Jersey Department of Environmental Protection adopted major amendments to the Water Quality Management Planning rules, N.J.A.C. 7:15-1 et seq. The amended rules gave each county Board of Chosen Freeholders responsibility for preparing wastewater management plans for all municipalities within its county. In addition to changing the entities responsible for preparing wastewater management plans, the 2008 rules added significant new requirements for plan contents. County plans were to include a distinct chapter for each municipality within the county and were to be submitted as a whole to DEP no later April 7, 2009. Most significantly, if the plan submission deadline was not met, the rules called for withdrawal of wastewater service area designations. The deadline for submission was subsequently extended until April 7, 2011 by Administrative Order No. 2010-03 signed by Commissioner Martin on March 24, 2010.

In April of 2011, few, if any, counties had submitted a county-wide plan. The resultant withdrawal of wastewater service area designations mandated by the rules was having a detrimental impact on much of the new development proposed in the State at a time when the economy was beginning to show signs of recovery after the recent recession. In response, legislation was introduced in December of 2011, swiftly adopted by the Assembly and Senate, and signed into law by Governor Christie on January 17, 2012.

P.L. 2011, c. 203, stipulates that no wastewater service area designation be withdrawn but shall remain in effect for 180 days following enactment of the law. Wastewater planning agencies were then required to submit at least that portion of a wastewater management plan designating a sewer service area within that same 180 day period, or by July 17, 2012. The law also gave planning agencies the ability to submit other portions of a wastewater management plan in additions to the portion designating a sewer service area and granted DEP explicit authority to adopt portions of a plan. Furthermore, the legislation allowed DEP to approve inclusion of areas within a sewer service area despite the fact that existing treatment plants may not have the assured capacity to treat wastewater from that area without infrastructure improvements or permit modifications. P.L. 2011, c. 203 was to expire on January 17, 2014.

The FWSA map was adopted with corrections by the Department on September 19, 2013, as the first phase of development of the county-wide wastewater management plan. In order to afford municipalities the protection offered by P.L. 2011, c. 203, Salem County prepared a second phase of the county-wide WMP consisting of a build-out analyses and capacity analysis for 15 municipalities. In addition, the County proposed corrections to the FWSA map adopted in September 2013. These documents were submitted to DEP with the expectation that adoption would occur prior to the expiration of the Act, however In January 2014, P.L. 2011, c. 203, was amended, supplemented and enacted as P.L. 2013, c. 188 (hereafter P.L. 2013, c.188), modifying the WQM Planning process. P.L. 2013, c.188 shall expire on January 17, 2016, or upon the reauthorization and adoption of WQM Planning rules N.J.A.C 7:15 et. seq.), whichever may come first. Similarly to the P.L. 2011, c. 203, Section 9 of P.L. 2013, c. 188 provides that upon adoption of the designation of a sewer service area pursuant to the WQM Planning rules, portions of the WMP may be submitted for review and subsequent adoption, in phases in a sequential or other manner deemed timely or expedient by the Department.

This WMP includes for adoption those nitrate dilution analyses, which comply with N.J.A.C. 7:15-5.25(e)iv –v and proposed adjustments to the FWSA map. The nitrate dilution analyses were received and reviewed by the Department. The Department determined that some of the analyses did not meet the nitrate standard. Consequently, the analyses that did not comply with the standard were removed WMP and provided within Appendix “A” for reference. The analyses provided within Appendix “A” does not include an adjustment to the zoning in order to achieve consistency between zoning and the allowable number of additional equivalent dwelling units at build-out in the undeveloped and underdeveloped areas, therefore, they do not comply with N.J.A.C. 7:15-5.25(e)iv –v. However, as the analyses were required to be completed, they have been included in the Appendices to inform future planning efforts.

Alternative Assignment of Wastewater Management Planning Responsibility

As of the date of submittal, wastewater management planning responsibility for the full County remains with the County Board of Chosen Freeholders and no alternative assignments have occurred pursuant to NJAC 7:15-5.13.

The Salem County Board of Chosen Freeholders has coordinated with various municipalities and Consultants to obtain information for inclusion within the WMP. Sickels & Associates prepared the WMP utilizing the available documentation provided by these sources and prepared supplemental mapping, calculations and narratives in collaboration with the County of Salem. Any proposed revisions or amendments to this wastewater management plan shall be submitted to the County of Salem for review.

Status of Previous Approved Local and Regional WMPs Affected by the County WMP

The County WMP incorporates or replaces part or all of a variety of previously approved WMPs prepared by municipalities, wastewater authorities, or the county itself. The WQMP rule provides that any WMP previously approved by NJDEP may remain in force and effect until six (6) years from that approval date or until superseded by a subsequent WMP. In the County, the previously approved WMPs listed in Table 1-1 are still considered current, until the expiration date. However, adoption of this County WMP supersedes the Salem City, Alloway Township, and Quinton Township WMP. The County WMP incorporates the wastewater service areas and facility tables from these current WMPs.

A municipal chapter for Pennsville Township has been prepared for inclusion within the Salem County WMP. The information provided is for reference only and is based on the previously approved plan. The municipality has not made any revisions or amendments to the previously approved plan as a part of this submission of the Salem County Wastewater Management Plan.

Table 1-1. Current WMPs

WMP Planning Area	Municipality	Expires
Pennsville Sewerage Authority	Pennsville Township	June 30, 2016 (Incorporated upon adoption)
Salem, Alloway & Quinton WMP	Alloway Township, Portions of Mannington Twp and Elsinboro, Quinton Twp., and Salem City	June 30, 2016 (Superseded by this WMP)

In addition to the municipality listed above, this County WMP includes chapters for each municipality, except where the municipality and any relevant wastewater agency did not provide sufficient information to the County for preparation of its chapter. Development that relies on discharges to ground water of 2,000 gpd or less is allowed, but will be required to comply with relevant NJDEP rules including nitrate dilution analysis where the proposed development exceeds an aggregate greater than 2,000 gpd in projected flow or requires a NJDEP permit or approval subject to N.J.A.C. 7:15-4.

Overview of County

Salem County has a total of 15 municipalities. There aren't any discernable development patterns that can be generalized for the County as a whole, as each municipality has its own characteristics with regard to land use and development patterns. Some of the municipalities have been developed extensively in urban areas and other areas with higher population densities, which contain a mix of residential, commercial and industrial development. Whereas other portions of the County with lower population densities, are sparsely or largely undeveloped containing mostly agricultural and rural residential uses or small residential villages. Commercial development is generally located in close proximity to highways, state and county roadways and more easily accessible areas.

Table 1-2 below provides a summary of the geographical characteristics of each municipality within Salem County.

Table 1-2. Geography of County						
Municipality	Municipal Area	Geography of Municipality * (census bureau)				Municipal Area
	(GIS Data)	Land	Land Area	Water	Water Area	(census data)
	(Acres) (*)	(Acres)	(Percent)	(Acres)	(Percent)	(Acres)
Allalloway	21,703	20,992	98.9%	192	0.9%	21,229
Carneys Point	11,431	11,200	98.6%	192	1.7%	11,360
Elmer	585	576	102.3%	0	0.0%	563
Elsinboro	8,427	7,872	92.3%	704	8.3%	8,531
Lower Alloways Creek	30,801	18,048	59.0%	1,792	5.9%	30,602
Mannington	24,232	22,272	90.6%	2,304	9.4%	24,589
Oldmans	12,814	12,800	98.5%	192	1.5%	12,992
Penns Grove	583	576	96.8%	0	0.0%	595
Pennsville	15,901	14,784	95.5%	1,088	7.0%	15,475
Pilesgrove	23,524	22,336	99.6%	64	0.3%	22,415
Pittsgrove	29,273	28,928	98.4%	448	1.5%	29,395
Quinton	15,524	15,488	98.6%	256	1.6%	15,709
Salem	1,761	1,664	92.9%	128	7.1%	1,792
Upper Pittsgrove	25,844	25,856	99.9%	64	0.2%	25,894
Woodstown	1,034	1,036	100.0%	0	0.0%	1,036
Salem County	223,438	204,428	94.5%	7,424	3.4%	216,243

NOTE (): GIS Mapping information utilized for municipal areas.*

Overview of Current Wastewater Services and Wastewater Responsibilities

The County has identified a Future Wastewater Service Area (FWSA) intended to meet the goals and objectives of each municipal master plan. The current community wastewater systems serve approximately 9% percent of the total County area and 49% percent of the total County population, within the FWSA area reflected on Map No.3. Sewer service areas may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business.

Salem County is primarily served by seven (7) wastewater treatment facilities, which are identified in Chapter 6 of this report. These facilities provide wastewater service to eleven (11) Municipalities. The capacity and associated flow for each municipality has been reviewed and summarized below with further details being provided within each municipal chapter. Existing sanitary sewer infrastructure within the currently served SSA has been identified and is located on Map No.2. There are no combined sewers within the County.

Table 1-3 below provides a summary of the estimated percentage of the FWSA being served by public community wastewater treatment facilities within each municipality as well as overall totals for Salem County.

Municipality	Total Municipal Area (Acres)	FWSA (Acres)	Area within Municipality Served (% of county area)
Alloway	21,703	1,167	5.4%
Carneys Point	11,431	6,486	56.7%
Elmer	585	472	80.7%
Elsinboro	8,427	5	0.1%
Lower Alloways Creek	30,801	942	3.1%
Mannington	24,232	438	1.8%
Oldmans	12,814	1,980	15.5%
Penns Grove	583	583	100%
Pennsville	15,901	4,983	31.3%
Pilesgrove	23,524	257	1.1%
Pittsgrove	29,273	444	1.5%
Quinton	15,524	477	3.1%
Salem	1,761	1,212	68.8%
Upper Pittsgrove	25,844	63	0.2%
Woodstown	1,034	970	93.8%
Salem County	223,438	20,476	9.2%

Table 1-4 below provides a summary of the estimated number of persons being serviced by public community wastewater treatment facilities within each municipality as well as overall totals for Salem County.

Table 1-4. Estimates # of Persons Served by Sanitary Sewer				
Municipality	2010 US Census Municipality Population	Persons Served with Sanitary Sewer	Persons Served with Sewer (% of Munic.)	Persons Served with Sewer (% of County)
Alloway	3,467	684	19.73%	1.04%
Carneys Point	8,049	5,296	65.80%	8.01%
Elmer	1,395	0	0.00%	0.00%
Elsinboro	1,036	14	1.35%	0.02%
Lower Alloways Creek	1,770	624	35.25%	0.94%
Mannington	1,806	159	8.8%	0.24%
Oldmans	1,773	300	16.92%	0.45%
Penns Grove	5,147	5,147	100.00	7.79%
Pennsville	13,409	10,867	81.04%	16.44%
Pilesgrove	4,016	125	3.11%	0.19%
Pittsgrove	9,393	0	0.00%	0.00%
Quinton	2,666	673	25.24%	1.02%
Salem	5,146	5,146	100.00%	7.79%
Upper Pittsgrove	3,505	0	0.00%	0.00%
Woodstown	3,505	3,505	100.00%	5.30%
Salem County	66,083	32,540		49.24%

Note: Data regarding the estimated population served by water / sewer was obtain from the utilities as well as DEP online sources.

Overview of Current Water Services and Water Supply Responsibilities

The current community water supply systems, located within the County FWSA, serve approximately 9% percent of the total County area and 54% percent of the total County population. Salem County is primarily served by five (5) water supply facilities, which are identified in Chapter 7 of this report. These facilities provide potable water to fourteen (14) municipalities. The capacity and associated demand for each municipality has been reviewed and summarized below with further details being provided within each municipal chapter. Existing water supply infrastructure within the currently served SSA has been identified and is located on Map No. 1.

Table 1-5 below provides a summary of the estimated number of persons being serviced by public community waster supply systems within each municipality as well as overall totals for Salem County.

Table 1-5. Estimates # of Persons Served by Potable Water				
Municipality	2010 US Census Municipality Population	Persons Served with Potable Water	Persons Served with Water (% of Munic.)	Persons Served with Water (% of County)
Alloway	3,467	0	0.00%	0.00%
Carneys Point	8,049	5,143	63.90%	7.78%
Elmer	1,395	1,395	100.00%	2.11%
Elsinboro	1,036	14	1.35%	0.02%
Lower Alloways Creek	1,770	75	4.24%	0.11%
Mannington	1,806	159	8.8%	0.24%
Oldmans	1,773	1,238	69.83%	1.87%
Penns Grove	5,147	5,147	100.00%	7.79%
Pennsville	13,409	11,188	83.44%	16.93%
Pilesgrove	4,016	125	3.11%	0.19%
Pittsgrove	9,393	1,852	19.72%	2.80%
Quinton	2,666	368	13.80%	0.56%
Salem	5,146	5,146	100.00%	7.79%
Upper Pittsgrove	3,505	506	14.44%	0.77%
Woodstown	3,505	3,505	100.00%	5.30%
Salem County	66,083	36,268		54.88%

Note: Data regarding the estimated population served by water / sewer was obtain from the utilities as well as DEP online sources.

Overview of Major Environmental, Regional and Local Considerations to Wastewater Services

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, State, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species

habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection for areas that have received plan endorsement from the state planning commission.

Additional regional and local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in each of the municipal chapters of this WMP.

Overview of Major Water Resource Management Issues

Water purveyors who currently own and operate public community water supply systems within the County are identified in chapter 8. A depletive/consumptive water use analysis was prepared to determine if there is sufficient potable water supply to serve the projected development of each municipality within the FWSA. The FWSA potable water build-out analysis results indicate that a few of the water purveyors do not currently have sufficient water allocation to support future wastewater demands projected by the plan. These deficits in water allocation are more clearly defined in chapter 8.

The Township of Elsinboro has identified areas of existing development that are believed to have failing septic systems. Pursuant to 7:15-3.5(b)4.ix, a revision to an adopted SSA is allowed to provide for connection of an existing structure(s) with a malfunctioning subsurface sewage disposal system that is not currently within an approved sewer service area to an identified sewage treatment plant, provided the applicant demonstrates that it is not feasible to repair or replace the malfunctioning subsurface sewage disposal system under N.J.A.C. 7:9A-3.4 and the property where the existing structure is located is contiguous to the existing sewer line. In addition, upon review of these areas with the Department, the areas under consideration are within the coastal zone and regulated by CAFRA. Consequently, these areas have not been included as part of the FWSA at this time. The County is prepared to assist the Township with the regulatory issues presented by the CAFRA jurisdiction. The Township will pursue an approved SSA, through the amendment process, upon working through the regulatory planning approval process.

The County and the Township are currently working with the Department to identify documentation and reporting requirements necessary to substantiate the inclusion of these areas within the FWSA through the amendment process.

Other than the issues indicated above, the municipalities have not identified any additional issues regarding water quality or concerns with non-sewered areas.

Overview of Future Wastewater Services and Responsibilities

The County of Salem has identified the future wastewater service area necessary to implement the current goals and objectives of the municipalities Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and C-1 Waters.

The FWSA delineated on Map No.3 consists of the existing sewer service area currently being served by wastewater facilities and developable areas identified for future sewer service, by each municipality. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Maps No. 2 and No. 3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future, based on the environmental, regional and local land use planning objectives discussed above and the areas that are currently built but do not currently have adequate wastewater treatment. These maps also identify sites that are served by an on-site treatment works that is regulated under a New Jersey Pollutant Discharge Elimination System permit (NJPDDES). Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, future expansion of the current treatment works or identification of an alternative treatment facility will be required to meet the future wastewater generation needs for a few of the municipalities. Information regarding future wastewater projects and associated capacity is further defined in Chapter 6 of this document.

Summary of Significant Actions

Service Area Changes:

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan. Table 1-6 below provides a summary of the areas removed and/or added to the sewer service area within each municipality as well as overall totals for Salem County.

Pittsgrove Township has identified specific sites for use by Atlantic City Electric (Pepco). The location of the site is in a development corridor and in need of redevelopment. This site was selected by Atlantic City Electric after a rigorous site alternatives analysis. A pre-application was held with the Department to discuss the intended use of the facility and its inclusion within the FWSA. The proposed site is intended to be an operational facility for line operators and will serve as a staging area during major storm events.

Table 1-6. Summary of WMP Area Adjustments (*)			
Municipality	SSA Area Removed (Acres)	SSA Area Added (Acres)	SSA Overall Area Adjustment (Acres)
Alloway	136.4	52.1	-84.3
Carneys Point	3,211.3	583.6	-2,627.7
Elmer	13.5	471.6	458.1
Elsinboro	0.0	4.4	0.0
Lower Alloways Creek	221.7	434.6	212.9
Mannington	1.5	225.5	224.0
Oldmans	56.6	2,296.1	2,239.5
Penns Grove	0.0	2.5	2.5
Pennsville	0.0	0.0	0.0
Pilesgrove	1.2	221.1	219.9
Pittsgrove (**)	1.1	354.8	353.7
Quinton	257.7	30.1	-227.6
Salem	421.4	1.5	-419.9
Upper Pittsgrove	1.5	42.7	41.2
Woodstown	234.8	10.1	-224.7
Salem County	4,559	4,731	168
(*) This table reflects the changes from the previously adopted SSA in Salem County to the Salem County FWSA map adopted on September 19, 2013. (**) "This WMP adds 145.2 acres of SSA to the currently adopted Salem County FWSA map for the PEPCO development"			

All areas not proposed to be included in the FWSA sewer service areas in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

The City of Salem is currently designated as a regional center with the Borough's of Woodstown and Elmer being designated as a town center according to the Office of Planning Advocacy website. No other municipalities have submitted for plan endorsement.

New or Expanded Wastewater Facilities:

Based on the FWSA sanitary build-out projections identified in Chapter 6, expansion of the existing treatment works or identification / construction of an alternative treatment facility will be required to meet the future wastewater generation needs of Carneys Point Township, Oldmans Township and the Borough of Elmer.

Pittsgrove Township has identified specific sites for use by Atlantic City Electric (Pepco), as indicated above. The identified Atlantic City Electric area will be proposing an onsite sewerage treatment plant to meet the needs of the warehouse / operational facility.

II. Existing Infrastructure and Demographic Information

This section addresses wastewater treatment facilities utilized by development within the County, whether the treatment works itself is located within or outside of the County.

Existing Areas Served by Wastewater Facilities

Map No.2 shows the areas actively served by existing wastewater facilities, and the tables in Section VII provide detailed information on each facility. “Actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

The existing sewer service limits associated with each wastewater treatment facility are delineated on Map No.2. These areas were derived from existing sanitary sewer infrastructure currently constructed and/or approved. Mapping for the systems was provided by the municipality or prepared from available prints. The County consulted with staff from the wastewater treatment facility in an effort to verify the extent of the areas currently being served.

Sewer service areas may include industrial businesses that discharge process and/or sanitary wastewater to the collection system for treatment by a facility not owned by that business

Existing Public Wastewater Treatment Works

Table 2-1 lists the major domestic wastewater treatment facilities and the municipality or municipalities they serve. The wastewater districts, franchise areas and sewer service area and the associated treatment works, are depicted on Map No. 1.

Table 2-1. Wastewater Districts, Franchise Areas and Municipalities Served	
Wastewater Utility	Municipalities Served
Carneys Point Sewerage Authority	Carneys Point and Oldmans Townships
Canton Village WWTP	Lower Alloways Creek Township (LAC)
Hancocks Bridge WWTP	Lower Alloways Creek Township (LAC)
Penns Grove Sewer Authority	Penns Grove Borough
Pennsville Sewerage Authority	Pennsville Township
Salem City Sewer & Water Utility	Salem City, Mannington Township, Elsinboro, Quinton & Alloway Townships
Woodstown Sewer Authority	Woodstown Borough, Pilesgrove & Mannington Townships
E.I. DuPont	DuPont Chambers Works
Energy Freedom Pioneers	Industrial Park, Oldmans Township
PSE&G	Salem NGS and Hope Creek NGS (LAC)

Major Transmission Piping and Pumping Stations

Map 2 shows the major interceptors, trunk lines and pumping stations within the various sewer service areas for public wastewater treatment facilities. There are currently no known issues regarding the restriction of flows that may preclude a wastewater treatment facilities ability to satisfy current permitted flow thresholds.

Existing On-site, Non-industrial Wastewater Facilities

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Facility tables for all existing on-site, non-industrial treatment facilities that discharge to surface water or that discharge more than 2,000 gallons per day to ground water of domestic wastewater and are regulated under a NJPDES permit can be found in Section VII

Existing Industrial Treatment Works for Process Wastes and Sanitary Sewage

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste and/or sanitary sewage. They may be discharged to ground water or to surface water. Facility tables for all existing industrial treatment works that discharge to surface water or that discharge more than 2,000 gallons per day to ground water of process or sanitary wastewater and are regulated under a NJPDES permit can be found in Section VII.

Wastewater Management Areas for Septic Systems and Other Small Treatment Works Not Discharging to Surface Waters

Remaining areas of the County, not otherwise identified as existing service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat 2,000 gallons per day or less of wastewater and discharge to ground water.

Existing Areas Served by Public Water Supply Facilities

Map No.1 shows the areas actively served by existing public water supply facilities. On-site and private facilities are addressed within the municipal chapters. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

The water service areas identified on Map No.1 were derived from existing potable water infrastructure currently constructed and/or approved. Mapping for the systems was provided by the water purveyor or prepared from available prints. The County consulted with staff from the water supplier in an effort to verify the extent of the areas currently being served.

Table 2-2 lists the public community water supply facilities and the municipality or municipalities they serve. The districts and franchise areas are depicted on Map No.1.

Table 2-2. Water Supply Districts, Franchise Areas and Municipalities Served	
Water Supply Utility	Municipalities Served
Elmer Water Department	Borough of Elmer
Pennsville Water Department	Pennsville Township
Salem City Water Department	Salem City, Mannington Township, Elsinboro & Quinton Townships
Woodstown Water Department	Woodstown Borough, Pilesgrove & Mannington Townships
New Jersey American Water	Carneys Point and Oldmans Townships, Borough of Penns Grove

III. Environmental and Other Land Features

This section includes a description and mapping of environmental features and public open space for the County. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see Delineation of Sewer Service Areas, below).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The information described below with regard to the mapping of sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 3-1 below highlights the information and sources used to delineate environmentally constrained areas

Surface Waters and Classifications - Map No.5A shows the surface waters (FW2NTC1/SE1 and FW2NT/SE1) as mapped by NJDEP based on 1995/97 aerial photography. This was the most current mapping of surface waters for which surface water quality standards classifications were available. Information with regard to the number of miles of streams, along with the area of ponds, lakes are included within each municipal chapter.

Riparian Zones - Map No.5C shows riparian zones or buffers that are established along all surface waters under the following of regulations: Flood Hazard Area Control Act Rules, the Highlands Water Protection and Planning Act Rules, the Stormwater Management Rules, and the Water Quality Management Planning Rules and through municipal ordinances. FW1 waters are nondegradation waters in which no change from natural quality shall be allowed. Category One (C-1) waters, their tributaries and all Highlands waters are afforded a 300-foot buffer. The riparian zone adjacent to trout production waters and all upstream waters, including tributaries, is 150-feet. The riparian zone adjacent to trout maintenance waters and those that contain documented habitat for threatened and endangered species (that are not C-1 waters), which is critically dependent on the water body for survival and upstream tributaries within one mile is 150-feet. The riparian zone of a segment of water flowing through acid producing soils is 150 feet. The riparian zone adjacent to all other surface waters is 50-feet. These regulatory programs limit most development within these riparian zones.

Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300-foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service and have been removed during the build-out analysis.

Flood Prone Areas – Map No.5A shows the flood prone areas as mapped by NJDEP based on a combination of FEMA, NJDEP and aerial photography data. These areas may be subject to federal 201 grant limitations that prohibit the extension of sewers to serve development in these areas.

Wild and Scenic Rivers and Corridors –There aren't any wild and scenic rivers in the County.

Freshwater Wetlands -- Freshwater wetlands as mapped by the NJDEP are shown in Map No.5B. Freshwater Wetlands are regulated under the Freshwater Wetlands Protection Act Rules, which place stringent limits on development within these areas.

Coastal Wetlands – Maps No.5A and 5B shows the extent of wetlands regulated under the Wetlands Act of 1970. This regulatory program and the Rules on Coastal Zone Management significantly restrict the development potential of these areas.

Public Open Space and Recreation Areas – Map No.5B shows the land areas currently protected from development as public open space, and also shows other recreational areas that are owned and operated by land trusts, non-profit associations, and for-profit recreational businesses. Such properties are limited to those of 10 acres or more in size for mapping clarity. These areas are not expected to support additional development. Where future facilities may be developed on open space they are noted in the appropriate municipal chapter. While smaller dedicated open spaces may exist, they do not have a significant effect on the delineation of wastewater service areas or the future generation of wastewater flow.

Preserved Agricultural Areas and Other Conservation Easements on Private Lands –Map No.5C shows the land areas currently protected from development as agricultural lands from which the development rights have been retired by purchase, donation, lot size averaging, open space or conservation development, non-contiguous transfer of development credits, or Transfer of Development Rights, to the extent that data are available. These areas are not anticipated to support significant additional wastewater generating development.

Suitable Habitat for Threatened and Endangered Species – Map No.5B and 5C shows the areas identified by the NJDEP as being suitable habitat for threatened and endangered species, Ranks 3, 4 and 5, through the Landscape Project Version 2.1. Four of the five available habitat types were used – forests, forested wetlands, emergent wetlands and grasslands. The coastal beaches and dunes habitat type is not applicable to the County. In addition, the bald eagle foraging and the wood turtle habitat mapping were used as a species-specific mapped products under Rank 5 and Rank 3, respectively. Based on guidance from NJDEP, urban peregrine falcon habitat mapping was not used. The County has not verified the mapping of these areas. This mapping was primarily used in the delineation of sewer service areas as described in the next section.

Natural Heritage Priority Sites – Map No.5C shows the natural heritage priority sites mapped by NJDEP as of the date of this WMP. This mapping was primarily used in the delineation of sewer service areas as described in the next section.

Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered	NJDEP	www.njfishandwildlife.co	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Donation	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sa	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	

IV. Delineation of Sewer Service Areas and Planning Integration

The WQMP rules at NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. This section addresses those requirements. This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

Environmentally Sensitive Areas

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. This analysis was performed using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.
4. In accordance with NJAC 7:15-5.24(c), lands within Coastal Fringe, Coastal Rural, and Coastal Environmentally Sensitive Planning Areas are not included in the adopted SSA, with some exceptions. Areas previously designated as SSA, where wastewater collection infrastructure currently exists and where sewerage producing structures are connected to the system, remain in the SSA. In previously designated SSA, the SSA designations remain limited instances where the lots are considered infill development or to remove undulations in the FWSA boundary as necessary to create a linear boundary that relates to recognizable geographic features in accordance with NJAC 7:15-5.20(b)2.

Sewer Service Areas in Environmentally Sensitive Areas

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the County WMP:

Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities. The general locations of these developments would be indicated on Map #3 and keyed to a list of qualifying developments.

Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments would be indicated on Map #3 and are keyed to a list of qualifying developments in each municipal chapter. However, there hasn't been any site specific amendments identified at this time.

Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

Where sewer service is necessary to support for center based development under an "endorsed plan" (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.

Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

Exceptions to the Use of Geographic or Political Boundaries

The FWSA boundary was derived from existing sanitary sewer infrastructure currently constructed or approved, municipal zoning delineations and collaboration with the DEP regarding environmentally constrained areas. These boundaries generally hold tightly to the geographical boundary of the municipality.

Coastal Zone Management

New Jersey's coastal zone has been established pursuant to the federal Coastal Zone Management Act of 1972 and was federally approved in 1978. The Rules on Coastal Zone Management (N.J.A.C. 7:7E) establish the substantive rules of the Department of Environmental Protection regarding the use and development of coastal resources. These rules provide the basic policy direction for planning actions undertaken by the Department of Environmental Protection in the Coastal Zone as per section 306 of the federal Coastal Zone Management Act. Planning decisions affecting New Jersey's coastal zone under the New Jersey Water Quality Planning Act and section 208 of the federal Clean Water Act must be consistent with the New Jersey's coastal zone management program.

The Rules on Coastal Zone Management include identification of 48 Special Areas requiring special management consideration. In addition to the four environmental features previously identified, the Rules on Coastal Zone Management generally prohibit development on beaches, dunes and in coastal high hazard areas. These areas have also been excluded from sewer service under this wastewater management plan because providing centralized sewer service would encourage a development pattern inconsistent with the environmental sensitivity, recreational importance, and risk to life and property in these areas.

The Rules on Coastal Zone Management further define planning areas within the coastal zone designed to shape future development patterns along the coast. Among the five coastal planning areas the Coastal Fringe, Coastal Rural and Coastal Environmentally Sensitive Planning Areas are identified as areas to encourage growth in compact centers and to maintain low density and low intensity development outside of those centers. The extension of centralized sewer service in these planning areas is inconsistent with the growth and protection objectives of New Jersey's Coastal Zone Management program and therefore, these coastal planning areas have been excluded from sewer service areas.

Proposed developments tying into existing and proposed sewer service areas which require coastal permits must demonstrate compliance with all applicable sections of the Coastal Zone Management rules including, but not limited to, Wetlands (N.J.A.C. 7:7E-3.27), Wetlands Buffers (N.J.A.C. 7:7E-3.38), Secondary Impacts (N.J.A.C. 7:7E-6.3), Public Facility Use Policies (N.J.A.C. 7:7E-7.6), Water Quality (N.J.A.C. 7:7E-8.4), Ground Water Use (N.J.A.C. 7:7E-8.6) and the policies under General Land Areas rules, Subchapters 5, 5A and 5B.

Coordination with the Coastal Zone Management Program (if applicable)

The Township of Elsinboro has identified areas of existing development that are believed to have failing septic systems. Pursuant to 7:15-3.5(b)4.ix, a revision to an adopted SSA is allowed to provide for connection of an existing structure(s) with a malfunctioning subsurface sewage disposal system that is not currently within an approved sewer service area to an identified sewage treatment plant, provided the applicant demonstrates that it is not feasible to repair or replace the malfunctioning subsurface sewage disposal system under N.J.A.C. 7:9A-3.4 and the property where the existing structure is located is contiguous to the existing sewer line. In addition, upon review of these areas with the Department, the areas under consideration are within the coastal zone and regulated by CAFRA. Consequently, these areas have not been included as part of the FWSA at this time. The County is prepared to assist the Township with the regulatory issues presented by the CAFRA jurisdiction. The Township will pursue an approved SSA, through the amendment process, upon working through the regulatory planning approval process.

The County and the Township are currently working with the Department to identify documentation and reporting requirements necessary to substantiate the inclusion of these areas within the FWSA through the amendment process.

Delaware River Basin Commission

The Delaware River Basin Commission regulates the discharge of pollutants into, and the withdrawal of water from, the Delaware River Basin; therefore, wastewater and water supply decisions affecting the Delaware River Basin must be coordinated with the Commission.

Coordination with the Delaware River Basin Commission

Through the WMP process, Salem County has provided public notice of the FWSA map adoption to the DRBC.

Coordination with Municipalities, Sewer Authorities and Water Utilities

Table 4-1 identifies the municipalities, wastewater and water utilities that have been consulted during the preparation of the County WMP. The County generally consulted with various municipalities and utilities through the process by phone, email and/or meetings. Meetings were held with applicable municipalities to discuss the FWSA to be delineated and present preliminary comments provided from the Department. In addition, municipal staff or designated professional were consulted to verify existing system information, further define areas currently served and areas to be served in the future as well as water and sewer buildout analysis. Notices for public information sessions and the adoption of the FWSA mapping were also provided by the County.

Table 4-1: Municipalities and Utilities Contacted During WMP Process		
Municipality	Wastewater Utilities	Water Supply Utilities
Alloway Township	Salem City Sewer Department	Salem City Water Department
Carneys Point Township	Carneys Point Sewerage Authority	New Jersey American Water
Elmer Borough		Elmer Water Department
Elsinboro Township	Salem City Sewer Department	Salem City Water Department
Lower Alloways Creek Township	Lower Alloways Creek Township	
Mannington Township	Salem City Sewer Department	Salem City Water Department
Oldmans Township	Carneys Point Sewerage Authority	New Jersey American Water
Penns Grove Borough	Penns Grove Sewer Authority	New Jersey American Water
Pennsville Township	Pennsville Sewerage Authority	Pennsville Water Department
Pilesgrove Township	Woodstown Sewer Authority (WSA)	Woodstown Water Department
Pittsgrove Township		
Quinton Township	Salem City Sewer Department	Salem City Water Department
Salem City	Salem City Sewer Department	Salem City Water Department
Upper Pittsgrove Township		
Woodstown Borough	Woodstown Sewer Authority (WSA)	Woodstown Water Department

Proposed Wastewater Service Areas

Map No.3 delineates the Future Wastewater Service Areas for the County WMP, based on the following:

Existing or previously approved WMPs, that have been incorporated into this WMP;

Environmental, and local land use planning objectives discussed within this report and further clarified within the municipal chapters prepared as part of this WMP.

All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SUI) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent.

The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

V. Future County Wastewater and Water Demand

This chapter describes the build-out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP.

In general, zoning, as described below, was applied to the developable area within the sewer service area after removing those areas where development is not expected to occur: These areas consist of small irregular polygons, open space, wetlands, steep slopes and riparian zones. All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. The specific criteria utilized for build-out flow calculations are more clearly defined in each municipal chapter.

The build-out in the non-sewer service area was calculated by applying the zoning over all undeveloped land except polygons too small to support additional development. The number of residential units and non-residential floor area were then multiplied by the wastewater planning flow estimates in either N.J.A.C. 7:14A or 7:9A as appropriate.

The build-out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. This takes water uses that do not produce sewerage flow, e.g. watering plants, into account. The results of the analysis are presented in both the municipal chapters and in the facility tables.

Conformance and Nonconformance with Zoning and Prior Land Use Approvals

Where the WMP build-out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in the affected municipal chapter(s). No deviations from current zoning have been identified for inclusion within the WMP.

Municipal Zoning

The County has collected all available information on municipal zoning using digital sources. A composite zoning map for the County has not been developed because municipal zoning ordinances are not uniform in their nomenclature or definitions. Consequently, zoning information provided is specific for each municipality and is referenced in the municipal chapters. The zoning information presented within the municipal chapters was utilized for identifying "SSA developable area" for each applicable municipality and the preparation of the build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Calculating Future Wastewater and Water Supply Needs and Capacity

Using the Countywide information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is the constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities.

Municipal Demand Projections in Urban Municipalities

The Water Quality Management Planning rules define urban municipalities as those municipalities where 90 percent of the municipality’s developable land area appears as “Urban” as designated in the NJDEP’s 1995/97 and 2002 Lands Use/Land Cover geographical information systems database. The Department allows that areas such as water and permanently deed restricted open space not be included as developable. **Table 5-1** lists the municipalities that meet NJDEP’s definition of urbanized municipality. In these municipalities it is assumed that redevelopment of previously developed portions of the municipality will make up the majority of the future wastewater management needs. Therefore, an application of zoning to the undeveloped and developable land area of the municipality in these municipalities may underestimate their future wastewater management needs. In these municipalities a 20-year wastewater projection is based on population and employment projections

Table 5-1. Determination of Urbanized Municipalities				
Municipality	% Urban	% Preserved	% Developable	Urbanized? Yes/No
Penns Grove Borough	96%	2%	2%	Yes

The Borough of Penns Grove is an urban-based municipality bounded by the Delaware River (to the west), and Carneys Point Township (to the north, east, and south). Penns Grove encompasses a total area of 583 acres (0.91 square miles). This municipality has been developed extensively and has the highest population density in Salem County (approximately 5,654 people/sq mi), according to (2010) U.S. Census data.

Future wastewater is calculated from the population and employment projections by multiplying the projected increase in population by 75 gallons per day per person and the projected increase in employment by 25 gallons per day per person. Penns Grove Borough’s population and employment 20-year projection was taken from an estimate made by the South Jersey Transportation Planning Organization (SJTPO), which employed data from historical U.S. Censuses. Further information regarding population data is provided within the municipal chapters.

Table 5-2 provides an analysis of the population projection for the listed urban municipalities through the next 20 years. The flows contributed from residential, commercial, and industrial production are expected to remain stable.

Municipality		Current (2010)	20 Years (2030)	Projected Flows		% Change
				# of People	Flow (mgd)	
Penns Grove Borough	Population	5147	5776	629	0.047	12.22
	Employment	1119	1295	176	0.004	15.73
	Flow (mgd)	0.405	0.457		0.052	12.73

Municipal Demand Projections in Non-urban Municipalities

In the remaining municipalities it is anticipated that development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build-out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build-out depending on the wastewater service area designation.

Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. A summary of the build-out analysis for each municipality is presented in the municipal chapters. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation.

The projected wastewater data is also aggregated by wastewater treatment plant in chapter VI and presented in facility tables in chapter VII for comparison to the existing permitted capacity of each facility.

Table 5-3 provides a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the FWSA build-out analysis. *The basis for projecting residential, commercial and industrial flows is generally defined above. Any specific deviations from this method are further described within the applicable municipal chapter.*

Table 5-3. Additional Development at Build-out					
Municipality	FWSA Developable Area (Acres)	Number of Potential Units			Total Units
		Residential	Commercial	Industrial	
Alloway Township	222.0	98	14	n/a	112
Carneys Point Township	3,026.3	2,727	3,038	55	5,820
Elmer Borough	402.65	577	n/a	n/a	577
Elsinboro Township	Not proposing FWSA at this Time				
Lower Alloways Creek Township	174	348	n/a	n/a	348
Mannington Township	51	233	1	n/a	234
Oldmans Township	1,334	822	288	33	1,143
Penns Grove Borough	N/A: Borough is an urban municipality.				
Pennsville Township	N/A: Township WMP is already adopted.				
Pilesgrove Township	Refer to report.	127	60,000 SF	n/a	128
Pittsgrove Township	Proposing FWSA to Include Pepco Site at this time. Refer to municipal chapter.				
Quinton Township	238.8	214	5	n/a	219
Salem City	261.3	1,081	16	221	1,318
Upper Pittsgrove Township	Not proposing FWSA at this Time				
Woodstown Borough	88.9	212	23	114	349

Septic System Development Within the Sewer Service Areas

Individual subsurface sewage disposal systems (ISSDS) for individual residences can only be constructed in depicted sewer service areas if legally enforceable guarantees are provided, before such construction, that use of such systems will be discontinued when the depicted sewer service becomes available. This applies to ISSDS that require certification from the Department under the Realty Improvement Sewerage and Facilities Act (N.J.S.A. 58:11-23) or individual Treatment Works Approval or New Jersey Pollutant Discharge Elimination System Permits (under N.J.A.C. 7:14A). It also applies to ISSDS, which require only local approvals. Compliance with the connection requirement will be demonstrated through adoption of a municipal or sewerage authority ordinance, which requires abandonment of the septic and connection to the sewer system once it becomes available.

Collection System Construction Within the Sewer Service Areas (if applicable)

Where an area is designated for sewer service but the required trunk line or collection main has not yet been constructed, some local entities require that dry sewer lines be constructed within each new development. The developments will be connected to the sewer system as line capacity is constructed. Municipalities that have such an ordinance are identified in Chapter VI and Chapter IX below.

Future Wastewater Outside of Sewer Service Areas

*** Nitrate dilution analyses sections are included for the City of Salem, Woodstown Borough, and Pennsgrove Township, however a full analysis for each municipality was not required. Pennsgrove's SSA extends to the municipal boundary, leaving no areas designated for ground water discharges, while both the City of Salem and Woodstown Borough also have no developable land outside of the SSA which is not constrained by environmentally sensitive areas.

P.L. 2011, c. 203, as amended by P.L. 2013, c. 188, allows the wastewater management planning agency to prepare and submit, and the Department to accept, and adopt other portions of a wastewater management plan in addition to those portions that provide for the designation of a sewer service area, however the phased portions submitted must still comply with the Water Quality Management Planning rules at N.J.A.C. 7:15-5.25. Please note that nitrate dilution analyses are included in this plan amendment for Woodstown Borough, Salem City, and Pennsgrove Township, while said analyses for the remaining municipalities are included for reference only in Appendix A. The remaining municipalities' did not have sufficient zoning to comply with the nitrate standards, and have not yet taken measures to ensure compliance.

Non-degradation Areas

Areas located within the watershed of a Freshwater One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class 1-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water area based on the Surface Water Quality Standards at N.J.A.C. 7:(B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6". Where this requirement has been studied and reviewed as part of the WMP process this classification appears on **Map 3**. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6.

VI. Analysis of Capacity to Meet Future Wastewater Needs

This chapter provides an assessment of whether there is sufficient wastewater treatment capacity to meet the needs of the County based on the projections described above. For sewer service areas this requires the aggregation of municipal wastewater projections by sewage treatment plant and a comparison of the projected future demand to the existing permitted capacity of the sewage treatment plant. Instances where a sewage treatment plant does not currently have sufficient remaining capacity to meet the wastewater needs of the FWSA area are specifically identified within the municipal chapters.

As previously noted, nitrate dilution analyses methods and results are included in this plan amendment for Woodstown Borough, Salem City, and Pennsgrove Township, while said analyses for the remaining municipalities are included for reference only in Appendix A.

Table 6-1 provides a breakdown of future wastewater flows by service area and by general development category for the County, based on the development projections provided above. The final column determines whether facility capacity is or is not adequate for the projected flows. Where capacities are inadequate, the issue is addressed in later sections.

Table 6-1. Future Wastewater Planning Flows By Facility											
Domestic Wastewater Treatment Facility or FWSA Alternative	Municipality conveying wastewater to Facility	Facility Permitted Flow (MGD)	Existing Flows (MGD)	Projected Residential Dwelling Units	Projected Residential Flow (MGD)	Projected Industrial Units (sq ft)	Projected Industrial Flow (MGD)	Projected Commercial Units (sq ft)	Projected Commercial Flow (MGD)	Total Future Planning Flows (MGD)	Excess (or Deficit) Facility Capacity (MGD)
Carneys Point WWTP		1.300	1.069							3.554	-3.323
	Carneys Point Township		1.048	2,727	0.732	55	0.069	3,038	1.391	2.192	
	Oldmans Township		0.021	822	0.247	33	0.216	288	0.900	1.362	
Caton Village WWTP		0.500	0.140							0.320	0.040
	Lower Alloways Creek			105	0.320	n/a	n/a	n/a	n/a	0.320	
Hancocks Bridge WWTP		0.500	0.110							0.290	0.100
	Lower Alloways Creek			243	0.290	n/a	n/a	n/a	n/a	0.290	
Penns Grove WWTP (Urban Designation)	Based on Population	0.750	0.405							0.052	0.293
	Penns Grove Borough			629	0.047	n/a	n/a	176	0.005	0.052	
Pennsville WWTP (*)	Based on Approved WMP.	1.875	1.366							0.287	0.222
	Pennsville Township		1.355	n/a	0.073	n/a	0.018	n/a	0.192	0.283	
	Carneys Point Township		0.011	n/a	0.000	n/a	n/a	n/a	0.004	0.004	
Salem City WWTP		1.400	0.696							0.513	0.191
	Salem City		0.547	1,081	0.324	221	0.049	16	0.005	0.378	
(Agreement with Salem)	Alloway Township	0.064	0.016	98	0.029	n/a	n/a	14	0.005	0.034	
(Agreement with Salem)	Quinton Township	0.063	0.027	214	0.064	n/a	n/a	5	0.033	0.097	
(Mannington Mills Agreement)	Mannington Township	0.1225*	0.104	224	0.004	n/a	n/a	1	0.001	0.005	
	Elsinboro Township	0.001	0.001	n/a	n/a	n/a	n/a	n/a	n/a	0.000	
Woodstown WWTP		0.530	0.346							0.152	0.032
	Woodstown Borough		0.237	212	0.061	114	0.041	23	0.019	0.120	
(Flows for School)	Pilesgrove Township		0.034	n/a	0.005	n/a	n/a	n/a	n/a	0.005	
(Remaining Allocated Flow)	Mannington Township		0.076	n/a	0.027	n/a	n/a	n/a	n/a	0.027	
FWSA Area (Alternative)		0.00	0.00							0.142	-0.142
	Elmer Borough			577	0.108	N/A	N/A	1.00	0.034	0.142	
FWSA Area (Site Specific)		0.00	0.00							0.012	-0.012
Pepco Site	Pittsgrove Township			N/A	N/A	N/A	N/A	1.00	0.012	0.012	

Adequacy of Sewage Treatment Plant Capacity

Details of the projections are included within the municipal chapters, which also address any needs for new or expanded treatment facility discharges. The facility tables in Section VII provide detailed information on the planning flows for each new and expanded treatment facility. The following facilities will require new or expanded capacity to accommodate the FWSA:

Facility / Municipality	Domestic (D) or Industrial (I)	DGW/ DSW	Existing Permitted Flow (MGD)	Future Flow Projection (MGD)
Carneys Point Township			1.3	2.192
Oldmans Township			Served by CPSA	1.362
Borough of Elmer	D	TBD	0	0.142
Pittsgrove Township	(Future Pepco Facility)	DSW	0	0.012

Analysis and Selection of Treatment Alternatives

The FWSA sanitary build-out analysis results indicate that Oldmans Township and the Borough of Elmer will need to identify alternative facilities to receive wastewater to support future wastewater management needs projected by the plan. Carneys Point Township will also need to either expand existing treatment facilities or identify alternative facilities to support projected flows from this municipality, as there is marginal capacity for growth in the future. Due to the current economic climate, projected growth rate of the population and the anticipated short-term need for additional capacity, the municipality is not proposing new or expanded facilities at this time.

These municipalities will begin to review the potential process improvements and available treatment alternatives based on the direction of their governing body. It is anticipated that the municipalities would consider the Gloucester-Salem County Regional Alternative to meet future development needs.

The Salem County Pollution Control Financing Authority conducted a sanitary sewer study in an effort to conceptualize a regional sewage system plan for the County. The intent of the plan is to convey sanitary sewer to a newly constructed treatment facility to be located on the Dupont Chambers Works property in Carneys Point Township. The planning of this effort is ongoing and currently in the environmental assessment and preliminary engineering stage of development.

Compliance with Environmental Protection Standards

The County WMP must ensure that proposed wastewater service areas are in the proper areas and will minimize or eliminate primary and secondary environmental impacts. The identification of appropriate wastewater service areas begins with the analysis of environmentally sensitive areas discussed above. Added to this result are the build-out analyses. The result is a determination of what areas are both zoned for and appropriate for sewer service, and which areas are not appropriate for sewers due to zoning, environmentally sensitive areas, or both.

The FWSA map was adopted by the Department on September 19, 2013. The area has been identified based on the environmental constraints "Landscape Project GIS Layers" available from the Department. The treatment facilities for the defined FWSA do not guarantee that

sufficient wastewater treatment capacity will be available for the complete build-out of the area, at this time. However, there are other environmental considerations regarding pollutant loadings, water supply and other factors. In some cases (e.g., riparian zones and steep slopes) the WQMP rules require that municipal ordinance ensure protection of these areas regardless of their wastewater service area.

Further, the WQMP rules establish that avoidable development within these areas is inconsistent with the Statewide Water Quality management plans and the Department cannot issue any permits or approvals for development of these areas. Table 6-4 below provides the status of adoption of the required municipal ordinances.

TMDLs and Watershed Restoration/Regional Stormwater Management Plans

The Department received a plan prepared by Rutgers University entitled "Upper Salem River Watershed Restoration and Protection Plan", dated April 2013. The Upper Salem River watershed drains to the Delaware River and encompasses 15 square miles, including 20 miles of rivers and streams and lakes. The plan primarily identified one (1) lake (Memorial Lake in Woodstown Borough). However, other lakes within the watershed include East Lake, Avis Mill Pond, Slabtown Lake and Fox Mill Lake. Several smaller dammed impoundments throughout the watershed are utilized for flood control. This watershed contains sections of Upper Pittsgrove Township, Pilesgrove Township, and Woodstown Borough located within in Salem County. The plan included a comprehensive watershed characterization and assessment and a management plan to address water quality impairments for the Upper Salem River watershed. TMDL's were identified within the report for fecal coliform and total phosphorus (TP). Fecal coliform TMDL requires an 84% reduction with the total phosphorus (TP) TMDL requiring an 88% reduction. Since the Salem River drains to Memorial Lake, the applicable lake water quality criterion of 0.05 mg/L was used for the TP TMDL.

In addition to the above referenced watershed, a plan was received for Seeleys Pond Sunset Lake located In Upper Deerfield Township, Cumberland County within the Upper Cohansey River Watershed. This watershed contains headwater within sections of Alloway Township and Upper Pittsgrove Township, Pittsgrove Township located within in Salem County. TMDL's were identified within the report for fecal coliform and total phosphorus (TP). Fecal coliform TMDL requires an 66% reduction with the total phosphorus (TP) TMDL requiring an 92% reduction, which is the lake standard, which applies because the Cohansey River drains to Sunset Lake. Also, Parvin Lake in Pittsgrove Township has a fecal coliform TMDL. However, there aren't any restoration projects associated with this adopted TMDL.

Nonpoint and stormwater sources are the primary contributor to fecal coliform from sources such as geese, agricultural practices, and domestic pets to the drinking water. Nonpoint sources also include steady inputs from sources such as failing sewerage conveyance systems and failing or inappropriately located septic systems. However, because the total source contribution from wastewater treatment plants is an insignificant fraction of the total load, these pathogen TMDL's will not impose any change in current effluent limits at wastewater treatment facilities.

Management measures for such sources include the measures already required as part of the municipal stormwater permits as well as more targeted measures that are source appropriate such as the restoration of riparian buffers and other best management practices. Table 9-2 reflects Stormwater management plan ordinances that have been adopted by the Municipalities within Salem County.

The plans have been reviewed by the Department and determined that it sufficiently addresses the USEPA's requirements for watershed restoration plans. In addition, it has adequately identified and prioritized specific projects to be implemented for improved water quality. Projects have been prioritized based on percent removal of pollutants, need on a subwatershed basis, impact on the watershed's discharge quality, overall cost-effectiveness, and best professional judgment. **Environmental Protection Ordinances**

Table 6-4 addresses the status of municipal ordinances regarding the protection of steep slopes, riparian zones and the maintenance of septic systems as addressed in the municipal chapters. The applicable ordinances are referenced within Chapter 9 and municipal chapters.

Municipality	Master Plan	Zoning Ordinance & Map	Stormwater Ordinance (Groundwater Recharge Maintenance)	Riparian Zone Ordinance	Septic Connection in Sewer Service Areas
Alloway Township	Y	Y	Y	Y	Y
Carneys Point Township	Y	Y	Y	P	Y
Elmer Borough	Y	Y	Y	P	
Elsinboro Township	Y	Y	Y	P	
Lower Alloways Creek Township	Y	Y	Y	Y	Y
Mannington Township	Y	Y	Y	P	
Oldmans Township	Y	Y	Y	P	
Penns Grove Borough	N	Y	Y	P	
Pennsville Township	Y	Y	Y	Y	Y
Pilesgrove Township	Y	Y	Y	P	
Pittsgrove Township	Y	Y	Y	P	
Quinton Township	Y	Y	Y	Y	Y
City of Salem	Y	Y	Y	P	Y
Upper Pittsgrove Township	Y	Y	Y	P	
Woodstown Borough	Y	Y	Y	Y	Y

**Y means that the master plan is within its 10 year update period, or that the ordinance has been adopted and is in compliance with NJAC 7:15.*

**P means the ordinance is has been drafted for compliance with NJAC 7:15 and is currently progressing towards adoption. The ordinance must be adopted prior to WMP/WMP chapter adoption.*

VII. Wastewater Facility Tables

The wastewater facility tables for all sanitary and/or process wastewater discharge to surface water facilities and those sanitary and/or process wastewater discharge to groundwater facilities discharging greater than 2,000 gallons per day (i.e., requiring NJPDES permits) are listed in Table 7-1 below.

Table #7-1 Summary of NJPDES Facility information (From Available DEP Sources, August, 2012)				
Table #	NJPDES	Facility Name	DIS TYPE	Municipality
Alloway Township				
1	NJ0054283	Alloway Township Landfill - (Closed)	GWIND	Alloway
2	NJ0102113	Salem County Solid Waste Facility	GWIND	Alloway
3	NJG0086959	Yogi Bear Jellystone @ Tall Pines Resort	T1	Alloway
4	NJG0088781	Roosevelt Scout Reservation	T1	Alloway
Carneys Point Township				
5	NJ0021601	Carney's Point Twp SA	SW	Carneys Point
6	NJ0073750	Carneys Point Gen Plant	GWIND	Carneys Point
7	NJ0128996	Carneys Point Generating Plant	GWIND	Carneys Point
8	NJG0100641	Westwood Villa	T1	Carneys Point
9	NJG0165565	Deepwater Diner	T1	Carneys Point
Elmer Borough				
10	NJ0099571	Elmer Community Hospital	GWIND	Elmer
Lower Alloways Creek Township				
11	NJ0050423	Lower Alloways Ck - Hancocks Bridge	SW	Lower Alloways Creek
12	NJ0062201	Lower Alloways Ck - Canton Village	SW	Lower Alloways Creek
13	NJG0112666	Meadowview Acres Campground	T1	Lower Alloways Creek
14	NJ0005622	PSE&G - Salem NGS	SW	Lower Alloways Creek
15	NJ0025411	PSE&G - Hope Creek NGS	SW	Lower Alloways Creek
Oldmans Township				
16	NJ0004286	Polyone Corp - Pedricktown	SW	Oldmans
17	NJ0024635	Fort Dix - Pedricktown Sup Fac	SW	Oldmans
18	NJ0137707	Oldmans Township School	T1	Oldmans
19	NJG0100684	295 Auto Truck Plaza Inc	T1	Oldmans
Penns Grove Borough				
20	NJ0024023	Penns Grove SA	SW	Penns Grove
Pennsville Township				
21	NJ 00056499	Pennsville Township Landfill	GWIND	Pennsville
22	NJ0005100	E I DuPont - Chamber Works	SW	Pennsville
23	NJ0021598	Pennsville SA	SW	Pennsville
24	NJ0068705	Pennsville Twp - Heron Wtp	SW	Pennsville
25	NJ0068730	Pennsville Twp - Water St Wtp	SW	Pennsville
26	NJG0133159	Fort Mott State Park	T1	Pennsville

Pilesgrove Township				
27	NJ0004308	Waddington-Richman Inc	SW	Pilesgrove
28	NJ0100218	Waddington-Richman Inc	GWIND	Pilesgrove
29	NJG0136221	Four Seasons Campground	T1	Pilesgrove
Pittsgrove Township				
30	NJ0099678	Harding Woods Inc	GWIND	Pittsgrove Twp
31	NJ0090221	Arthur Shalick High School	GWIND	Pittsgrove Twp
32	NJ0157716	Daytop of NJ	GWIND	Pittsgrove Twp
33	NJG0066214	Picnic Grove Mobile Homes	T1	Pittsgrove Twp
34	NJG0084883	The Villages I	T1	Pittsgrove Twp
35	NJG0108405	Holly Tree Acres Trailer Home	T1	Pittsgrove Twp
36	NJG0129577	Centerton Country Club	T1	Pittsgrove Twp
37	NJG0133167	Parvin State Park	T1	Pittsgrove Twp
38	NJG0158496	Rainbow Center	T1	Pittsgrove Twp
39 (*)	NJ006184	B&B Poultry Co., Inc.	D-STP	Pittsgrove Twp
39A (**)	N/A	Pepco Site (Future Facility).	D-STP	Pittsgrove Twp
Quinton Township				
40	NJ0054909	Quinton Township Landfill- (Closed)	GWIND	Quinton
Salem City				
41	NJ0024856	Salem City WWTP	SW	Salem City
42	NJ0035742	Salem City WTP	SW	Salem City
Upper Pittsgrove Township				
43	NJ0099198	Burlington Beef	GWIND	Upper Pittsgrove Twp
44	NJ0169889	WaWa	T1	Upper Pittsgrove Twp
45	NJ0100625	Upper Pittsgrove TWP Elementary School	GWIND	Upper Pittsgrove Twp
46	NJG0084603	Country Club Estates	T1	Upper Pittsgrove Twp
47	NJG0133493	Appel Farm Arts & Music Ctr	T1	Upper Pittsgrove Twp
48	NJG0132624	Point 40 Diner	T1	Upper Pittsgrove Twp
49	NJG0170208	Mater Dei Nursing Home	T1	Upper Pittsgrove Twp
50	NJG0170992	Bancroft Neurohealth - Mullica Hill Campus	T1	Upper Pittsgrove Twp
Woodstown Borough				
51	NJ0022250	Woodstown Wastewater Treatment Plant	SW	Woodstown
(*) Note:	This is an SIU Permit that conveys industrial wastewater to the LSA (NJ0025364)			
(**) Note:	This is a future site located in Pittsgrove Township being proposed by Atlantic City Electric.			

A copy of each of the facilities tables identified within the above summary table is provided below. Each facility is listed in accordance with its corresponding table number.

Table 1	
1. Name of Facility:	Alloway Township Landfill- (CLOSED)
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0054283
3. Discharge to ground water (DGW)	DGW
4. Owner of facility:	Alloway Township
5. Operator of facility:	Alloway Township.
6. Location of facility:	
a. Municipality & County	Alloway Township, Salem County
b. Street address	Thomas Road and Alloway Friesburg Road
c. Block(s) and Lot(s)	Block 100 Lot 6
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75° 32' 41" b. Latitude 39° 38' 17" or
	c. State Plane Coordinates x- 262831.399 y- 256945.877
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population N/A
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	N/A

Table 2		
Name of Facility:	Salem County Solid Waste Facility	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0102113	
3. *Discharge to ground water (DGW) or surface water (DSW):	N/A, Landfill, leachate trucked off-site*	
4. *Receiving water or aquifer:	N/A	
5. Classification of receiving water or aquifer:	N/A	
6. Owner of facility:	Salem County Solid Waste Facility	
7. Operator of facility:	Salem County Solid Waste Facility	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Alloway, Salem County	
b. Street address	52 MCKILLIP RD ALLOWAY, NJ 08302	
c. Block(s) and Lot(s)	Block 8, Lot 1	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°22'35" b. Latitude 39°35'20" c. State Plane Coordinates x245152, y 276397	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	N/A	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 2030)*** <i>specify one as applicable</i>
Total	N/A	Information not available
* **13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out**** or 20-Year Future (Year 2030) (in MGD) <i>specify one as applicable</i>
Residential flow		
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.0024	Information not available

Table 2 (continued)

Name of Facility:	Salem County Solid Waste Facility
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Notes:

The Salem County Solid Waste Facility is a sanitary landfill located in the northern portion of Alloway Township, which serves the needs of all of Salem County. The facility is owned and operated by the Salem County Utilities Authority. The operation of the facility is authorized by NJDEP Solid Waste Facility Permit No. 1701B. The facility is located on a 252-acre site consisting of a 39 acre permitted landfill area and associated support facilities. The landfill is being developed in 5-acre cells, as landfill capacity is needed. At the conclusion of 1998, approximately 20 acres of the landfill had been constructed.

* The leachate is collected in pipes and drains to the leachate pump station. The leachate is then pumped into a 200,000-gallon leachate storage tank, and hauled off-site for treatment to the Delaware County Regional Water Quality Control Authority treatment facility (DelCORA) in Chester, PA. Approximately (4) 6,000-gallon trucks are used (via C & H Disposal) to transport the leachate Monday through Saturday, although the amount fluctuates depending on how wet it has been. This can be seen as an average of 24,000 gallons per-day that is transported to DelCORA.

** Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

***Expansion of this facility is planned, but future planning information and future flow information is not available at this time.

Table 3	
1. Name of Facility:	Yogi Bear Jellystone @ Tall Pines Resort
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0086959
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	TP Campground Inc
5. Operator of facility:	TP Campground Inc
6. Location of facility:	
a. Municipality & County	Alloway Township, Salem County
b. Street address	49 Beal Road, Elmer, NJ 08318
c. Block(s) and Lot(s)	Block 103, Lots 1, 3.01
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°16'38" b. Latitude 39°32'28" or c. State Plane Coordinates x 271543; y 260111
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	262 sites. 3 bathhouses, 2 RV waste disposal stations, 1 laundry room*
Other:	
Facility Total	
Design Flow (MGD)	0.002

Notes:

* The facility maintains 262 campsites on 113 acres of land. The facility includes campsites with RV sewer hook-ups, three (3) bathhouses, two (2) RV waste disposal stations, and laundry room. The system includes an unknown number of septic tanks and disposal fields. The system authorized by this permit is for sanitary waste only.

Table 4	
1. Name of Facility:	Roosevelt Scout Reservation
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0088781
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Southern NJ Council BSA
5. Operator of facility:	Southern NJ Council BSA
6. Location of facility:	
a. Municipality & County	Alloway Township, Salem County
b. Street address	Watson Mill Road, Alloway, NJ 08001-0000
c. Block(s) and Lot(s)	Block 36, Lots 6, 10, 10.1, 19.01, 26
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°17'11" b. Latitude 39°34'34" or
	c. State Plane Coordinates x 269439; y 271749
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	230 scouts, 20 pit latrines, 7 field drains serving 7 buildings*
Other:	
Design Flow	0.002

Notes:

* This facility consists of a Boy Scout resident camp for approximately 230 scouts covering 123 acres. The camp is only open for 7 weeks each summer. The on-site sanitary facilities include 20 pit latrines at campsites and activity areas and 7 field drains serving 7 buildings. The system authorized by this permit is for sanitary waste only.

Table 5		
Name of Facility:	Carneys Point Township SA	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0021601	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	Carneys Point Township Sewerage Authority	
7. Operator of facility:	Carneys Point Township Sewerage Authority	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Carneys Point Twp, Salem County	
b. Street address	Cleveland & E Streets Carneys Point, NJ 08069	
c. Block(s) and Lot(s)	Block 157, Lot 2	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°21'32" b. Latitude 39°42'40" or c. State Plane Coordinates x 217730; y 321273	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	1.3 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 2030)** specify as applicable
Municipality: Carneys Point	2,596	6,139
Municipality: Oldmans Twp	300	304
Total	2,896	6,443
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out** or 20-Year Future (Year 2030) specify as applicable (in MGD)
<u>Municipality:</u>	Carneys Point	Carneys Point
Residential flow	0.662	1.394
Commercial flow	0.320	1.711
Industrial flow	0.066	0.135
Infiltration/Inflow	N/A	N/A
Municipal Total	1.048	3.24

Table 5 (continued)

Name of Facility:	Carneys Point Township SA	
<u>Municipality:</u>	Oldmans Twp	Oldmans Twp
Residential flow	0.015	0.262
Commercial flow	0.006	0.906
Industrial flow	0	0.216
Infiltration/Inflow	N/A	N/A
Municipal Total	0.021	1.384
Facility Total	1.069	4.624

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Data regarding the estimated population served by 2030 is based on population projections and the anticipated number of new connections. The summary of wastewater flow represents build-out projections within the adopted FWSA. The complete build-out may not be realized by 2030, based on the population projections.

Table 6		
Name of Facility:	Carneys Point Gen Plant (Revoked)	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0073750	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW	
4. Receiving water or aquifer:	Delaware River via Whooping John Creek	
5. Classification of receiving water or aquifer:	Zone 5	
6. Owner of facility:	Carneys Point Generating Plant	
7. Operator of facility:	Carneys Point Generating Plant	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Carneys Point, Salem County	
b. Street address	500 Shell Road Carneys Point, NJ 080692926	
c. Block(s) and Lot(s)	Block 185, Lot 1	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°29'04"	
	b. Latitude 39°41'32"	
	c. State Plane Coordinates x 214722.06976; y 314506.23557	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	N/A	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 20__) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	N/A	N/A

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Table 7		
Name of Facility:	Carneys Point Generating Plant	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0128996	
3. Discharge to ground water (DGW) or surface water (DSW):	DGW	
4. Receiving water or aquifer:		
5. Classification of receiving water or aquifer:		
6. Owner of facility:	Carneys Point Generating Plant	
7. Operator of facility:	Carneys Point Generating Plant	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Carneys Point, Salem County	
b. Street address	500 Shell Road Carneys Point, NJ 08069	
c. Block(s) and Lot(s)	Block 185, Lot 1	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°29'12" b. Latitude 39°41'24" or c. State Plane Coordinates x 214483, y 313545	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 2030) <i>specify one as applicable</i>
Total	0	N/A
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out or 20-Year Future (Year 2030) as applicable (in MGD)
Residential flow	0	
Commercial flow	0	
Industrial flow	0	
Infiltration/Inflow	0	
Facility Total	0	N/A

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**All process and sanitary wastewater flows go to DuPont Chambers Works in Pennsville Township.

Table 8	
1. Name of Facility:	Westwood Villa (Formerly Handy's Mobile Home Park)
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0100641
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Navillus Group
5. Operator of facility:	Navillus Group
6. Location of facility:	
a. Municipality & County	Carneys Point, Salem County
b. Street address	57 E. Quillytown, Road Carneys Point, NJ 08069
c. Block(s) and Lot(s)	Block 239, Lot 4
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°24'17" b. Latitude 39°41'12" or c. State Plane Coordinates x 237276; y 311590
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	46 sites*
Other:	
Design Flow (MGD)	0.0046

Notes:

This facility consists of a 10-acre site with 46 mobile homes served by 42 septic systems.

Table 9	
1. Name of Facility:	Deepwater Diner
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0165565
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	RKDJ Realty LLC.
5. Operator of facility:	RKDJ Realty LLC.
6. Location of facility:	
a. Municipality & County	Carneys Point, Salem County
b. Street address	455 Shell Road Carneys Point, NJ 08069
c. Block(s) and Lot(s)	Block 193, Lot 7
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°29'03" b. Latitude 39°41'31" or
	c. State Plane Coordinates x 215195 y 314246
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	120 seats*
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.0042

Notes:

The Deepwater Diner is an existing restaurant and has a capacity of 120 seats. The system has a 1-2000 gallon septic tank, 1-1000 gallon septic tank, 4-1000 gallon grease tanks, 1-1000 gallon dosing tank with two pumps and a 33 x 95 feet disposal field.

Table 10		
Name of Facility:	South Jersey Hospital	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0099571	
3. Discharge to ground water (DGW) or surface water (DSW):	DGW- K01K	
4. Receiving water or aquifer:	Bridgeton	
5. Classification of receiving water or aquifer:	II-A	
6. Owner of facility:	South Jersey Hospital/Inspira Medical Centers	
7. Operator of facility:	South Jersey Hospital/Inspira Medical Centers	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Elmer Borough, Salem County	
b. Street address	501 Front Street Elmer, NJ 08318-1090	
c. Block(s) and Lot(s)	Block 12, Lot 2.11, 12, 13, 14 (B53, L12 in Upper Pitts)	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°10'45"	
	b. Latitude 39°35'18" or	
	c. State Plane Coordinates x 300476; y 275250	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.024	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 20__) <i>specify one as applicable</i>
Total	54 patients, 90 staff	100 patients, 200 staff
*13. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (3/2010-2/2011) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) as applicable (in MGD)
Residential flow		
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.015	0.050

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Table 11		
Name of Facility:	Lower Alloways Ck – Hancocks Bridge	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0050423	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A	
4. Receiving water or aquifer:	Alloways Creek	
5. Classification of receiving water or aquifer:	SE1(C2) - tidal tributary to Zone 5	
6. Owner of facility:	Lower Alloways Creek Township	
7. Operator of facility:	Lower Alloways Creek Township	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Lower Alloways Creek Township, Salem County	
b. Street address	Poplar Street Hancocks Bridge, NJ 08038-0000	
c. Block(s) and Lot(s)	Block 5, Lot 12.01	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°27'39" b. Latitude 39°30'31" or c. State Plane Coordinates x 221065; y 247376	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.05 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 2030)** <i>specify one as applicable</i>
Total	275	275
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out** or 20-Year Future (Year 2030) (in MGD) <i>specify one as applicable</i>
Residential flow	0.011	0.040
Commercial flow	N/A	N/A
Industrial flow	N/A	N/A
Infiltration/Inflow	N/A	N/A
Facility Total	0.011	0.040

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Data regarding the estimated population served by 2030 is based on population projections and the anticipated number of new connections. The summary of wastewater flow represents build-out projections within the adopted FWSA. The complete build-out may not be realized by 2030, based on the population projections.

Table 12

Table 12		
Name of Facility:	Lower Alloways Ck – Canton Village	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0062201	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A	
4. Receiving water or aquifer:	Stow Creek	
5. Classification of receiving water or aquifer:	SE1(C2) - tidal tributary to Zone 6	
6. Owner of facility:	Lower Alloways Creek Township	
7. Operator of facility:	Lower Alloways Creek Township	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Lower Alloways Creek Twp, Salem County	
b. Street address	Main Street Lower Alloways Creek Twp, NJ 08079	
c. Block(s) and Lot(s)	Block 42, Lot 2.02	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°24'11" b. Latitude 39°27'45" c. State Plane Coordinates x 237192; y 230416	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.05 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 2030) <i>specify one as applicable</i>
Total	349	349
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out or 20-Year Future (Year 2030) (in MGD) <i>specify one as applicable</i>
Residential flow	0.014	0.046
Commercial flow	N/A	N/A
Industrial flow	N/A	N/A
Infiltration/Inflow	N/A	N/A
Facility Total	0.014	0.046

*Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Data regarding the estimated population served by 2030 is based on population projections and the anticipated number of new connections. The summary of wastewater flow represents build-out projections within the adopted FWSA. The complete build-out may not be realized by 2030, based on the population projections.

Table 13	
1. Name of Facility:	Meadowview Acres Campground
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0112666
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Estate of Traae Robert A
5. Operator of facility:	Barbara Carlson (Executor/Daughter)
6. Location of facility:	
a. Municipality & County	Lower Alloways Creek Township, Salem County
b. Street address	73 Buckhorn Road Lower Alloways Creek, NJ 08079
c. Block(s) and Lot(s)	Block 42, Lot 5.03
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°23'46" b. Latitude 39°27'48" or
	c. State Plane Coordinates x 239022; y 231081
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	20 sites, 1 laundry room*
Other:	
Design Flow (MGD)	0.016

Notes:

The facility has a total of 20 campsites and a laundry facility. There are a total of two septic tanks discharging to seven disposal beds at the facility. The systems authorized under this permit are for the discharge of sanitary waste only.

Owner Contact Info: Barbara Carlson, 112 Buckhorn Road, Salem, NJ 08079, 856.935.0461

Table 14		
Name of Facility:	PSE&G – Salem NGS	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0005622	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- B	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	PSEG Nuclear LLC	
7. Operator of facility:	PSEG Nuclear LLC, Salem Generating Station	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Lower Alloways Creek Twp, Salem County	
b. Street address	Alloway Creek Neck Road Hancocks Bridge, NJ 08038	
c. Block(s) and Lot(s)	Block 26, Lot 4	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°31'16" b. Latitude 39°27'42" or c. State Plane Coordinates x204221; y 230375	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	3000 MGD	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.0027	0.0030

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**The wastewater generated from this facility is non-contact cooling water.

Table 15		
Name of Facility:	PSE&G – Hope Creek NGS	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0025411	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW-B	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	PSE&G Nuclear LLC	
7. Operator of facility:	PSE&G Nuclear LLC	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Lower Alloways Creek Township, Salem County	
b. Street address	Artificial Island, Foot of Buttonwood Road Lower Alloways Creek NJ, 08038	
c. Block(s) and Lot(s)	Block 26, Lot 4	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°31'16" b. Latitude 39°27'42" or c. State Plane Coordinates x 204221; y 230375	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	48 MGD	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2013) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	46.08	48.00

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**The discharge flow from DSN 461A consists of cooling tower blowdown (46.7 MGD) with minor waste stream contributions from the Low Volume and Oily Waste System (DSN 461C, 0.04MGD), liquid radioactive waste system (DSN 461B, 0.06 MGD), and the Sewage Treatment System (DSN 462B, 0.01 MGD).

Table 16		
Name of Facility:	Mexichem Specialty Resins, Inc.	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0004286	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW -B	
4. Receiving water or aquifer:	Zone 5 of the Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	Mexichem Specialty Resins, Inc.	
7. Operator of facility:	Mexichem Specialty Resins, Inc.	
8. Co-Permittee of facility (<i>where applicable</i>):		
9. Location of facility:		
a. Municipality & County	Oldmans Township, Salem County	
b. Street address	Rt 130 & Porcupine Road Pedricktown, NJ 08067	
c. Block(s) and Lot(s)	Block 38, Lot 12	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°25'15"	
	b. Latitude 39°45'56" or	
	c. State Plane Coordinates x 233399 ; y 340859	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	2.1MGD	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2007 Flow (in MGD)	Build-out or 20 Year Future (Year 20 —) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.4	2.1

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**The facility discharges treated industrial wastewater with some sanitary wastewater. The majority of the process wastewater is generated from the manufacture of polyvinyl resins and compounds and acrylic latex. In addition, utility water consisting of well water treatment backwash and regenerate, recycle/reuse filter backwash, steam generation blowdown and cooling tower blowdown are also discharged. Sanitary wastewater is pretreated before being combined with the process wastewater in the main treatment plant.

Table 17

Table 17		
Name of Facility:	Fort Dix – Pedricktown Sup Fac	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0024635	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	Energy Freedom Pioneers Inc	
7. Operator of facility:	Energy Freedom Pioneers Inc	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Oldmans Township, Salem County	
b. Street address	Rt 130 Former Camp Pedricktown Bldg 530 Pedricktown, NJ 08046	
c. Block(s) and Lot(s)	Block 45, Lot 5.02	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°26'47" b. Latitude 39°45'07" or c. State Plane Coordinates x 226030; y 335977	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.03 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2014) Population	Build-out or 20-Year Future (Year 20__)** <i>specify one as applicable</i>
Total	50	Information not available
*13. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) as applicable (in MGD)**
Residential flow		
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.0112	Information not available

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Information regarding any future planned expansion is not available at this time.

Table 18	
1. Name of Facility:	Oldmans Township School
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0137707
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Oldmans Township Board of Education
5. Operator of facility:	Oldmans Township Board of Education
6. Location of facility:	
a. Municipality & County	Oldmans Township, Salem County
b. Street address	10 Freed Rd, Pedricktown NJ, 08067
c. Block(s) and Lot(s)	Block 9, Lot 5
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°24' 14" b. Latitude 39°45' 18" or
	c. State Plane Coordinates x 238094 ; y 336669
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	231 students, 36 teachers, cafeteria
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.009045

Table 19	
1. Name of Facility:	295 Auto Truck Plaza Inc.
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0100684
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Exit 7 Operating Corp.
5. Operator of facility:	Exit 7 Operating Corp.
6. Location of facility:	
a. Municipality & County	Oldmans Township, Salem County
b. Street address	185 Straughns Mill Road, Pedricktown NJ, 08067
c. Block(s) and Lot(s)	Block 28, Lot 30.01
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°24'13" b. Latitude 39°43'49" or
	c. State Plane Coordinates x 237431; y 327711
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	10,148 sq. ft
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.0065

Table 20		
Name of Facility:	Penns Grove SA	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0024023	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	Penns Grove Sewerage Authority	
7. Operator of facility:	Penns Grove Sewerage Authority	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Penns Grove Township, Salem County	
b. Street address	Beach Ave & Mill Street Penns Grove, NJ 08069	
c. Block(s) and Lot(s)	Block 118, Lot 2	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°28'27" b. Latitude 39°43'43" or c. State Plane Coordinates x 218278; y 327384	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.75 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 2030)** <i>specify one as applicable</i>
Total	5,147	5,776
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out** or 20-Year Future (Year 2030) (in MGD) <i>specify one as applicable</i>
Residential flow	0.360	0.407
Commercial flow	0.045	0.050
Industrial flow	0	0
Infiltration/Inflow	N/A	N/A
Facility Total	0.405	0.457

*Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Data regarding the estimated population served by 2030 is based on population projections and anticipated number of new connections. The summary of waste water represents build-out projections within the adopted FSWA. This complete build-out may not be realized by 2030, based on the population projection.

Table 21	
1. Name of Facility:	Pennsville Township Landfill
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ00056499
3. Discharge to ground water (DGW)	DGW
4. Owner of facility:	Pennsville Township
5. Operator of facility:	Pennsville Township
6. Location of facility:	
a. Municipality & County	Pennsville Township, Salem County
b. Street address	Industrial Park Road, Pennsville, NJ
c. Block(s) and Lot(s)	Block 4801, Lots 5 & 7
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75° 32' 41" b. Latitude 39° 38' 17" or
	c. State Plane Coordinates x 197926, y294814
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	Information not available*
Design Flow (MGD)	Information not available*

Notes: *The Pennsville Township Landfill is closed. Population and design flow is not available at this time.

Table 22		
Name of Facility:	E I DuPont – Chamber Works	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0005100	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- B	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	El DuPont De Nemours & Co	
7. Operator of facility:	El DuPont De Nemours & Co	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pennsville and Carney's Point, Salem County	
b. Street address	67 Canal Road Pennsville, NJ 08023	
c. Block(s) and Lot(s)	Block 301, Lots 1 and 3	
10. Location of discharge * (i.e. degrees, minutes, seconds):	a. Longitude 75°29'49" b. Latitude 39°41'04" c. State Plane Coordinates x 211657; y 311564	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	62.6 MGD	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Ultimate Build-out
Commercial flow	0.22	N/A
Industrial flow	11.0	N/A
Infiltration/Inflow	14.0	N/A
Facility Total	25.22	N/A

Notes:

The terminus of the wastewater treatment portion of the plant is at Outfall Designator 662A. There is no separate permitted flow here. Effluent from 662A mixes with non-process wastewater from B-Basin, internal monitoring point DSN 322 (which consists of non-contact cooling water, stormwater runoff, steam condensate, and river water) where it mixes with Tank T-3. At Tank T-3 effluent from DSN 662A mixes with water from B-Basin prior to being discharged at DSN 001A.

Table 23		
Name of Facility:	Pennsville SA	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0021598	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A, AS	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	Pennsville Sewerage Authority	
7. Operator of facility:	Pennsville Sewerage Authority	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pennsville Township, Salem County	
b. Street address	183 Delaware Drive Pennsville NJ, 08070	
c. Block(s) and Lot(s)	Block 4802, Lot 2	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75° 32' 32" b. Latitude 39° 38' 20" c. State Plane Coordinates x 198504; y 294657	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	1.875 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2008) Population	Build-out or 20-Year Future (Year 2028)** specify as applicable
Municipality: Pennsville	10,744	11,627
Municipality: Carneys Point	123 ²	123
Total	10,867	11,750¹
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2008) Flow (in MGD)	Build-out** or 20-Year Future (Year 2028)-specify <i>as applicable</i> (in MGD)
<u>Municipality:</u>	Pennsville	Pennsville
Residential flow	1.066	1.1392 ³
Commercial flow	0.239	0.4312 ³
Industrial flow	0.050	0.0675 ³
Infiltration/Inflow	N/A	N/A
Municipal Total	1.355	1.6379
<u>Municipality:</u>	Carneys Point	Carneys Point
Residential flow	0.008	0.008
Commercial flow	0.003	0.007
Industrial flow	0.000	0.000

Table 23 (continued)		
Name of Facility:	Pennsville SA	
Infiltration/Inflow	N/A	N/A
Municipal Total	0.011	0.015
Facility Total	1.366	1.6529

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Data regarding the estimated population served by 2030 is based on population projections and anticipated number of new connections. The summary of waste water represents build-out projections within the adopted FSWA. This complete build-out may not be realized by 2030, based on the population projection.

- (1) The population of the Township of Pennsville, as of the 2000 U.S. Census, was 13,194. It was estimated that 10,744 individuals (81.4%) are currently served by sanitary sewer facilities. The U.S. Census indicated 13,794 people resided in the Township in 1990. The population decrease over that 10 year period was approximately 4.3%. The Delaware Valley Regional Planning Commission (D.V.R.P.C.) forecasted the population growth in Salem County from 2000-2025 to be 7.6%. This translates into a projected population of 14,279 for the Township of Pennsville. These predictions were based on current available data. The percentage of population currently served by sanitary sewer facilities was also utilized for the future projection.

- (2) It was estimated that 41 residential connections exist within Carney’s Point. This translates into a projected 123 individuals being served by Pennsville’s sanitary sewer facilities.

- (3) The proposed build-out projections consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. These flows are presented within the Environmental Assessment / Analysis Report.

Table 24		
Name of Facility:	Pennsville Twp – Heron WTP	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0068705	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- B	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	Pennsville Township	
7. Operator of facility:	Pennsville Township	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pennsville Township, Salem County	
b. Street address	50 Heron Ave Pennsville, NJ 08070	
c. Block(s) and Lot(s)	Block 1306, Lot 19	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75° 30' 10" b. Latitude 39° 39' 56" c. State Plane Coordinates x 209609; y 304375	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	Not Limited	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current Flow (in MGD)	Build-out (in MGD)
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	N/A	N/A

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Note: No future expansion planned at this time.

Table 25		
Name of Facility:	Pennsville Twp – Water St WTP	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0068730	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- B	
4. Receiving water or aquifer:	Delaware River	
5. Classification of receiving water or aquifer:	Mainstem Delaware-Zone 5	
6. Owner of facility:	Pennsville Township	
7. Operator of facility:	Pennsville Township	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pennsville Township, Salem County	
b. Street address	6 Water Street Pennsville, NJ 08070	
c. Block(s) and Lot(s)	Block 1603, Lot 6	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75° 30' 43" b. Latitude 39° 39' 59" c. State Plane Coordinates x 207165; y 305047	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	Not Limited	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 20__) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	N/A	N/A

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Note: No future expansion planned at this time.

Table 26	
1. Name of Facility:	Fort Mott State Park
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0133159
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	NJDEP State Park Service
5. Operator of facility:	NJDEP State Park Service
6. Location of facility:	
a. Municipality & County	Pennsville Township, Salem County
b. Street address	454 Fort Mott Road Pennsville, NJ 08070-0000
c. Block(s) and Lot(s)	Block 5301, Lot 3
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°33'03" b. Latitude 39°36'18" or
	c. State Plane Coordinates x 196233; y 281949
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	public restroom, office, maintenance garage, and dwelling*
Other:	
Design Flow (MGD)	0.00355

Notes:

This action is a renewal of the authorization under the NJPDES Septic System Discharge General Permit (NJ0130281).

The facility is a state park comprised of a large public restroom, office, maintenance garage, and dwelling. The facility is served by four (4) conventional septic systems. The systems authorized by this permit are for sanitary waste only.

Table 27

Table 27		
Name of Facility:	Waddington-Richman, Inc.	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0004308	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- B	
4. Receiving water or aquifer:	Salem River via unnamed trib.	
5. Classification of receiving water or aquifer:	FW2-NT(C2)	
6. Owner of facility:	Waddington Richman Inc	
7. Operator of facility:	Waddington Richman Inc	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pilesgrove Township, Salem County	
b. Street address	849 Rt 40 Woodstown, NJ 08098-2840	
c. Block(s) and Lot(s)	Block 29, Lot 17	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°21'48"	
	b. Latitude 39°39'28" or	
	c. State Plane Coordinates x 249118; y 301472	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.02 MGD	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2007) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	NODI	NODI

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Table 28	
1. Name of Facility:	Waddington-Richman Inc
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0100218
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Waddington Richman Inc.
5. Operator of facility:	Waddington Richman Inc.
6. Location of facility:	
a. Municipality & County	Pilesgrove Township, Salem County
b. Street address	849 Rt 40 Woodstown, NJ 08098-2840
c. Block(s) and Lot(s)	Block 29, Lot 17
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°21'50" b. Latitude 39°39'28" or
	c. State Plane Coordinates x 249118; y 301472
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	N/A*
Design Flow (MGD)	N/A*

*This permit was revoked.

Table 29	
1. Name of Facility:	Four Seasons Campground
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0136221
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Four Seasons Campground
5. Operator of facility:	Four Seasons Campground
6. Location of facility:	
a. Municipality & County	Pilesgrove Township, Salem County
b. Street address	158 Woodstown - Daretown Rd Pilesgrove Twp, NJ 08098
c. Block(s) and Lot(s)	Block 81, Lot 23
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°16'24" b. Latitude 39°37'12" or
	c. State Plane Coordinates x 273991; y 286500
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	487 sites*
Other:	
Design Flow (MGD)	0.002

Notes:

The facility consists of 387 sites for RV/Park model campers and 100 tent/tent trailer sites. Sewage is handled by 28 septic tanks and 2 disposal fields. The discharge authorized by this permit is for sanitary waste only.

No future expansion planned at this time.

Table 30	
1. Name of Facility:	Harding Woods Inc
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0099678
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Harding Woods Inc
5. Operator of facility:	Harding Woods Inc
6. Location of facility:	
a. Municipality & County	Pittsgrove Township, Salem County
b. Street address	187 Harding Highway Pittsgrove Twp, NJ 08318
c. Block(s) and Lot(s)	Block 201, Lot 2
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°07'17" b. Latitude 39°35'27" or
	c. State Plane Coordinates x 317120; y 277645
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	319 unit mobile home park
Design Flow (MGD)	0.075

Notes: Harding Woods is a 319 unit mobile home park with an on-site treatment system.

Table 31

Table 31		
Name of Facility:	Arthur Shalick High School	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0090221	
3. Discharge to ground water (DGW) or surface water (DSW):	DGW- T- Underground Injection Control -UIC	
4. Receiving water or aquifer:	Cohansey Sand Formation	
5. Classification of receiving water or aquifer:	I-PL	
6. Owner of facility:	Arthur Schalick High School	
7. Operator of facility:	Arthur Schalick High School	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pittsgrove Township, Salem County	
b. Street address	718 Centerton Road Pittsgrove Twp, NJ 08343-0000	
c. Block(s) and Lot(s)	Block 57, Lot 5	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°09'42" b. Latitude 39°31'43" or c. State Plane Coordinates x 304914; y 253952	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.0225 MGD	
*13. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 26-Year Future (Year 2040)*** <i>specify one as applicable</i>
Total	1,461 students & staff**	1,473 students and staff
*14. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (3/2010-2/2011) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) as applicable (in MGD)
Residential flow		
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.002129	0.0329

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Includes High School and Middle School populations.

*** Future population calculated using SJTPO's projection of 0.83% growth by 2040.

Table 32		
Name of Facility:	Daytop of NJ	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0157716	
3. Discharge to ground water (DGW) or surface water (DSW):	DGW- T- Underground Injection Control -UIC	
4. Receiving water or aquifer:	Cohansey Formation	
5. Classification of receiving water or aquifer:	II-A	
6. Owner of facility:	Daytop of NJ	
7. Operator of facility:	Daytop of NJ	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pittsgrove Township, Salem County	
b. Street address	4 Harding Highway Pittsgrove Twp, NJ 07945	
c. Block(s) and Lot(s)	Block 204, Lot 3,4,5	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°07'19"	
	b. Latitude 39°35'40" or	
	c. State Plane Coordinates x 316827; y 277750	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.01225 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 20-Year Future (Year 20__) <i>specify one as applicable</i>
Total	35 students	70 students
*13. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (3/2010-2/2011) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) as applicable (in MGD)
Residential flow		
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.00428	0.01225

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Table 33	
1. Name of Facility:	Picnic Grove Mobile Homes
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0066214
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Par 3 Management, LLC
5. Operator of facility:	Par 3 Management, LLC
6. Location of facility:	
a. Municipality & County	Pittsgrove Township, Salem County
b. Street address	Route 40, Pittsgrove Twp, NJ 08318
c. Block(s) and Lot(s)	Block 201, Lot 1
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°07'35" b. Latitude 39°35'43" or
	c. State Plane Coordinates x 315685.042; y 277584.899
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	100 mobile home sites
Design Flow (MGD)	0.02

Notes: This facility consists of 100 mobile home sites which discharge to groundwater via multiple subsurface disposal systems.

Table 34	
1. Name of Facility:	The Villages I
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0084883
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Jim Sullivan Inc
5. Operator of facility:	Jim Sullivan Inc
6. Location of facility:	
a. Municipality & County	Pittsgrove Township, Salem County
b. Street address	388 Porchtown Road Pittsgrove Twp, NJ 08318
c. Block(s) and Lot(s)	Block 303, Lot 2
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°06'21" b. Latitude 39°33'55" or
	c. State Plane Coordinates x 321100; y 267340
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	21 sites*
Other:	
Design Flow (MGD)	0.0042

Notes:

This facility consists of 21 mobile homes, which are serviced by 7 septic tanks, 12 cesspools and 1 - 60 by 30 feet disposal bed.

Table 35	
1. Name of Facility:	Holly Tree Acres Trailer Home
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0108405
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Holly Tree Acres LLC
5. Operator of facility:	Holly Tree Acres LLC
6. Location of facility:	
a. Municipality & County	Pittsgrove Township, Salem County
b. Street address	109 Middle Drive Pittsgrove Twp, NJ 08318-4032
c. Block(s) and Lot(s)	Block 2701, Lot 109
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°07'37" b. Latitude 39°29'47" or
	c. State Plane Coordinates x 315405; y 242773
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	112 sites*
Other:	
Design Flow (MGD)	0.0224

Notes:

This facility is an existing 112 unit mobile home park, which discharges sanitary wastewater via 80 on-site septic systems. Maximum population served is 300 persons. A "typical" system at this site is comprised of a septic tank and seepage pit. Some units have their own system and other units share the septic system. The system authorized by this permit is for sanitary waste only.

Table 36	
1. Name of Facility:	Centerton Country Club
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0129577
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Centerton Hospitality Group LLC
5. Operator of facility:	Centerton Hospitality Group LLC
6. Location of facility:	
a. Municipality & County	Pittsgrove Township, Salem County
b. Street address	1022 Almond Road Pittsgrove Twp, NJ 08318
c. Block(s) and Lot(s)	Block 1802, Lot 1, 2.5
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°09'20" b. Latitude 39°31'41" or
	c. State Plane Coordinates x 307618.2; y 251710.9
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	1000 seats*
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.01

Notes:

The facility is an existing country club. It has restaurant and banquet facilities with a total seating capacity of 1000 seats.

Table 37	
1. Name of Facility:	Parvin State Park
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0133167
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	NJDEP State Park Service
5. Operator of facility:	NJDEP State Park Service
6. Location of facility:	
a. Municipality & County	Pittsgrove Township, Salem County
b. Street address	701 Almond Road Pittsgrove, NJ 08318-3928
c. Block(s) and Lot(s)	Block 2801, Lot 2
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°08'53" b. Latitude 39°30'43" or
	c. State Plane Coordinates x 313656; y 247317
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	17 sites, including: cabins, maintenance buildings, a nature center, office, and dump station*
Other:	
Design Flow (MGD)	0.02025

Notes:

The facility is a state park comprised of (17) cabins, maintenance buildings, nature center, office, and dump station. The facility is served by seventeen (17) conventional septic systems. The systems authorized by this permit are for sanitary waste only.

Table 38	
1. Name of Facility:	Rainbow Center
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0158496
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	American Health Corp
5. Operator of facility:	American Health Corp
6. Location of facility:	
a. Municipality & County	Pittsgrove Township, Salem County
b. Street address	849 Big Oak Road Pittsgrove, NJ 08318
c. Block(s) and Lot(s)	Block 2703, Lot 8
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°07'20" b. Latitude 39°29'10" or c. State Plane Coordinates x 316516 y 238364
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	84 beds*
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.0135

Notes:

This facility has 84 patients and 60 employees. The existing system consists of two disposal systems. One system, installed in 1970 has a total of nine(9) 1000-gallon septic tanks followed by a drain field. The 1982 system has a total of four (4) 4,300-gallon septic tanks followed by a pump station. One hundred percent (100%) of facility flow is directed to the 1982 system tanks from which the pump station directs flow to either the 1982 drain fields or to the head of the 1970 septic tanks and then by gravity to the 1970 drain field. Wastewater flow is manually alternated between the two systems every four(4) months.

Table 39		
Name of Facility:	B&B Poultry Co., Inc	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0061841	
3. Discharge to ground water (DGW) or surface water (DSW):	D- STP	
4. Receiving water or aquifer *:	N/A – Landis Sewerage Authority Sewage Treatment Plant	
5. Classification of receiving water or aquifer:	N/A	
6. Owner of facility:	B&B Poultry Co., Inc..	
7. Operator of facility:	B&B Poultry Co., Inc..	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pittsgrove, Salem County	
b. Street address	110 Almond Road Pittsgrove, NJ 08347	
c. Block(s) and Lot(s)	Block 2402, Lot 24	
10. Location of discharge (i.e. degrees, minutes, seconds):	N/A: Discharge to LSA STP	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	N/A	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2011) Flow (in MGD)	Build-out or 20-Year Future (Year 2034) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.1109	0.1650

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

* The applicant operates a poultry slaughterhouse and preparation plant, SIC 2015. Approximately 115,000 gallons per day of wastewater from various processes is being discharged to LSA. The process wastewater is pretreated prior to discharge. The pretreatment system consists of screening, equalization, dissolved air floatation and skimming processes.

Table 39A		
Name of Facility:	Pepco	
1. Existing or proposed facility:	Proposed	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	N/A (future facility)	
3. Discharge to ground water (DGW) or surface water (DSW):	N/A	
4. Receiving water or aquifer *:	N/A	
5. Classification of receiving water or aquifer:	N/A	
6. Owner of facility:	Pepco Holdings, Inc.	
7. Operator of facility:	Pepco Holdings, Inc.	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Pittsgrove, Salem County	
b. Street address	Evelyn Avenue Pittsgrove, NJ	
c. Block(s) and Lot(s)	Block 3002, Lots 1, 2, 3, 4 Block 3001, Lots 1, 2, 11, 20, 21, 38, 39	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°05'54"	
	b. Latitude 39°29'10"	
	c. State Plane Coordinates x 323261, y 238086	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	N/A	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2014) Flow (in MGD)	Build-out or 20-Year Future (Year 2031) (in MGD) <i>specify one</i>
	Commercial flow	
	Industrial flow	
	Infiltration/Inflow	
	Facility Total	N/A

Note: This facility is a proposed future facility and therefore does not have a NJPDES permit number or permitted or current flows.

Table 40	
1. Name of Facility:	Quinton Township Landfill
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0054909
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Quinton Township
5. Operator of facility:	Quinton Township
6. Location of facility:	
a. Municipality & County	Quinton Township, Salem County
b. Street address	S Burden Hill Road Quinton, NJ 08072
c. Block(s) and Lot(s)	Block 34, Lots30, 23.01
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°23'10" b. Latitude 39°31'29" or
	c. State Plane Coordinates x 242001, y 253008
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	N/A
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	N/A

Table 41		
Name of Facility:	Salem City WWTP	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0024856	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A	
4. Receiving water or aquifer:	Salem River	
5. Classification of receiving water or aquifer:	SE1(C2) - tidal tributary to Zone 5	
6. Owner of facility:	Salem City	
7. Operator of facility:	Salem City	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Salem City, Salem County	
b. Street address	19 S Front Street Salem, NJ 08079-0000	
c. Block(s) and Lot(s)	Block 46, Lots 1, 3, 5	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°28'38" b. Latitude 39°34'34" or c. State Plane Coordinates x 216308; y 271025	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	1.4 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population (census)	Build-out or 20-Year Future (Year 2030)** specify as applicable (SJTPO)
Municipality: Salem City	5,146	5,104
Municipality: Alloway Twp	684	881
Municipality: Quinton Twp	673	674
Municipality: Mannington Twp	121	142
Municipality: Elsinboro Twp	14	14
Total	6,638	6,815
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out** or 20-Year Future (Year 2030) specify as applicable (in MGD)
<u>Municipality:</u>	Salem City	
Residential flow	0.469	0.793
Commercial flow	0.016	0.021
Industrial flow	0.062	0.111
Infiltration/Inflow	N/A	N/A
Municipal Total	0.547	0.925

Table 41 (continued)

Table 41 (continued)		
Name of Facility:	Salem City WWTP	
<u>Municipality:</u>	Alloway Township	
Residential flow	0.016	0.045
Commercial flow	0	0.005
Industrial flow	0	0
Infiltration/Inflow	N/A	N/A
Municipal Total	0.016	0.050
<u>Municipality:</u>	Quinton Township	
Residential flow	0.027	0.091
Commercial flow	0	0.033
Industrial flow	0	0
Infiltration/Inflow	N/A	N/A
Municipal Total	0.027	0.124
<u>Municipality:</u>	Mannington Township	
Residential flow	0	0.004
Commercial flow	0.104	0.105
Industrial flow	0	0
Infiltration/Inflow	N/A	N/A
Municipal Total	0.104	0.109
<u>Municipality:</u>	Elsinboro Township	
Residential flow	0.001	0.001
Commercial flow	0	0
Industrial flow	0	0
Infiltration/Inflow	N/A	N/A
Municipal Total	0.001	0.001
Facility Total	0.695	1.209

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Data regarding the estimated population served by 2030 is based on population projections and the anticipated number of new connections. The summary of wastewater flow represents build-out projections within the adopted FWSA. The complete build-out may not be realized by 2030, based on the population projections.

Table 42		
Name of Facility:	Salem WTP	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0035742	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW-B	
4. Receiving water or aquifer:	Tributary to Keasbey's Creek	
5. Classification of receiving water or aquifer:	FW2-NT/SE1(C2)	
6. Owner of facility:	Salem City	
7. Operator of facility:	Salem City	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Salem City, Salem County	
b. Street address	520 Grieves Parkway Salem, NJ 08079-0000	
c. Block(s) and Lot(s)	Block 73, Lot 2	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°27'15" b. Latitude 39°33'37" c. State Plane Coordinates x 216316; y 271033	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.0316 MGD	
13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2007) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) (in MGD) <i>specify one</i>
Commercial flow		
Industrial flow	0.02	
Infiltration/Inflow		
Facility Total	0.02	N/A**

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Owner plans to close lagoons once the new WTP is completed and online. Note that the new WTP will discharge to the sanitary sewer system and therefore does not require a NJPDES permit.

***The facility uses surface water as source water and chlorinated water to backwash the filters. Wastewater consisting of filter backwash and clarifier blowdown is directed to settling lagoons #2 and #1 and discharged to an unnamed tributary of Keasbey's Creek.

Table 43		
Name of Facility:	Burlington Beef	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0099198	
3. Discharge to ground water (DGW) or surface water (DSW):	DGW- GW	
4. Receiving water or aquifer:	Cape May	
5. Classification of receiving water or aquifer:	II-A	
6. Owner of facility:	Henry Kohn Inc.	
7. Operator of facility:	Henry Kohn Inc.	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Upper Pittsgrove Twp, Salem County	
b. Street address	30 Burlington Road Upper Pittsgrove Twp, NJ 08343-0000	
c. Block(s) and Lot(s)	Block 48, Lot 4	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°12'00" b. Latitude 39°37'13" or c. State Plane Coordinates: x 294973; y 287396	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	N/A	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 20__) Population	Build-out or 20-Year Future (Year 20__) <i>specify one as applicable</i>
Total		
*13. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out or 20-Year Future (Year 20__) as applicable (in MGD)
Residential flow		
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.000818	0.000818

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

Table 44	
1. Name of Facility:	WaWa
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ0169889
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Wawa, Inc.
5. Operator of facility:	Wawa, Inc.
6. Location of facility:	
a. Municipality & County	Upper Pittsgrove Township, Salem County
b. Street address	Rt 40 and Pole Tavern Road, Elmer, NJ 08318
c. Block(s) and Lot(s)	Block 56, Lot 6
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°13'44" b. Latitude 39°36'59" or
	c. State Plane Coordinates x 287178.285; y 285738.870
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	5,589 sq ft
Campground: (sites, specify laundry, store, bathhouses)	
Other:	16 fueling stations
Design Flow (MGD)	0.0032

Table 45		
Name of Facility:	Upper Pittsgrove Twp Elementary School	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0100625	
3. Discharge to ground water (DGW) or surface water (DSW):	DGW- T- Underground Injection Control -UIC	
4. Receiving water or aquifer:	Cohansey Sand Formation of Tertiary Age	
5. Classification of receiving water or aquifer:	II-A	
6. Owner of facility:	Upper Pittsgrove Township Board of Education	
7. Operator of facility:	Upper Pittsgrove Township Board of Education	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Upper Pittsgrove Township, Salem County	
b. Street address	235 Pine Tavern Road Upper Pittsgrove, NJ 08343	
c. Block(s) and Lot(s)	Block 38, Lot 9	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°12'06" b. Latitude 39°37'44" c. State Plane Coordinates x 294528; y 290592	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.009	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population	Build-out or 26-Year Future (Year 2040)** <i>specify one as applicable</i>
Total	600	616
**13. Summary of wastewater flow received/to be received as a 3-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2007) Flow (in MGD)	Build-out or 26-Year Future (Year 2040) as applicable (in MGD)
Residential flow		
Commercial flow		
Industrial flow		
Infiltration/Inflow		
Facility Total	0.001	0.001

Notes: The school has no cafeteria or science laboratories and a maximum population of 600 students and staff, resulting in the generation of daily design volume of sanitary sewage of 9,000 gallons per day.

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Future population was calculated using SJTPO's projection of 2.6% growth by 2040.

Table 46	
1. Name of Facility:	Country Club Estates
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0084603
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Garden Homes Management Corp
5. Operator of facility:	Garden Homes Management Corp
6. Location of facility:	
a. Municipality & County	Upper Pittsgrove Township, Salem County
b. Street address	NJ State Highway Rt 40 Elmer, NJ 08318
c. Block(s) and Lot(s)	Block 5, Lot 55, 60
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°07'48" b. Latitude 39°35'46" or c. State Plane Coordinates x 314626; y 278289
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	80 sites*
Other:	
Design Flow (MGD)	0.002

Notes:

This is an existing mobile home park with 80 mobile homes. The park is serviced by 60 gravity fed septic systems with tanks ranging from 1000 to 2000 gallons. A home and bungalow onsite each have an individual gravity fed septic system. The total site capacity is 16000 gallons/day. The system authorized by this permit is for sanitary waste only.

Table 47	
1. Name of Facility:	Appel Farm Arts & Music Ctr
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0133493
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Appel Farm Arts & Music Center
5. Operator of facility:	Appel Farm Arts & Music Center
6. Location of facility:	
a. Municipality & County	Upper Pittsgrove Township, Salem County
b. Street address	Shirley – Elmer Road/Box 888 Elmer, NJ 08318
c. Block(s) and Lot(s)	Block 82, Lot 2, 3, 9
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°11'50" b. Latitude 39°34'40" or
	c. State Plane Coordinates x 295610 y 271905
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	290 people during camping period (6/24-8/17)
Institution: (beds)	310 beds available for camp
Restaurant: (seats)	310 seats for camp
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other: (conference/ educational center)	theater, art barn, grandma's house, office, dining hall/conference/infirmery, north dormitory, coop dormitory, south dormitory, new bunk house/new dining hall
Design Flow (MGD)	0.0035

Notes:

The facility is used for concerts and educational purposes in a campus-like setting. Although there are multiple buildings on the 176 acre site, only 9 buildings require septic systems (theater, art barn, grandma's house, office, dining hall/conference/infirmery, north dormitory, coop dormitory, south dormitory, new bunk house/new dining hall). There are sleeping accommodations for 275 people. The systems authorized by this permit are for sanitary waste only.

Table 48	
1. Name of Facility:	Point 40 Diner
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0132624
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	GEV Inc
5. Operator of facility:	GEV Inc
6. Location of facility:	
a. Municipality & County	Upper Pittsgrove Township, Salem County
b. Street address	761 Route 40 Upper Pittsgrove, NJ 08434-0000
c. Block(s) and Lot(s)	Block 61, Lot 20
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°13'47" b. Latitude 39°37'01" or
	c. State Plane Coordinates x 286566 y 286243
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	
Restaurant: (seats)	170 seats*
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.0038

Notes:

The facility is a restaurant with a capacity of 170 patrons. The facility is served by (4) septic tanks, (2) grease traps, and discharge to a single disposal field. The system authorized by this permit is for sanitary waste only.

Table 49	
1. Name of Facility:	Mater Dei Nursing Home
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG0170208
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Diocese of Camden
5. Operator of facility:	Diocese of Camden
6. Location of facility:	
a. Municipality & County	Upper Pittsgrove Township, Salem County
b. Street address	176 Route 40 Upper Pittsgrove, NJ 08344
c. Block(s) and Lot(s)	Block 5, Lot 38
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°07'09" b. Latitude 39°35'38" or c. State Plane Coordinates x 317746; y 277946
8. Summary of population served identifying all wastewater generating uses:	Current (Year 2010) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	64 beds*
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.01019

Notes:

The facility consists of a nursing home with fifty-nine (59) staff members and sixty-four (64) beds. The facility contains six (6) 3,000-gallon and two (2) 1,500-gallon septic tanks, one (1) dosing tank and three (3) disposal fields.

Table 50	
1. Name of Facility:	Bancroft Neurohealth – Mullica Hill Campus
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJG 0170992
3. Discharge to ground water (DGW)	DGW- T1
4. Owner of facility:	Bancroft Inc.
5. Operator of facility:	Bancroft Inc.
6. Location of facility:	
a. Municipality & County	Upper Pittsgrove Township, Salem County
b. Street address	6 Commissioners Pike Upper Pittsgrove Twp, NJ 08062
c. Block(s) and Lot(s)	Block 29, Lot 4
7. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°14'15" b. Latitude 39°39'40" or c. State Plane Coordinates x 284508 y 302347
8. Summary of population served identifying all wastewater generating uses:	Current (Year 20__) Population
School: (students and staff, specify cafeteria, lab, etc.)	
Institution: (beds)	42 resident patients, 100 staff*
Restaurant: (seats)	
Commercial: (square footage)	
Campground: (sites, specify laundry, store, bathhouses)	
Other:	
Design Flow (MGD)	0.0078

Notes:

This is an existing residential hospital care facility with apartments, recreational, treatment and administrative offices. The above site is discharging to a total of 9 existing subsurface sewage disposal systems. There are three septic systems with a conventional tank and disposal field installation. The remaining sewage disposal systems are a varied combination of septic tanks, seepage pits and cesspool structures. There are two potable wells onsite according to the above referenced site map. Further information available about the current potable supply: PCWS ID# 1744003. NJDEP enforcement site visit June 17, 2008 verified that there are 42 resident patients and 100 staff.

Table 51		
Name of Facility:	Woodstown Wastewater Treatment Plant	
1. Existing or proposed facility:	Existing	
2. New Jersey Pollutant Discharge Elimination System Permit Number:	NJ 0022250	
3. Discharge to ground water (DGW) or surface water (DSW):	DSW- A	
4. Receiving water or aquifer:	Salem River	
5. Classification of receiving water or aquifer:	FW2-NT(C2)	
6. Owner of facility:	Woodstown Borough Sewerage Authority	
7. Operator of facility:	Woodstown Borough Sewerage Authority	
8. Co-Permittee of facility (<i>where applicable</i>):	N/A	
9. Location of facility:		
a. Municipality & County	Woodstown Borough, Salem County	
b. Street address	90 West Ave Woodstown, NJ 08098-0000	
c. Block(s) and Lot(s)	Block 40, Lot 43	
10. Location of discharge (i.e. degrees, minutes, seconds):	a. Longitude 75°19'52" b. Latitude 39°38'55" or c. State Plane Coordinates x 261885; y 296857	
11. Present permitted flow or permit condition (DSW) or daily maximum (DGW):	0.53 MGD	
*12. Summary of population served/to be served including major seasonal fluctuations:	Current (Year 2010) Population (census)	Build-out or 20-Year Future (Year 2030)** <i>specify as applicable</i> (SJTPO)
Municipality: Woodstown Borough	3,505	4,061
Municipality: Pilesgrove Township	126	136
Municipality: Mannington Township	88	104
Total	3,719	4,301
*13. Summary of wastewater flow received/to be received as a 30-day average flow for DSW or a daily maximum flow for DGW:	Current (Year 2010) Flow (in MGD)	Build-out** or 20-Year Future (Year 2030) <i>specify as applicable</i> (in MGD)
<u>Municipality:</u>	Woodstown	
Residential flow	0.120	0.181
Commercial flow	0.037	0.056
Industrial flow	0.080	0.121
Infiltration/Inflow	N/A	N/A
Municipal Total	0.237	0.358
<u>Municipality:</u>	Pilesgrove	
Residential flow	0.014	0.019

Table 51 (continued)		
Name of Facility:	Woodstown Wastewater Treatment Plant	
Commercial flow	0.020	0.020
Industrial flow	0	0
Infiltration/Inflow	N/A	N/A
Municipal Total	0.034	0.039
<u>Municipality:</u>	Mannington	
Residential flow	0	0.027
Commercial flow	0.076	0.076
Industrial flow	0	0
Infiltration/Inflow	N/A	N/A
Municipal Total	0.076	0.103
Facility Total	0.347	0.500

* Infiltration/Inflow (I/I): Existing I/I should be identified. However, additional future I/I may not be projected. (The NJPDES Treatment Works Approval regulations make numerical allowances for I/I.) The existing I/I can be carried-over and accounted for in the total future wastewater flow.

**Data regarding the estimated population served by 2030 is based on population projections and anticipated number of new connections. The summary of waste water represents build-out projections within the adopted FSWA. This complete build-out may not be realized by 2030, based on the population projection.

VIII. Future County Water Supply Availability Analysis

Availability of Water Supply

At the time of development of this document, the most recent adopted State Water Supply Plan is dated August, 1996. The plan includes Recommended Initiatives for Planning Areas Anticipated to be in Deficit. WMPs must not conflict with those regional water supply recommendations, and where specific actions are recommended, WMPs should support their implementation. The update to the State Water Supply Plan is expected to provide a useful tool in assessing potential water supply availability and identifying any 'fatal flaws' in future development projections. However, no timeframe has been identified for adoption of an updated Water Supply Plan.

Table 8-1 provides information regarding the current water allocation for each water purveyor within the county and the municipalities that they serve.

Water Purveyor	Municipality receiving water from Facility	Facility Water Allocation	
		(MGM)	(MGY)
Elmer Water Department		10.00	80.00
	Elmer Borough	10.00	80.00
New Jersey American Water Company		70.40	753.00
	Carneys Point Township		
	Oldmans Township		
	Penns Grove Borough		
Pennsville Water Department	(*)	54.25	580.00
(Based on Current WMP)	Pennsville Township		
Salem City Water Department		93.00	900.00
	Salem City		
	Mannington Township		
	Quinton Township		
	Elsinboro Township		
Woodstown Water Department		19.00	174.10
	Woodstown Borough		
(Flows for School)	Pilesgrove Township		
(Remaining Allocated Flow)	Mannington Township		

Sufficiency of Water Supply

Until such time that the NJ State Water Supply Plan is updated, the Department is not requiring a comparison analysis of estimated water availability to water supply demand outside of public water supply areas.

The estimated water supply demand associated with the build-out analysis is aggregated by the FWSA on a municipal basis. Water supply projections were prepared using a method similar to the sanitary sewer analysis provided. Water allocation values for each purveyor were compared to the existing demands as well of the future demands to determine whether the current water allocation is sufficient to support the plan.

The FWSA potable water build-out analysis results indicate that the water purveyor (NJAW), supplying Carneys Point Township, Oldmans Township and the Borough of Penns Grove, does not currently have sufficient water allocation to support future waster demands projected by the plan. The total monthly water allocation for the water system that serves these municipality's (70.4mgm/ 753mg) is less than the water supply necessary to support existing demands and proposed development within the Carney Point, Oldmans Township and Penns Grove FWSA. The projected calculations were based on the proposed build-out projections and average daily demand values utilized within the regulations for each type of development.

Due to the current economic climate, projected growth rate of the population, and the anticipated short-term need for additional water supply, these municipalities are not seeking additional water supply at this time. As NJAW is only operating at 54% of their monthly allocation and approximately 60% of their annual diversion limit, the existing water capacity is sufficient to support existing demands and short-term development in the future, based on the current water utilization indicated above. However, it should be noted that NJAW system has additional water production capabilities and could supply more than the current allocation.

NJAW supplies water to Penns Grove Boro, Oldmans and Carneys Point Townships through its Penns Grove system, which receives water from its local sources, as permitted by the Department, and from the Tri-County pipeline, which was connected to the NJAW Penns Grove system in 2011. Therefore, NJAW could supply more than the current allocation if necessary. This may require NJAW to make adjustments or infrastructure improvements to its water system in order to supply additional water to the area. NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility.

The above municipalities will need to implement measures to ensure adequate water supply as development within the FWSA is realized. These measures include working with the water purveyor in an effort to review the potential process improvements or identify alternative facilities to support the projected demands of the FWSA in its entirety as the population increases and development expands, based on the direction of their governing body. Salem County as well as the governing bodies of affected municipalities will work with the water purveyor in an effort to review the potential process improvements to support the projected demands of the FWSA in its entirety as the population increases and development expands.

Similarly, the Borough of Woodstown appears to have sufficient monthly allocation to accommodate the FWSA water build out, but the annual diversion may be exceeded if the complete FWSA build-out is realized. As development occurs within the Borough, the feasibility of water supply alternatives such as interconnection to NJAW, construction of new wells, and desalination could be evaluated, and are discussed in further detail in Woodstown's municipal chapter. Given the limited options, in order for the Borough to obtain adequate annual allocation to support the water supply demands of the existing and future sewer service area, a significant investment could be required on the part of Woodstown.

Table 8-2 provides a comparison of water current water allocation for each water purveyor within the county and the municipalities that they serve with the existing and future water demands.

Table 8-2. Future Potable Water Demand By Facility											
Water Purveyor	Municipality receiving water from Facility	Facility Water Allocation		Existing Water Demand		Projected Future Water Demand		Total Future Water Demand		Facility Capacity (Excess or Deficit)	
		(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
Elmer Water Department		10.00	80.00					4.90	59.75	5.10	20.25
	Elmer Borough	10.00	80.00	4.34	53.03	0.56	6.772	4.90	59.75		
New Jersey American Water Company		70.40	753.00	37.95	455	140	1,650	178.02	2,105	-107.62	-1,352.07
	Carneys Point Township			24.00	287.98	84.48	994.68	108.48	1,283		
	Oldmans Township			2.65	31.84	53.54	630.41	56.19	662.25		
	Penns Grove Borough			11.30	135.59	2.05	24.57	13.35	160.15		
Pennsville Water Department (*)		54.25	580.00					41.12	493.39	13.13	86.61
(Based on Current WMP)	Pennsville Township			30.90	370.75	10.22	122.64	41.12	493.39		
Salem City Water Department		93.00	900.00	24.03	288.38	15.61	183.81	39.64	472.19	53.36	427.81
	Salem City			18.30	219.61	15.45	181.85	33.75	401.46		
	Mannington Township			4.87	58.39	0.17	1.96	5.03	60.35		
	Quinton Township			0.84	10.11	0.00	0.00	0.84	10.11		
	Elsinboro Township			0.02	0.28	N/A	N/A	0.02	0.28		
Woodstown Water Department		19.00	174.10	11.54	138.45	5.06	59.52	16.6	197.97	2.4	-23.87
	Woodstown Borough			8.66	103.94	4.77	56.11	13.43	160.05		
(Flows for School)	Pilesgrove Township			1.42	17.00	0.16	1.83	1.58	18.83		
(Remaining Allocated Flow)	Mannington Township			1.46	17.51	0.84	9.86	2.30	27.37		

Note

(*): Pennsville Township information is based on the currently approved WMP.

IX. Municipal Wastewater Management Chapters

The Salem County Board of Chosen Freeholders has coordinated with various municipalities and Consultants to obtain information for inclusion within the WMP. Sickels & Associates prepared the WMP utilizing the available documentation provided by these sources and prepared supplemental mapping, calculations and narratives in collaboration with the County of Salem Department of Planning and Agriculture.

The County WMP incorporates or replaces part or all of a variety of previously approved WMPs prepared by municipalities, wastewater authorities, or the County itself. Separate municipal chapters have been prepared for inclusion within the Salem County WMP. The information provided within these chapters and is based on the previously approved plans and intended to further define the following:

- 1) *Individual mapping of each municipality.*
- 2) *Build-out methods used to prepare sanitary sewer and potable water build-out analysis and associated tables for applicable municipalities.*
- 3) *A summary of the results of each analysis for the municipality including a narrative.*
- 4) *Any special considerations used in preparing the build-out for that municipality.*

Ordinance Information, Letter of Interpretation, Determinations

Municipal ordinances regarding Septic Development and Mandatory Connection in Sewer Service Areas are included. The status of such ordinances is as follows:

Table 9-1. Ordinances for Septic System Development in Sewer Service Areas		
Municipality/Authority	Ordinance Name/Number	Adoption Date
Alloway Township	Ordinance #425	8-20-2009
Carneys Point Township	Ordinance 743	1-28-2004
Elmer Borough		
Elsinboro Township		
Lower Alloways Creek Township	Sewers Ord # 1984-13	6-4-1984
Mannington Township		
Oldmans Township		
Penns Grove Borough		x
Pennsville Township	Amended Ord. #A-7-2005 / A-34-2009	12-3-2009
Pilesgrove Township		
Pittsgrove Township		
Quinton Township	Ordinance #2008-03	3-5-2008
City of Salem	Required Connection §230.57	12-7-1987
Upper Pittsgrove Township		
Woodstown Borough	Borough Code Article III §75A-15	1-25-85

County certification letters for municipal stormwater management ordinances in compliance with NJAC 7:8 are included. The status of such ordinances is as follows:

Table 9-2. Ordinances for Municipal Stormwater Management			
Municipality	Ordinance Name/Number	Municipal Adoption Date	County Approval Date
Alloway Township	Municipal Stormwater Management Ord #390	02-09-2006	(*)
Carneys Point Township	Ordinance No. 770 Stormwater Management	12-14-2005	(*)
Elmer Borough	Stormwater Management Ordinance #2005-4	04-13-2005	(*)
Elsinboro Township	Municipal Stormwater Management Ord #2006-3	02-06-2006	(*)
Lower Alloways Creek Township	Stormwater Control Ordinance #2006-11	07-18-2006	(*)
Mannington Township	Stormwater Management Controls #06-11	10-05-2006	(*)
Oldmans Township	Municipal Stormwater Management Ord #2006-6	06-03-2006	(*)
Penns Grove Borough	Municipal Stormwater Management Ord#2006-23	09-05-2006	(*)
Pennsville Township	Municipal Stormwater Management Ord#A-32-2006	11-2-2006	(*)
Pilesgrove Township	Municipal Stormwater Management Ord #06-04	04-25-2006	(*)
Pittsgrove Township	Stormwater Controls for Major Development #5-2006	05-09-2006	(*)
Quinton Township	Municipal Stormwater Management Ord #2006-04	05-03-2006	(*)
City of Salem	Municipal Stormwater Management Ord #0605	03-06-2006	(*)
Upper Pittsgrove Township	Municipal Stormwater Management Ord #2006-4	05-09-2006	(*)
Woodstown Borough	Stormwater Management Ordinance #2006-618	03-28-2006	(*)

(*) Note: County approval dates would be in effect 90 days after a submission to the County.

Municipal ordinances regarding Riparian Zone Protection in compliance with NJAC 7:15 are included. The status of such ordinances is as follows:

Table 9-3. Ordinances for Riparian Zone Protection		
Municipality	Ordinance Name/Number	Adoption Date
Alloway Township	Stream Corridor Protection Ord #355	3-13-2003
Carneys Point Township		
Elmer Borough		
Elsinboro Township		
Lower Alloways Creek Township	Riparian Zone Ordinance: 2009-15	12-15-2009
Mannington Township		
Oldmans Township		
Penns Grove Borough		
Pennsville Township	Amended Ord. #A-7-2005 / A-33-2009	12-17-2009
Pilesgrove Township		
Pittsgrove Township		
Quinton Township	Stream Corridor Protection Ord # 2003-3	3-5-2003
City of Salem		
Upper Pittsgrove Township		
Woodstown Borough	Riparian Zones Ordinance 2010-3	03/09/10

(*) Note: Ordinances for Riparian Zone Protection are not required for phased adoption of the WMP.

Municipal ordinances regarding Steep Slope Protection in compliance with NJAC 7:15 are included. The status of such ordinances is as follows:

Table 9-4. Ordinances for Steep Slope Protection		
Municipality	Ordinance Name/Number	Adoption Date
Alloway Township		
Carneys Point Township		
Elmer Borough		
Elsinboro Township		
Lower Alloways Creek Township		
Mannington Township		
Oldmans Township		
Penns Grove Borough		
Pennsville Township		
Pilesgrove Township		
Pittsgrove Township		
Quinton Township		
City of Salem		
Upper Pittsgrove Township		
Woodstown Borough	Steep Slopes Ordinance 2010-4	03/09/10

Municipal ordinances regarding Master Plan and Zoning Ordinance adoption are included. The status of such ordinances is as follows:

Table 9-5. Zoning Ordinance and Municipal Master Plan Status		
Municipality	Master Plan Date	Zoning Ordinance & Map Date
Alloway Township	1975; 2007/08	2007
Carneys Point Township	September 2005	1989
Elmer Borough	1993	1979
Elsinboro Township	2007	1979
Lower Alloways Creek Township	1992; 2005	1997; amended 2001
Mannington Township	1978; 2006; 2007	1978
Oldmans Township	1990; 2007	1990
Penns Grove Borough	1980	1985
Pennsville Township	2002; 2009	2005
Pilesgrove Township	1992; 2004 - 08	1994
Pittsgrove Township	2000; 2005; 2007	1990
Quinton Township	1990; 2008	2008
City of Salem	1978	1994
Upper Pittsgrove Township	1990	2006
Woodstown Borough	1983; 2005 – 07	1990

X. Septic Management Plan

Introduction

Pursuant to the adoption of the new Water Quality Management Planning (WQMP) rules at N.J.A.C. 7:15-5.25(e)3, Water Quality Management Planning Agencies are required to implement a Septic Management Plan (SMP) for areas within their jurisdictions that are served by individual subsurface sewage disposal systems (ISSDS's).

A SMP can be implemented by the County WMP agency, County Health Department or individual municipalities. SMP's submitted for review must define the framework and procedures for the notification to property owners for routine maintenance of all ISSDS's within the County. Routine maintenance includes regular pumping out of the ISSDS's at an appropriate frequency

Effective data management is the only way that municipalities and counties can ensure that the septic systems are being permitted, installed, operated, and maintained according to the State regulations and recommended maintenance schedules and procedures. This is particularly true as more innovative and alternative types of on-site systems are encouraged and permitted. Also, as environmental quality monitoring is required, a central database is necessary to make it easy for managers to identify potential issues and address them in a timely fashion.

This chapter outlines Salem County's approach to initiating a Septic Management Program in accordance with the WQMP rules. The Program includes but is not limited to the following:

- Identify newly constructed and/or repaired ISSDS's within the County's municipalities;
- Create and maintain a database system to inventory ISSDS's and track routine maintenance;
- Establish a procedure for notifying system owners of the recommended maintenance;
- Provide educational and program information to all residents served by ISSDS's.

Septic Management Data Elements

Implementing a SMP is a straightforward process, which can be initiated at a basic level and expanded in the future to meet new regulatory requirements. The procedures can be established on a repeatable cycle and recorded using a spreadsheet or database program to organize ISSDS inventories and track maintenance activities. Data management historically consists of filing cabinets organized with paper records. This method is very useful for organizing data on a parcel-by-parcel basis and is much easier and less expensive to institute. It requires little capital expense or training of personnel when compared with more comprehensive systems.

The SCHED has historically utilized a manual filing system to maintain septic system information through the plan review, permit and inspection process. The following information is typically provided through this process:

- Permit Information
- General Site Information
- Site Evaluation Information
- Treatment System Information
- Inspection report Data

The information required to populate a SMP database is generally available within the existing files. However, additional data fields will be required for the monitoring septic system maintenance, tracking and notification processes. The following data will be collected and a

database system will be utilized to create an inventory of newly constructed and/or repaired ISSDS's within the County as part of the SMP.

- Municipality where ISSDS is located
- Block / Lot of ISSDS
- Name of Responsible Party / Owner of system
- Address of Responsible Party / Owner of system
- System Pump Out Interval requirement (Initially set at 3 years)
- Date for sending notice (generally 3-6 months prior to end pump out interval)
- Date of System Pump Out
- Date when pump out verification was received.

The details of setting up the database and logistics behind the notification process are currently under review by the County Planning Department and the Health Department. Database management requires being trained in the software applications and potentially an initial capital outlay to implement them. Depending on the volume of newly constructed ISSDS's as well as the number of existing systems throughout Salem County, the implementation of the SMP will likely require additional staffing or the reallocation of existing resources. Current fiscal constraints may require ISSDS's to be grouped in batches and incorporated into the SMP incrementally. This approach could divide the workload over a period of years and allow for scheduling of resources on a monthly or quarterly basis.

The means and methods for populating the existing inventory of ISSDS's, over a fixed period of time, are not being considered at this time. This greatly depends on the degree to which an inventory already exists and which entities possess the relevant information, such as the Health Department, planning boards, tax assessors, or others. In addition, current economic conditions and the budgetary constraints are also important factors that limit the completion of a comprehensive inventory of existing septic systems. The current plan to incorporate existing ISSDS's will include identifying existing systems during real estate transactions, if a compliance review of the system is requested. Systems that require a permit for repair or alteration will also be incorporated at the time of the permit application process.

Database Development

The Salem County Health Department is currently responsible for the review of applications and permitting for all ISSDS's within Salem County. The permits are reviewed in accordance with the State standards for the proper design and installation of a properly functioning septic system according to the rules found at N.J.A.C.7:9A-3.1 et seq. The SCHD utilizes an Access database to maintain the permit and related information regarding existing septic systems. This data includes general information regarding the dates of specific phases of the permit and construction process. A screen shot of one of the current database input fields are shown below.

File copies of plans, permit applications, inspection reports and related site specific information are not included within the database. This information is organized in a hardcopy format and filed accordingly. The database has been populated with information for newly constructed systems or existing systems that have been repaired or altered. Since the database was created approximately 3 years ago, in 2011, the SCHD has input preliminary information on 577 systems. Preliminary information is included for new systems, systems that required repair or alterations as well as Advanced Treatment Units (ATU's). A summary of the number of existing systems included within the database is identified in Table 10-1 below.

No. Of Systems	Type of Application
194	New System
175	Repaired System
197	Alteration to System
11	Advanced Treatment Unit
577	Total No. Of System
192	Average Systems /year Logged

Management of information being entered into the system is considered either passive or active. Data for conventional septic systems is passive, which is characterized by the logging of parcel information and filing of permits and plans. Whereas, systems utilizing advanced technology units (ATU's) are more active. These systems are reviewed on an annual basis to monitor permit status and verify whether service and maintenance contracts are current and ensure compliance with permitting requirements.

The SCHD's existing database is currently structured to allow for basic information management of conventional septic systems and more active monitoring of systems with ATU's. Objects in the database include Tables, Forms and Reports. Tables are the basic components of the database. The Tables represent the underlying organizational structure for data. Forms are used for reviewing data on the computer screen and to facilitate data entry. As such, a form will typically display information from a single record at a time. The Reports are designed to organize and print out data. Database tools are available to perform queries of the data and can be utilized to identify systems that are nearing their recommended pump out period. Modifications to the SCHD's current system architecture would be required to include more comprehensive data management and notification process for conventional septic systems. Some of these fields include the following:

- Notification Sent Date:
- Maintenance Record Received Date:
- Follow up Notice Date
- Notes Field for logging calls with homeowner or service provider
- Create Specific reports to identify status of notification process
- Set Next Maintenance Period Date

Notification Process

Once those properties being served by ISSDS's are identified and inventoried, tracking of regular maintenance and pump out periods can be scheduled on quarterly basis. Staffing will be assigned to complete the task during predetermined periods.

Upon initiating the SMP, a notification will be sent describing the recommendations, including a pump-out schedule and providing educational material, as ISSDS's are entered into the database. Where the number of ISSDS's to be inventoried and tracked is small, the notification and pumping schedule can be the same for all. Notices will be grouped and sent out in manageable numbers each month or quarter, including over a multi-year period, with appropriately assigned pump-out schedules, thereby staggering the workload into smaller, more reasonable increments.

It is anticipated that the pump out period will be initially set at 3 years. The frequency of the pump-outs may be adjusted on a case-by-case basis, depending on the site-specific information that may be available, such as the size of the system and the number of people living in the dwelling.

Three to six months prior to the recommended pump out date, a helpful reminder will be sent to the responsible party recommending pump out and requesting confirmation that the system has been maintained. In an effort to improve the response from system owner, the County will also coordinate with licensed haulers to obtain confirmation that the systems have been maintained. Once proof of the pump-out is received (such as a copy of a receipt from a licensed hauler), the date will be noted and that ISSDS "account" will be deemed current until the next scheduled maintenance action.

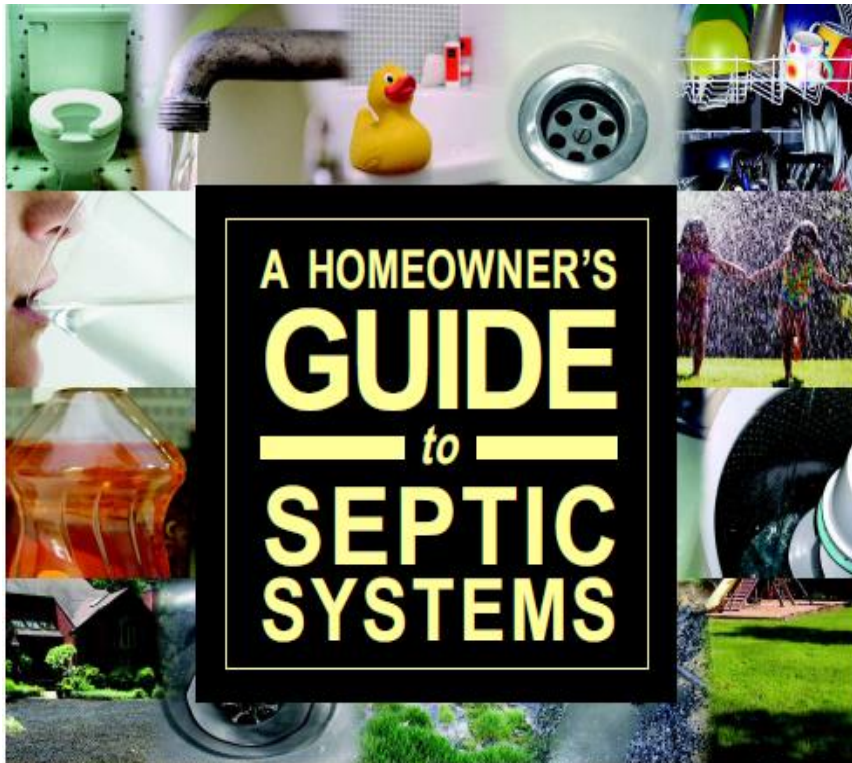
Only ISSDS's that discharge 2,000 gallons per day (gpd) or less are subject to the Septic Management Plan provisions of the WQMP rules found at N.J.A.C. 7:15. Onsite wastewater treatment systems that discharge greater than 2,000 gpd are regulated by the NJDEP through NJPDES permits.

Alternative Treatment Units

For systems that utilize ATU's, the Salem County Health Department currently has internal procedures in place to monitor the permit status and verify whether service contracts are current to ensure compliance with permitting requirements. Systems that do not comply with the permitting requirements are sent notices of violation and enforcement measures are implemented by the SCHED in accordance with the Water Pollution Control Act, when needed. The SCHED, does not, however, currently have the authority to enforce the requirements for maintaining conventional septic systems. Information received from the residents for populating the inventory database with maintenance information will rely on the public's willingness to respond to the notifications and provide verification that the system has been serviced.

Public Education

The SCHED provides system owners with educational material and references to additional resource material during the permit process. The information provided is included within the Homeowners Guide to Septic systems referenced below.



The Home Owners Guide to Septic Systems is a modification to the US EPA's Homeowner's Guide to Septic Systems (EPA document # EPA-832-B-02-005 December 2002). This information is intended for regular septic systems only, and not for Alternative Treatment Units.

The guide provides specific system owners with information on the following topics:

- Your Septic System is Your Responsibility
- Septic System Dos and Don'ts
- Rules and Regulations
- How Does It Work?
- Why Should I Maintain My Septic System?
- How Do I Maintain My Septic System?
- What Can Make My System Fail?

Homeowner Septic System Checklist

Septic System Description

Contact your local authority if you don't have this information.

Date system installed:

Installer:

Phone:

Tank size:

Capacity:

Type:

Things To Keep In Mind:

- Inspect your system (every 1 to 3 years) and pump your tank (as necessary, generally every 3 to 5 years).
- Use water efficiently.
- Don't drive or park vehicles on any part of your septic system.
- Plant only grass over and near your system. Roots from nearby trees or shrubs may clog your system.

Septic System Maintenance Record

Date	Company	Work Done	Comments

In addition to the above referenced guide, system owners are referred to other available sources of information. These resources include the following:

1. **NJDEP's non-point pollution control website:**
 - a. <http://www.nj.gov/dep/dwq/owmpmain.htm>
2. **Local Health Department:**
 - a. www.nj.gov/health/lh/directory/lhdselectcounty.htm
3. **New Jersey DEP, Onsite Wastewater Management Program:**
 - a. www.nj.gov/dep/dwq/sep_site.htm
4. **EPA Onsite/Decentralized Management Homepage:**
 - a. www.epa.gov/owm/onsite
5. **National Small Flows Clearinghouse:**
 - a. www.nesc.wvu.edu
6. **Rural Community Assistance Program:**
 - a. www.rcap.org
7. **National Onsite Wastewater Recycling Association, Inc.:**
 - a. www.nowra.org
8. **Septic Yellow Pages:**
 - a. www.septicyellowpages.com
9. **National Association of Wastewater Transporters:**
 - a. www.nawt.org
10. **Clean Water New Jersey:**
 - a. www.cleanwaternj.org

Program Staffing Requirements

Implementation of a septic management plan and the selection of a database must also take into consideration other realities, such as available budget, staff availability, staff time, training, and the true needs of the management program. As a management entity takes on more of the requirements of an active program, the need to maintain, monitor, and report on system information has the potential to increase dramatically.

Salem County has a population of approximately 66,000 residents, based on 2010 Census data. Seven (7) wastewater treatment facilities, identified in Chapter 6, Table 6-1 of the County WMP, currently provide treatment for approximately 50% of the residents within the County. As a result, it is estimated that 33,000 residents are currently utilizing individual subsurface sewage disposal systems. This equates to approximately 11,000 to 12,000 systems, assuming 2.75 – 3 persons per household.

The staffing required to initially populate the database with comprehensive information of all existing ISSDS's within Salem County is significant and is not being proposed at this time. It is estimated that the time required to locate the files, review the information and input the various fields of data into the system could take 30-60 minutes per system, depending on how extensive the details of the system may be for each application. The inclusion of septic tank design information, the number of residents per home etc., require more than a cursory review. This could result in the need for 6,000-12,000 staff hours for initially populating the comprehensive database.

Once a completed database is in place, the notification process could require 1 day per month when sending out 1,000 notices per month over the course of a year. Follow up for the verification of maintenance and updating the database could potentially require the addition of a full time employee, based on the 1,000 notices per month and spending even 5-10 minutes per notice for tracking per month.

As indicated in previous sections above, the means and methods for populating existing inventory of ISSDS's, over a fixed period of time, are not being considered at this time. The initial capital required to populate the database with existing system information and staff resources to maintain, monitor and report on system information are not available. The current plan to incorporate an existing system will include identifying existing systems that require a permit for repair or alterations at the time of the permit application process.

The SCHD has currently populated the database with approximately 577 systems. However, only those utilizing ATU's are being monitored annually for compliance with operating permit conditions. The current number of systems within the database equates to 192 systems being added to the database on an annual basis, according to Table 10-1 above.

Considering the information currently available and the average number of systems that have been entered into the database, the following table 10-2 reflects the projected number systems that could be added to the database over a 6-year planning period. The database information will be reevaluated and an updated table will be provided when the WMP is renewed. Also, included are the estimated additional staff hours that would be necessary to initiate the SMP.

Table 10-2: Projected Database Staffing Requirements				
Year No.	No. Of Systems added Per Year	Number of systems Logged	Notices Sent per Quarter (*)	Staffing Hours/Quarter Required (**)
1		577	48	8
2	192	769	64	11
3	192	961	80	13
4	192	1153	96	16
5	192	1345	112	19
6	192	1537	128	21
(*) Assumes 12 quarters over a 3 year Maintenance Period				
(**) Assumes 10 minutes per application for notice, follow up and database management				

Conclusion

The Septic Management Plan outlined above reflects Salem County's approach to initiating a SMP in accordance with the WQMP requirements. This includes but is not limited to the following:

- Modifying the SCHED's existing database to include additional fields for information related to notification for maintenance of conventional septic system; (it is now up to the individual homeowner to monitor and maintain the system after approval by the HD)
- Identify newly constructed and/or repaired ISSDS's within each municipality of the County.
- Maintain the database system to inventory ISSDS's and track routine maintenance;
- Establish a procedure for notifying system owners of the recommended maintenance;
- Provide educational and program information to all residents served by ISSDS's that will provide guidance on maintenance of the septic system and frequency of pump outs)
- Prepare and print annual report of compliance: (County working with NJDEP to implement electronic reporting system consistent with N.J.A. C. 7:9A-3.15)

The proposed Septic Management Plan is an initial step toward identifying existing ISSDS's within Salem County. Based on the above projections in Table 10-2, the staffing required to setup and initiate the initial phase of the septic management plan would require approximately 3 staff days per quarter, over a 6-year planning period. However, based on the estimated number of existing systems within the County, the reality is that management of this program and maintenance of the database could grow to be a significant commitment of County resources. Salem County does not currently have the financial and/or staffing resources to follow through with this unfunded mandate or the authority to enforce it.

The Salem County Health Department (SCHED) is dedicated to the promotion and protection of the public's health as well as the enforcing laws and regulations that protect the health and ensure the safety of the public. As indicated in previous sections above, the SCHED does not currently have the authority to enforce the requirements for maintaining conventional septic systems. Consequently, this program will rely of the system owner's willingness to voluntarily respond to notices send by the SCHED and on the results of an ongoing public education effort. A copy of the anticipated notice to residents within Salem County is provided on the next page. The results of this program will be reviewed and recommendations for program improvements will be incorporated with future WMP revisions.

Notification to Residents

Dear Salem County homeowner,

We need your help.

Have you ever caught a glimpse of a bald eagle gliding over the Mannington Meadows in search of prey? Ever drop a fish hook into one of Salem County's beautiful streams or lakes? Maybe you wait for hummingbirds to migrate here every Spring? Protecting the quality of our water in Salem County is critical to preserving our rural character. Preventing pollution of our surface water and underground aquifers is our priority.

And, this is where you can help.

Salem County is launching a voluntary program in which we are asking homeowners with septic systems to pump out their systems at least once every three years. This one simple action will reduce what is called 'non point source pollution' – AND extend the life of your septic system and reduce repairs bills. No one needs a \$10,000 bill to replace a septic system.

We will make it as easy as possible for you to make this voluntary commitment to help.

Attached is a form with the Lot and Block information for your septic system and the certification date from the Salem County Department of Health.

IF YOU HAVE HAD YOUR SYSTEM PUMPED OUT WITHIN THE LAST THREE YEARS, please fill out the attached form, listing the date of service and identifying the company that performed the pump out. If you have it, include copy of the receipt for the service. Sign and mail the form back to us. *We will remind you in advance of the next three-year pump-out date in 2017.*

IF YOU HAVE NOT PUMPED OUT YOUR SEPTIC SYSTEM WITHIN THE LAST THREE YEARS, we've attached a list of local service providers. You are not required to use a company on the list; it is just to help get you started. Once you have your system pumped out, sign and mail the form back to us with the date of service, the name of the company that provided the service, and a copy of the receipt. *We will remind you in advance of the next three-year pump-out date in 2017.*

We hope you will voluntarily take part in this effort to protect Salem County's waterways and underground aquifers. You will be helping to preserve the quality of our rural resources, while protecting the expensive investment you have in your own septic system.

APPENDIX "A"- Nitrate Dilution Analysis

APPENDIX "B"- Piles Grove Township WMP

APPENDIX "C"- Pittsgrove Township Buildout Analysis

Chapter IX.1

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

ALLOWAY TOWNSHIP CHAPTER

PREPARED BY:

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I. INTRODUCTION

This chapter represents the Alloway Township portion of the Salem County WMP. The Salem County WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (N.J.A.C 7:15).

Alloway Township is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service area (FWSA) for the Township of Alloway is identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

The Township of Alloway is bounded by Cumberland County (to the south-east), and four Salem County municipalities including Pilesgrove Township (to the north), Upper Pittsgrove Township (to the north-east), Quinton Township (to the south-west), and Mannington Township (to the northwest). Alloway Township encompasses a total area of 21,703 acres (33.9 square miles), including approximately 195.6 acres of which is surface water (ponds, lakes, reservoirs) and 59.6 miles of streams (shown in Map No.1) flowing in the municipality. This municipality is largely undeveloped, containing mostly farms, forests and rural residential developments. However, Alloway Village does contain low to high-density residential development. Alloway Township has one of the lowest population densities in Salem County (approximately 84.5 people/sq mi) according to (2010) U.S. Census data. The remaining land area for future development consists of a large number of underdeveloped and undeveloped parcels throughout the municipality.

Alloway Township has a population of 3,467 persons. The municipality’s population trend over the last decade can be seen as a 2.5% average (increase) in population each year (25% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the Township of Alloway. In terms of population change over the next three decades, Alloway is expected to experience steady growth. This is according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Table 1.1: Alloway Township- Historic Population				Table 1.2: Alloway Township- Projected Population			
Year	Population	Population Change		Year	Population	Population Change	
		#	avg yearly %			#	avg yearly %
1980	2,680			2010*	3,467		
1990	2,795	115	0.43%	2020	3,975	508	1.47%
2000	2,774	-21	-0.08%	2030	4,461	486	1.27%
2010*	3,467	693	2.50%	2040	4,987	526	1.27%
~Source: 1990 U.S. Census, *2010 U.S. Census				~Source: SJTPO, 2011			

A. STATUS OF PREVIOUS APPROVED WMPs

The current WMP in effect for the Township of Alloway is an amendment to the Lower Delaware WQMP submitted in coordination with Quinton Township, and Salem City. This amendment, which formally included the Village of Alloway and other specific sites within Elsinboro Township, Lower Alloways Creek Township, Quinton Township and Mannington Township into the SSA of the City of Salem, was adopted on September 24, 2003.

The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Alloway Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

Alloway Township currently owns and operates a public sewer collection system within the Alloway Village area. All sanitary flow collected by the system is conveyed to the Salem City Sewerage Treatment Plant for treatment. The Township sewer service area serves a population of approximately 684 people according to current DEP online sources and related municipal data. This equates to 1.04% of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the wastewater treatment plant.

Sewer service areas may include industrial facilities that discharge process wastewater to the collection system for treatment. The existing sewer service limits, delineated on Map No.2, are maintained by the Alloway Township and contribute sanitary flow to the larger Salem City sewer system. The limits were derived from existing sanitary sewer infrastructure currently constructed and/or approved. The treatment process and information for the Sewerage Treatment Plant (STP) is located within the Salem City municipal chapter in this report.

C. CURRENT WATER SERVICES

Alloway Township does not currently own or operate a public community water supply system and is not currently served by any adjacent water supply systems. All development within Alloway Township is supplied by individual or private community drinking water wells.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF WATER RESOURCE MANAGEMENT ISSUES

Alloway Township's existing sewer service area is completely served by individual water wells. The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Township of Alloway has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and FW-2 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consist of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual subsurface sewage disposal systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the areas planned to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System (NJPDES) permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, and projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plant identified in this plan, sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area. Future expansion of the identified treatment works serving the municipality is not required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included within the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Map No.2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term “actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

Alloway Township owns and operates a series of pump stations, vacuum sewer collection mains, and force mains used to convey wastewater flow to the Salem City STP. The system is owned and maintained by the Township of Alloway. There are approximately 3.9 miles of vacuum sewer mains with pipes ranging in size from 4 to 10 inches in diameter. The Township currently owns and operates one (1) pump station located on E Main Street. All flow is conveyed to the Salem City STP for treatment.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
1	Alloway Township Landfill - (Closed)	NJ0054283	GWIND	1
2	Salem County Solid Waste Facility	NJ0102113	GWIND	2
3	Yogi Bear Jellystone @ Tall Pines Resort	NJG0086959	T1	3
4	Roosevelt Scout Reservation	NJG0088781	T1	4

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, Alloway Township does not contain any industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally, the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the Salem City STP were calculated based on flows metered by the Salem City Water and Sewer Department. The present average annual wastewater contributed by Alloway to the plant for 2010 is 0.016mgd. The present average flow includes residential and commercial flows as well as an I/I component.

Alloway Township executed an inter-local service agreement with the City of Salem on December 17, 2001. The intent of the agreement was to allocate 64,200 gpd of sanitary sewer capacity from the Salem City Sewerage Treatment Plant to Alloway Township for proposed development.

The following Table 2.F.1 summarizes the permitted capacity and associated average daily flows of 2010 for the wastewater treatment plants serving Alloway Township.

WWTP	Allocated Capacity (mgd)	Average Daily Flow 2010 (mgd)	Build-Out Projection (mgd)	Total (mgd)	Remaining Capacity (mgd)
Salem WWTP	0.0642	0.016	0.034	0.05	0.0142

The flows from these connections are identified within the specific municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data specific to Alloway Township are identified for 2010 in Table 2.F.2 below. Based upon the above analysis, Alloway Township has sufficient capacity to support the proposed sewer service area.

Table 2.F.2: Existing Wastewater Flows	
Month	Monthly Avg. Flow to Salem City STP (mgd)
Jan-10	0.0051
Feb-10	0.0056
Mar-10	0.0058
Apr-10	0.0169
May-10	0.0113
Jun-10	0.0089
Jul-10	0.0193
Aug-10	0.0197
Sep-10	0.0189
Oct-10	0.0276
Nov-10	0.0259
Dec-10	0.0249
Yearly Average	0.016

G. EXISTING WASTEWATER TREATMENT

Alloway Township does not own a wastewater treatment plant, or any treatment infrastructure associated with treating the wastewater from Township’s collection system. All flow is pumped via force main to the Salem City Sewerage Treatment Plant. Specific information on the Salem City STP is provided in Salem City municipal chapter.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Township of Alloway does not own or operate a public water supply system, nor does it own water supply infrastructure. Developments are presently served by privately owned wells and systems. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

This Section is not applicable as Alloway Township does not own or operate any public community water supply facilities, water treatment plants, potable water wells or distribution mains.

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in **Chapter I** of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to the geographical boundary of the municipality. No exceptions were made for the delineations used in this WMP. Environmentally constrained areas that were identified through the process have been removed within the sewer service area boundary, where applicable.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	8/1/10

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
A	AGRICUTURAL	6,330.5	0.0
C	COMMERCIAL	44.4	4.6
HP	HIGH PUBLIC	44.3	0.0
HR	HIGH RESIDENTIAL	333.4	41.2
LR	LOW RESIDENTIAL	8,179.8	81.5
MR	MEDIUM RESIDENTIAL	164.4	19.0
P	PUBLIC	3.4	0.0
RR	RURAL RESIDENTIAL	6,646.8	75.6

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defines as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Township of Alloway does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference.

Proposed future sanitary sewer flows to be conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the expanded sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The Township of Alloway's sewer service area extends as defined on Map No.3. Consequently, infill development has been identified by utilizing a parcel based build-out approach as defined below. The zoning based analysis was not required for this municipality.

2. Existing Sewer Service Area Build-Out Analysis

The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and industrial flows were projected assuming 0.1 GPD/sq.ft. of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
HR	4.68	3.00	300	900
MR	4.00	8.00	300	2,400
RR	30.45	7.00	300	2,100
TOTAL				5,400 gpd (0.005 mgd)

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the available acreage per zone of the entire municipality in accordance with the current Alloway Township Master Plan.
- (b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
 - Residential Zones RR, MR, and HR Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings
- (d) Total ADF represents the calculated potential build-out within the existing sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an ADF. value.

3. Future Sewer Service Area Buildout Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
C	5.58	14.00	360	5,040
HR	42.52	30.00	300	9,000
LR	90.51	20.00	300	6,000
MR	15.03	23.00	300	6,900
RR	58.03	7.00	300	2,100
TOTAL				29,040 gpd
				0.029 mgd

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the available acreage per zone of the entire municipality in accordance with the current Alloway Township Master Plan.
- (b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
 - Residential Zones HR, LR, MR, RR Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings
 - Commercial Zone C, Average Daily Flow Based on 0.1 gal/SF established for Offices and Industry (30% coverage of 12,000 or 3,600sf)
- (d) TOTAL ADF represents the remaining potential build-out within the existing sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing Salem City wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether additional capacity is available and can be obtained through an amendment to the existing agreement between Alloway Township and the City of Salem. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Treatment Works	Permit No.	Current Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)		Existing SSA Build-Out Projection (mgd)	Proposed SSA Build-Out Projection (mgd)	Remaining Treatment Capacity (mgd) <i>Note (a)</i>
			Alloway Township	Entire System (Salem WWTP)			
Salem WWTP	NJ0024856	1.4	0.016	0.696	0.005	0.029	0.670

Note (a): The remaining capacity identified above reflects the current available surplus of the Salem City WWTP. The capacity analysis is further defined within the Salem City municipal chapter of this report.

Alloway Township executed an interlocal service agreement with the City of Salem on December 17, 2001. The intent of the agreement was to allocate 64,200 gpd of sanitary sewer capacity from the Salem City Sewerage Treatment Plant to Quinton Township for proposed development. The current average daily flows of 0.016 mgd and proposed build-out of 0.034 mgd require an available capacity of 0.050 mgd to support development for the currently proposed WMP.

The total allocated treatment capacity for the sanitary sewer system that serves the municipality (0.0642 mgd) is greater than the projected flows necessary to support the combination of existing demands, proposed development within the sewer service area, and proposed development within the expanded sewer service area (0.050 mgd). The calculations were based on the existing build-out projections, proposed build-out projections, and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, Alloway Township has sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area.

It should be noted that in the event that additional capacity is needed in the future, City of Salem currently has surplus capacity available to accommodate an expanded sewer service area. This would require an amendment to the existing interlocal service agreement.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

This section is not applicable to this municipality, as sufficient capacity currently exists to address the future wastewater management needs projected by the plan.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

Alloway Township does not own or operate any public potable water supply wells or distribution mains. The Township is currently supplied by individual private water wells. Extension of the Salem City water distribution system to Alloway Township is not planned. Future development within the Township will continue to be supplied by individual water wells.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Alloway Township proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Alloway Township Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP NO.1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.2: EXISTING FACILITIES & SERVICE AREAS

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Alloway Township, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP NO.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP NO.4: ALLOWAY TOWNSHIP ZONING MAP

The map depicts the current zoning of Alloway Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations

Zone	Zone Title		Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Maximum Building Height	Minimum Habitable Floor Area
P	PUBLIC		12,000 SF	75'	125'	30'	15'	30'	50'	
A	AGRICUTURAL		1 ACRE	150'	200'	40'	25'	50'	45'	*
RR	RURAL RESIDENTIAL	MUNICIPAL BUILDINGS, WATER, FOREST OR WILDLIFE CONSERVATION AREAS AND USES	3 ACRES	200'	200'	40'	25'	50'	45'	*
		ACCESSORY USES				40'	25'	25'	45'	
LR	LOW RESIDENTIAL	PRINCIPAL USES	2 ACRES	200'	200'	40'	25'	40'	35'	*
		ACCESSORY USES				40'	10'	10'	25'	
MR	MEDIUM RESIDENTIAL	PRINCIPAL USES	18,000SF	90'	150'	30'	15'	30'	35'	**
		TWO-FAMILY DWELLINGS	24,000SF	120'	150'	30'	15'	30'	35'	850
		ACCESSORY USES				40'	10'	10'	25'	
HR	HIGH RESIDENTIAL	PRINCIPAL USES	1 ACRE	150'	200'	40'	25'	50'	35'	**
		ACCESSORY USES				40'	10'	10'	25'	
C	COMMERCIAL	PRINCIPAL USES	12,000 SF	75'	125'	40'	20'	20'	35'	
		ACCESSORY USES				40'	20'	20'	35'	

* SINGLE STORY: 1,100 SF - SPLIT LEVEL: 1,300 SF - 1 1/2 AND 2 STORY: 1,500 SF

** SINGLE STORY: 960 SF - SPLIT LEVEL 1,200 SF - 1 1/2 & 2 STORY: 1,400 SF

5. MAP NO.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP NO.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP NO.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.2

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

CARNEYS POINT TOWNSHIP CHAPTER

PREPARED BY:

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***Wastewater Management Plan for
Salem County, New Jersey
Carneys Point Township Chapter***

I. INTRODUCTION

This chapter represents the Carneys Point Township portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

The sewer service area for the Township of Carneys Point includes the entire Township of Carneys Point, and small portions Oldmans Township. The planning area encompasses 11,730 acres, (11,431 acres of which make-up the Township of Carneys Point).

Carneys Point Township is located in the Delaware River Drainage Basin and lies within the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area.

The Township is bounded by five (5) municipalities including Oldmans Township (to the northeast), Pilesgrove Township (to the east), Mannington Township (to the south), Pennsville Township (to the southwest), and Penns Grove Borough, which is an enclave of Carneys Point along the township’s western boundary created by the Delaware River. According to the U.S. Census Bureau, Carneys Point encompasses a total area of 17.8 square miles, approximately 313.8 acres of which is surface water (ponds, lakes, reservoirs), and approximately 56.5 miles of streams (shown in Map No.1) flow in the municipality. The land in this municipality has been developed in sparse places along the New Jersey Turnpike, and contains urban development in the area surrounding Penns Grove Borough. In terms of land development, the municipality is relatively split among usage for agriculture, designated forest, urban development, and wetlands. Due to its size and partial development, Carneys Point Township has a somewhat low population density (439 pp/sq mi) according to (2000) U.S. Census data. The remaining land available for future development consists of under and undeveloped parcels throughout the municipality.

Carneys Point Township has a population of 8,049 persons. The municipality’s population trend over the last decade can be seen as a 0.48% growth in population each year (4.8% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for Carneys Point Township. In terms of population change over the next three decades, Carneys Point growth is expected to continue experiencing small growth according to the most recent study by the New Jersey Department of Labor, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	8,396		
1990	8,443	47	0.06%
2000	7,684	-759	-0.90%
2010*	8,049	365	0.48%

~Source: 1990 U.S. Census, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010	8,049		
2020	8,722	673	0.84%
2030	9,330	608	0.70%
2040	9,957	627	0.67%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The Township of Carneys Point has submitted several Wastewater Management Plans (WMP's) / Amendments since 1991. These amendments have included proposed expansions to the Carneys Point Sewer Service Area within Carneys Point Township and inclusion of specific sites within Oldmans Township. Proposals most recently included the consolidation of the Penns Grove and Carneys Point Sewer Service Areas, and conveyance of wastewater flows from the Carneys Point Sewage Treatment Plant (STP) to the DuPont Chamber Works for final treatment until necessary final treatment upgrades are made to the CPSA STP.

The current WMP in effect for the Township of Carneys Point is an amendment to the Lower Delaware WQMP, which was adopted on December 16, 1999. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Carneys Point Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

Most recently proposed was a 2006 WMP revision prepared by the engineer Schoor DePalma, dated December 22, 2006. This revision called for the addition of 87.5 acres within Oldmans Township to accommodate the second phase development of the Gateway Business Park (formally known as the Salem County Industrial Park. This revision to the WMP was approved by the DEP on July 20, 2007.

B. CURRENT WASTEWATER SERVICES

The Township of Carneys Point community wastewater system serves approximately 5,296 persons within the municipality according to current municipal data. This equates to 8.1 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the wastewater treatment plant. The Carneys Point Sewer Service Area may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business. The existing sewer service limits, delineated on Map No.2, are serviced by the Carneys Point Wastewater Treatment Plant and were derived from existing sanitary sewer infrastructure currently constructed and/or approved.

The current Lower Delaware WMP amendment from December 16, 1999 identified a sewer service area expansion of the CPSA Sewage Treatment Plant (STP) within Carneys Point Township to serve most of the Township to the north of the New Jersey Turnpike except for two parcels, one bordered by the Oldmans Township boundary, the N.J. Turnpike, West Quillytown Road and Pennsville-Auburn Road and the other a wetlands area south of Layton Well Pit in the Game Creek Watershed. Areas south of the N.J. Turnpike also to receive sewer service include the existing Cedar Crest Manor development, the Route 48 corridor, and the eastern portion of the U.S. Route 40 corridor. Areas excluded from the SSA are designated as having subsurface sewage disposal systems with wastewater planning flows less than 2,000 gallons per day.

The wastewater management planning area includes the Township of Carneys Point, and designated areas within Oldmans Township located in Salem County, New Jersey. The areas in Oldmans are service connections to the N.J. Turnpike Service Areas 1S and 1N. The facilities served by the Carneys Point WWTP within Oldmans Township are further defined within the Oldmans Township municipal chapter and clearly identified on the mapping provided.

The Carneys Point STP is located on “E” Street and Cleveland Avenue, Block 157, Lot 2. This facility operates under NJPDES Permit Number-NJ0021601 effective on April, 2007. Wastewater generated within the WMP existing sewer service area is conveyed to the STP, which is permitted to operate at 1.3 MGD. The CPSA-STP currently receives contributing flow from residential living units, commercial and industrial uses. The monthly flow generated by these contributors for the 2010 calendar year was 1.069 MGD.

C. CURRENT WATER SERVICES

Water Service in the Township of Carneys Point is currently provided by two community water systems. The New Jersey American Water Company serves approximately 5,143 persons within Carneys Point’s planning area, and is the largest provider of water service to the municipality. The population served by NJAW equates to 7.78% percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the water system.

The New Jersey American Water Company (previously the Penns Grove Water Supply Company) was identified in the 1999 Carneys Point WMP Amendment as the water supplier for Carneys Point Township. NJAW presently draws from seven (7) ground water wells. All wells are located within Carneys Point and draw from the Potomac Raritan Magothy (PRM) Aquifer. Two of the wells pump water from the Lower PRM while the other five draw from the Upper PRM source. Aside from NJAW, Handy’s Mobile Park operates its own community water system to serve a total of 90 residents, and is the only other community water system serving Carneys Point Township. The remaining population within Carneys Point Township is served by individual or private water wells.

NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, State, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

Carneys Point Township does not currently own or operate a public community water supply system. The Township's potable water within the sewer service area is primarily supplied by NJAW. The Township's water supply is sufficient to meet the current demand. However, an additional source of water supply will be necessary in order to accommodate development within the FWSA. Other than the need for additional water supply in the future, the municipality has not identified any other issues regarding water quality or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Township of Carneys Point has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, FW-2 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map 3 consists of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental, and local land use planning objectives discussed above and the identified areas that are currently built but do not currently have adequate wastewater treatment, Map 2 and Map 3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, insufficient wastewater treatment capacity exists to accommodate the complete buildout of the FWSA. Future expansion of the identified treatment works or identification of an alternative treatment works will be required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the WSA sewer service areas in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

2. Expansion of the existing treatment works or construction of a new treatment facility will be required to meet the future wastewater generation needs of the municipality.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. WASTEWATER TREATMENT PLANT

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term “actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

The CPSA Sewage Treatment Plant is a localized system for the conveyance, treatment, and disposal of municipalities’ wastewater within the CPSA sewer service area. The plant operates under the NJPDES Permit No. NJ0021601 issued 6/1/2010, which will expire 9/30/2015. The STP treats domestic waste as well as industrial waste at a present permitted capacity of 1.3 MGD. Treated wastewater is discharged to the Delaware River- Zone 5 via Helms Cove. This Treatment system meets current permitted parameters under current conditions with Biochemical oxygen demand (BODs) and total suspended solids (TSS) removal efficiencies of the overall treatment system averaging 96.81% (BOD) and 98.07 % (TSS).

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Carneys Point Sewerage Authority (CPSA) owns and operates one STP, a series of pump stations, force mains and sanitary sewer, which are used to convey wastewater to the treatment facility. The sanitary sewer collection system in Carneys Point is owned and maintained by the Authority. There is approximately 28.2 miles of sanitary sewer main with pipes ranging in size from 8 inches to 24 inches in diameter. All flow is conveyed first to the CPSA STP for primary treatment. Map No.2 depicts the areas actively served by existing wastewater facilities, and the tables in Chapter 7 (VII) provide detailed information on each facility. “Actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.C.1: Non-Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
5	Carney's Point Twp SA	NJ0021601	SW	5
7	Carneys Point Generating Plant	NJ0128996	GWND	7
8	Westwood Villa	NJG0100641	DGW - T1	8
9	Deepwater Diner	NJG0165565	DGW - T1	9

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. Table 2.D.1 lists all existing industrial treatment works that discharge 2,000 gallons per day or more of process and wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.D.1: Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
6	Carneys Point Gen Plant	NJ0073750	GWIND	6

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the CPSA STP were calculated based on flows metered by CPSA. The present average annual wastewater for 2010 is 1.069MGD. The present average flow includes residential, commercial and industrial flows. The following Table 2.F.1 summarizes the permitted wastewater treatment plant capacity and associated average daily flows for 2010.

WWTP	NJPDES Permit No.	Permitted Capacity (MGD)	Average Daily Flow 2010 (MGD)	Build-Out Projection (mgd)
Carneys Point WWTP	NJ0021601	1.3	1.069	2.19

Included within the above existing wastewater flows are projections from connections located within Carneys Point Township, and Oldmans Township. The flows from these connections are identified within the specific municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below.

Month	Municipality			
	Total System	Carneys Point Township	Oldmans Township	
	Monthly Avg. (mgd)	Monthly Avg. (mgd)	Monthly Avg. (mgd)	
Jan-10	1.333	1.319	0.0137	
Feb-10	1.405	1.394	0.0112	
Mar-10	1.799	1.786	0.0131	
Apr-10	1.449	1.433	0.0161	
May-10	1.015	0.994	0.0211	
Jun-10	0.673	0.649	0.0243	
Jul-10	0.848	0.820	0.0279	
Aug-10	0.861	0.835	0.0264	
Sep-10	0.731	0.705	0.0264	
Oct-10	0.943	0.915	0.0281	
Nov-10	0.892	0.868	0.0236	
Dec-10	0.878	0.854	0.0230	
Yearly Average	(mgd)	1.069	1.048	0.021
	(mgm)	32.513	31.867	0.646
	(mgy)	390.161	382.408	7.752

G. EXISTING WASTEWATER TREATMENT

The CPSA STP is currently operated under NJPDES Permit number NJ0021601. This treatment facility currently operates within permitted effluent limits, based on 2010 data.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Township of Carneys Point is presently serviced from the New Jersey American Water Company (NJAW). NJAW currently owns and operates seven wells within the township. The wells: “Ranney 7” and “Layton 11A” (the replacement for the previous well “11”) draw from the Lower PRM (Potomac Raritan Magothy Aquifer) source. Whereas, the wells: “Layton 2”, “Layton 4”, and “RF1A”, “RF2B”, and “RF3A” draw from the Upper PRM source. Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the properly either is connected or has all regulatory approvals necessary to be connected with no further review.

The public water supply infrastructure of this system consists of 16.6 miles of water main ranging from 4 – 12 inches diameter in size. The following Table 2.H.1 summarizes each public community water supply facility currently serving the municipality, excluding the Handy’s Mobile Park well No.1 which has minimal pump capacity and operates under permit No.3000014192. The wells located in this table are owned and operated by NJAW. The NJAW water system serves Carneys Point, Oldmans Township, and Penns Grove Borough. All wells in this system are located within the Carneys Point Township municipal boundary. In addition, the five (5) ground water wells included as part of the NJAW (Logan System) have also been identified within the table. The franchise areas are depicted on Map No.1.

Water System	Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
Auburn Village Water Supply	3000001151	1	N/A	N/A
	3000011400	2	N/A	N/A
NJAW Penns Grove System	3000000563	7	500	Lower PRM
	3000001113	2	500	Upper PRM
	3000001815	4	450	Upper PRM
	3000003310	RF1A	250	Upper PRM
	3000003535	RF3A	100	Upper PRM
	3000008511	RF2B	250	Upper PRM
	3000019273	11A	250	Lower PRM
NJAW Logan System	3000001371	2	800	Mid PRM
	3000009444	4	590	Mid PRM
	3000005212	5	100	Mid PRM
	3000014797	6	600	Mid PRM
	E201002435	7	800	Mid PRM

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

New Jersey American Water (NJAW) is currently the primary source of water to the Township of Carneys Point. NJAW purchased the Penns Grove Water System in 2007. NJAW operates under permit No.WAP070002 to provide water to a service area, which includes Carneys Point Township, Borough of Penns Grove and Oldmans Township. As a result, a specific allocation for each of these municipalities has not been established.

General information presented within this municipal chapter regarding the water system's overall annual demand and the estimated yearly demand for each municipality from 2008 through 2010 has been obtained from NJAW. Projected average daily demand values have been estimated for each of the three (3) municipalities served by this system. This was necessary as NJAW meters each individual connection to their system and not the municipality as a whole. Based on available water demand information provided, between 2008 through 2010, the following average demand percentages have been estimated to represent the water supplied by NJAW to the three municipalities: Borough of Penns Grove 30.5%, Carneys Point Township 62.5% and Oldmans Township 7%.

The Township of Carneys Point currently has an estimated average daily demand of approximately 0.789 MGD based upon the 2010 calendar year. The Township's peak annual and monthly water demand over a period of 5 years between 2006 through 2010 was shown to occur in the month of July 2007. Estimates of monthly flows to Carneys Point from 2006-2010 were made based on data supplied by NJAWC. Monthly data was formulated by adjusting total water supplied by NJAW by the associated demand percentage utilized by Carneys Point as indicated above. The reduction in average demand, over the last few years, is partially due to the enforcement of water restrictions and water conservation appurtenances in residential and commercial buildings and improvements/replacements within the system's infrastructure.

The following Table 2.I.1 summarizes current water demands and allocation diversion limits permitted for the New Jersey American Water system (which includes the Borough of Penns Grove and Oldmans Township).

Water Company (Breakdown by Municipality)		Permit # / Program Interest ID	2010 Water Allocation *		Average Demand 2010		Build-Out Projection	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water	% of System Demand	WAP070002/ 5328	70.4	753	37.95	455.409	140.07	1649.66
Penns Grove	30.5	N/A	N/A	N/A	11.299	135.586	2.05	24.57
Oldmans	7.0	N/A	N/A	N/A	2.653	31.842	53.54	630.41
Carneys Point Township	62.5	N/A	N/A	N/A	23.998	287.981	84.48	994.68

*Source: The Average Demand indicated above represents data obtained from DEP water use results.

The following Table 2.I.2 summarizes historical daily, monthly and annual water demand estimates specific to the demands of Carneys Point Township on the NJAW water system. The districts and franchise areas are depicted on Map No.1.

Table 2.I.2: Annual Water Demand Summary			
Year	Annual Yearly Demand (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)
2006	312.811	0.857	26.068
2007	323.818	0.887	26.985
2008	311.038	0.852	25.920
2009	279.901	0.767	23.325
2010	287.981	0.789	23.998

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (**see Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands –Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINEATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules at NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.

4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to geographical features and political boundaries within the municipality. No exceptions were made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	9/15/09

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Carneys Point WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
AG	AGRICULTURE	2,929.6	444.34
GC	GENERAL COMMERCIAL	1,751.8	731.03
GC-R	GENERAL COMMERCIAL (REDEVELOPMENT)	146.9	102.96
GI-R	GENERAL INDUSTRIAL (REDEVELOPMENT)	1,115.9	377.61
HR	HIGH DENSITY RESIDENTIAL	101.8	2.81
IC	INTERCHANGE COMMERCIAL	338.2	175.81
LC	LIMITED COMMERCIAL	175.6	66.20
LI/ LI-R	LIGHT INDUSTRIAL / REDEVELOPMENT	801.3	151.36
LR	LOW DENSITY RESIDENTIAL	923.5	321.05
MHR	MEDIUN HIGH DENSITY RESIDENTIAL	491.2	72.73
OS	OPEN SPACE	733.9	37.90
RR-1	RURAL RESIDENTIAL 1	1,192.2	511.75
RR-2	RURAL RESIDENTIAL 2	110.2	30.71

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defines as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Township of Carneys Point does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build-out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference. The Township's sewer service is defined on Map No.3.

2. Sewer Service Area Build-out Analyses

The build-out of the FWSA consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a "parcel based" build out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and industrial flows were projected assuming 0.1 GPD/ sq.ft. of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the FWSA. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 5.E.2.1: FWSA Build-Out Projections					
Zone	Developable Acres	Zoned Lot Areas	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>		<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
Ag	444.34	1 ACRE	385	300	115,500
GC	731.03	15,000SF	2042	450	918,900
GC-R	102.96	15,000SF	295	450	132,750
GI-R	377.61	10 ACRES	35	1250	43,750
HR	2.81	5,000SF	16	225	3,600
IC	175.81	50,000SF	136	1250	170,000
LC	66.20	5,000SF	565	300	169,500
LI / LI-R	151.36	5 ACRES	20	1250	25,000
LR	321.05	15,000SF	843	300	252,900
MHR	72.73	7,000SF	403	225	90,675
OS	37.90	N/A	182	0	0
RR-1	511.75	22,000SF	893	300	267,900
RR-2	30.71	2 ACRE	5	300	1,500
Total FWSA Projected Sanitary Flows (GPD)					2,191,975
Total FWSA Projected Sanitary Flows (MGD)					2.19

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the developable acreage per zone, within the sewer service area, excluding the environmentally constrained areas..
- (b) “Potential Units” represent the projected number of units that may be constructed within each zone within the FWSA.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
- (d) TOTAL ADF represents the potential build-out within the FWSA. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

3. Future Sewer Service Area Build-out Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

All proposed sanitary sewer flows for the Township, included as part of this WMP submission, are identified within section 5.E.2.1 above.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected flows. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Treatment Works	Permit #	Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)	FWSA Build-Out Projection (mgd)	Contributing FWSA Build-out (mgd)	Remaining Treatment Capacity (mgd)
Carneys Point WWTP	NJ0021601	1.300	1.069	2.190	1.362	-3.321

Note: Contributing Municipalities include Oldmans Township

The total treatment capacity (1.3 mgd) of the wastewater treatment plant (Carneys Point WWTP) that serves the municipality is less than the projected flows necessary to support existing demands and proposed development within the Carneys Point Township FWSA. The calculations were based on the proposed build-out projections and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, sufficient wastewater treatment capacity is not currently available to accommodate the FWSA in its entirety.

Included within the summaries above of “Average Daily Flows” and “Contributing FWSA Build-out” are existing contributions and proposed contributions from connections to the Carneys Point sewerage system that are located within Oldmans Township. Detailed information regarding anticipated flows from contributing FWSA’s are identified within the Oldmans Township municipal chapter.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

The FWSA sanitary buildout analysis results above indicate that Carneys Point Township does not have sufficient wastewater treatment capacity to support future wastewater management needs projected by the plan. The wastewater treatment plant does have sufficient capacity to support existing flows from this municipality and marginal capacity for growth in the future. Due to the current economic climate, projected growth rate of the population and the anticipated short-term need for additional capacity, the municipality is not proposing new or expanded facilities at this time. Carneys Point Township will begin to review the potential process improvements and available treatment alternatives based on the direction of the governing body. It is anticipated that the Township would consider the Gloucester-Salem County Regional Alternative to meet future development needs.

The Salem County Pollution Control Financing Authority conducted a sanitary sewer study in an effort to conceptualize a regional sewage system plan for the County. The intent of the plan is to convey sanitary sewer to a newly constructed treatment facility to be located on the Dupont Chambers Works property in Carneys Point Township. The planning of this effort is ongoing and currently in the environmental assessment and preliminary engineering stage of development.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

The Township of Carneys Point's current water allocation and existing average water demands are identified in Section 2 of this municipal chapter. Development of vacant land was the predominant factor in determining future water supply needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide potable water while protecting surface and ground water quality for the entire projected build-out allowable by zoning.

Proposed daily demands required to support development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis. Future demands are generally evaluated and projected based on two sets of data; water demands projected within the existing sewer service area and proposed water demands for the expanded sewer service area. Future water demands within the existing sewer service area utilize a "parcel based" method for calculating the demand of infill development. Whereas, future water demands within the expanded sewer service area utilize a "zoning based" method for calculating the demand.

Water demand was evaluated based on current zoning of identified developable land. All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

Proposed daily demands were evaluated and projected based on two sets of data. This included identified developable land within the existing sewer service area or infill development as well as proposed future development within the expanded sewer service area. The summaries for each of these sets of data are provided below.

1. Existing Sewer Service Area: Water Build-out Analysis

The build-out of the sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a "parcel based" build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Generally, residential flows were projected assuming 300gpd / dwelling unit. Commercial flows were projected assuming 0.125 GPD/sq.ft. of building area.

Table 7.A.1.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 7.A.1.1: FWSA Water Supply Build-Out Projections				
Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
Ag	444.34	385	400	154,000
GC	731.03	2042	563	1,149,646
GC-R	102.96	295	563	166,085
GI-R	377.61	35	1250	43,750
HR	2.81	16	225	3,600
IC	175.81	136	1250	170,000
LC	66.20	565	400	226,000
LI / LI-R	151.36	20	1250	25,000
LR	321.05	843	400	337,200
MHR	72.73	403	225	90,675
OS	37.90	182	0	0
RR-1	511.75	893	400	357,200
RR-2	30.71	5	400	2,000
Total FWSA Projected Water Demand (GPD)				2,725,156
Total FWSA Projected Water Demand (MGD)				2.73
			(mgm)	84,480
			(mgy)	994,682

Notes:

- (a) “Developable Acres” represents the developable acreage per zone, within the sewer service area, excluding the environmentally constrained areas..
- (b) “Potential Units” represent the projected number of units that may be constructed within each zone within the FWSA.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
- (d) TOTAL ADF represents the potential build-out within the FWSA. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

2. Future Sewer Service Area: Water Build-out Analysis

Generally, the future sewer service area build-out is prepared utilizing a “zoning based” build-out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

All proposed water demands for the Township, included as part of this WMP submission, are identified within section 7.A.1 above.

3. Analysis of Water Capacity to Meet Supply Needs

This section of the wastewater management plan analyzes whether there is sufficient potable water treatment capacity to meet the needs of the Municipality based on the projections described above. This requires a comparison of the projected future demand to the existing capacity of the water supply system.

Table 7.A.3.1 provides a comparison of existing water allocation with existing and future flow demands within the municipality. The final column determines whether existing capacity is sufficient to support projected daily demands. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 7.A.3.1: Water Supply Capacity								
Water Company (Breakdown by Municipality)		Permit # / Program Interest ID	2010 Water Allocation *		Total Projected Water Demand		Remaining Water Allocation	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water (Logan System)		WAP100001/ 5003	60	392	N/A	N/A	(Alternative Source)	
New Jersey American Water (Penns Grove System)	% of System Demand	WAP070002/ 5328	70.4	753	178.02	2,105.07	-107.62	-1,352.07
Penns Grove	30.5	n/a	n/a	n/a	13.35	160.16	n/a	n/a
Oldmans	7	n/a	n/a	n/a	56.19	662.25	n/a	n/a
Carneys Point Township	62.5	n/a	n/a	n/a	108.48	1,282.66	n/a	n/a

Note: Total Projected Water Demand reflects the Average Daily Demand in 2010 and additional demand associated with the FWSA build-out projections.

Based on the analysis presented above, the total monthly water allocation for the water purveyor (NJAW), supplying the Carneys Point Township, Oldmans Township and the Borough of Penns Grove water systems (70.4mgm/ 753mgy) is less than the water supply necessary to support existing demands and proposed development within the Carney Point FWSA. The projected calculations were based on the proposed build-out projections and average daily demand values utilized within the regulations for each type of development.

Carneys Point Township will need to obtain additional water supply to support the FWSA in its entirety, as the population increases and development expands. Due to the current economic climate, projected growth rate of the population, and the anticipated short-term need for additional water supply, these municipalities are not seeking additional water supply at this time. As NJAW is only operating at 54% of their monthly allocation and approximately 60% of their annual diversion limit, the existing water capacity is sufficient to support existing demands and short-term development in the future, based on the current water utilization indicated above. However, it should be noted that NJAW system has additional water production capabilities and could supply more than the current allocation.

NJAW supplies water to Penns Grove Boro, Oldmans and Carneys Point Townships through its Penns Grove system, which receives water from its local sources, as permitted by the Department, and from the Tri-County pipeline. NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1. Therefore, NJAW could supply more than the current allocation if necessary. This may require NJAW to make adjustments or infrastructure improvements to its water system in order to supply additional water to the area.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Carneys Point WMP provides the most current planning efforts within the Sewer Service Area.

The Carneys Point WMP proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Carneys Point Township WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. This planning area is exclusive to the municipality's boundary. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.2: EXISTING FACILITIES & SERVICE AREAS

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Carneys Point Township, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP No.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP No.4: CARNEYS POINT TOWNSHIP ZONING MAP

The map depicts the current zoning of Carneys Point Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations									
Zone	Zone Title	Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum side yard setback	Minimum rear yard setback	Maximum Building Height	Maximum Building Coverage
RR-1	RURAL RESIDENTIAL 1	22,000SF	125'	150'	30/40'	15/10'	30/10	35/15	20%
RR-2	RURAL RESIDENTIAL 2	2 ACRE	150'	200'	40'	25'	50	35/15	20%
AG	AGRICULTURE	1 ACRE	100'	125'	30/40	15/10	30/10	35/15	15%
LR	LOW DENSITY RESIDENTIAL	15,000SF	100'	125'	30/40	15/10	30/10	35/15	25%
MHR	MEDIUN HIGH DENSITY RESIDENTIAL	7,000SF	60'	90'	30/30	10/5.	25/5	35/15	25%
HR	HIGH DENSITY RESIDENTIAL	5,000SF	50'	70'	30/30	10/5.	25/5	35/15	30%
LC	LIMITED COMMERCIAL	5,000SF	50'	70'	30/30	10/5.	25/5	35/15	30%
GC	GENERAL COMMERCIAL	15,000SF	100'	125'	40/40	30/30	40/40	40/40	30%
GC-R	GENERAL COMMERCIAL (REDEVELOPMENT)	15,000SF	100'	125'	40/40	30/30	40/40	40/40	30%
LI-R	LIGHT INDUSTRIAL (REDEVELOPMENT)	5 ACRES	300	400	60/60	30/30	40/40	50/50	30%
GI-R	GENERAL INDUSTRIAL (REDEVELOPMENT)	10 ACRES	500'	500'	75/75	30/30	40/40	50/50	40%
IC	INTERCHANGE COMMERCIAL	50,000SF	200'	200'	50'	20'	35'	45'	40%

5. MAP No.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP No.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP No.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.3

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

BOROUGH OF ELMER CHAPTER

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Sickels & Associates, Inc.

*Wastewater Management Plan for
Salem County, New Jersey
Elmer Borough Chapter*

I. INTRODUCTION

The purpose of this document is to provide a comprehensive Wastewater Management Plan (WMP) for Salem County. This chapter represents the Borough of Elmer portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

The Borough of Elmer is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service area (FWSA) for the municipality is identified on Map No.3. The area does not include any areas that lay within adjacent municipalities with the exception of the Hospital (South Jersey Hospital discharge bed located in Upper Pittsgrove).

Elmer Borough is bounded by the municipal boundaries of Pittsgrove Township (to the southeast and Upper Pittsgrove Township (to the northwest). Elmer Borough encompasses a total area of 584 acres (0.9 square miles) including approximately 16 acres of which are surface water (ponds, lakes, reservoirs) and 1.4 miles of streams (shown in Map No.1) flowing in the municipality. This municipality has been developed extensively in area between Main Street and Chestnut Street, and Front Street to S. Main Street. Other areas of the municipality are developed agriculturally or have been set aside for conservation. As the Borough is mostly urban, it has a medium population density of 1,555 people/sq mi according to (2010) U.S. Census data.

Elmer Borough has a population of 1,395 persons. The municipality's population trend over the last decade can be seen as an average 0.08% growth in population each year (8% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for Elmer Borough. In terms of population change over the next three decades, Elmer is expected to continue growing slowly according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	1,589		
1990	1,571	-18	-0.11%
2000	1,384	-187	-1.19%
2010*	1,395	11	0.08%

~Source: 1990 U.S. Census, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010	1,395		
2020	1,416	21	0.15%
2030	1,433	17	0.12%
2040	1,450	17	0.12%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The Borough of Elmer has previously submitted two Water Quality Management Plans (WQMP's) / Amendments. The amendments, which were adopted on March 31 and June 9, 1998, recognized the South Jersey Hospital a.k.a. "Elmer Community Hospital" NJPDES facility in the Borough of Elmer and Upper Pittsgrove Township as an on-site treatment facility discharging to groundwater.

The Borough of Elmer does not currently have an adopted WMP in effect. The enclosed plan reflects current zoning and includes the default wastewater management alternative to support development in areas that are not designated as sewer service area, which is a discharge to groundwater of less than 2,000 gallons per day. The Borough of Elmer WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

Elmer Borough does not currently own or operate a public sewer system, nor does it own or operate any infrastructure for wastewater service.

C. CURRENT WATER SERVICES

The Borough of Elmer Water Department water supply system serves approximately 1,395 persons within their sewer service area according to current NJDEP data. This equates to 2.1 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the system. The water service area only includes areas within Elmer Borough.

The Borough of Elmer owns and operates its own potable water supply system. The public is presently serviced from two (2) ground water wells located throughout the municipality. Wells No.6 and No.8 withdraw water from the Mount Laurel-Wenonah Aquifer. Map No.1 depicts the areas actively served by existing public water supply facilities, which includes all of the Borough of Elmer. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

The Borough of Elmer owns and operates its own potable water supply system. The Borough's water supply is sufficient to meet the current demand. Since the FWSA reflects the area currently served by potable water and also accounts for population increases, based on census data, the Borough's existing water supply is sufficient to meet the demands of the FWSA. The municipality has not identified any other issues regarding water quality or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

There are currently no areas served by public sewers within the Borough of Elmer. The Borough of Elmer has identified a future wastewater sewer service area (FWSA) necessary to implement a portion of the goals and objectives of the Borough's Master Plan. The FWSA reflects the area currently served by potable water and also accounts for population increases, based on census data. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and FW-2 Waters. The area identified is intended to reflect the portion of the municipality where sanitary sewer service could be constructed. However, wastewater treatment facilities are not currently available. As wastewater treatment facilities become available to this municipality in the future, the infrastructure and treatment facilities would be identified in future WMP updates.

The proposed future sewer service areas delineated on Map No.3 consists of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the areas planned to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each NJPDES permit identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, and projected build-out flow summarized by municipality. A sanitary build-out analysis has been prepared for the future wastewater service area identified on Map No.3.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.
2. Construction of a new treatment facility or interconnection with an existing treatment facility along with the installation of infrastructure will be required to meet the future wastewater generation needs of the municipality, as wastewater treatment facilities are not currently available.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Elmer does not own or operate any wastewater treatment or conveyance systems. Map No.2 depicts the areas actively served by existing wastewater facilities. These facilities consist of on-site treatment works that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Tables located in Chapter 7 (VII) provide detailed information on each facility. "Actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

This Section is not applicable as Elmer does not own or operate a sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations for public wastewater treatment facilities.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

TABLE 2.C.1: Non-Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
10	South Jersey Hospital	NJ0099571	GWIND	10

Note: The Elmer Community Hospital is now included within the Inspira Health Network. It is now referred to as South Jersey Hospital.

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Appendix “D” list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, Elmer Borough does not contain any industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Remaining areas of the municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

This Section is not applicable as Elmer does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities.

G. EXISTING WASTEWATER TREATMENT

This Section is not applicable as Elmer does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Borough of Elmer is presently serviced from two (2) ground water wells located throughout the Borough. Wells No.2 and No.6 withdraw water from the Mount Laurel-Wenonah Aquifer. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

The following Table 2.H.1 summarizes each public community water supply facility currently serving the municipality. The franchise areas are depicted on Map No.1.

Well Permit Number	Well Designation	Pump Capacity (gpm)	(a) Aquifer
3100004612	6	65	MLW
3100019206	8	65	MLW

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

The Borough of Elmer currently has an average daily usage of approximately 0.143 million-gallons/day based upon the 2010 calendar year. The peak annual and monthly water demand over a period of 5 years between 2006 through 2010, occurred in July, 2007. The reduction in average demand, over the last few years, is partially due to the enforcement of water restrictions and water conservation appurtenances in residential and commercial buildings and improvements/replacements within the system’s infrastructure.

The following table 2.I.1 summarizes current water allocation diversion limits permitted for the public community water system.

Water Company	Permit No. / Program Interest ID	Water Allocation (mgm) / (mgy)	Average Demand 2010 (mgm) / (mgy)	Build-Out Projection (mgm)/ (mgy)
Elmer Borough Water Dept.	WAP990001 / 5215	10.00/80.00	4.34/53.03	0.56/6.72

The following table 2.I.2 summarizes historical daily, monthly and annual water demands currently supplied by the public community water system. The districts and franchise areas are depicted on Map No.1.

Year	Annual Demand Total (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)	Peak Monthly Demand	
				(MGM)	Month
2006	53.890	0.148	4.491	6.497	June
2007	57.931	0.159	4.828	7.056	July
2008	53.798	0.147	4.483	6.132	July
2009	52.888	0.145	4.407	5.931	October
2010	52.031	0.143	4.336	6.113	August

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas**, below).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A. Surface Waters and Classifications—Refer to Map No.5A of County map set
- B. Riparian Zones -- Refer to Map No.5C of County map set
- C. Flood Prone Areas – Refer to Map No.5A of County map set
- D. Freshwater Wetlands -- Refer to Map No.5B of County map set
- E. Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F. Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G. Preserved Agricultural Areas and Other Conservation Easements on Private Lands –Refer to Map No.5C of County map set
- H. Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I. Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area. The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.

3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.

5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. The boundary holds tightly to block and lot designations from the Lower Alloways Creek Township tax maps. The boundary was delineated using lots served by sanitary sewer, and in some cases, portions of lots where inclusion of the lot as a whole would misrepresent developed SSA. These are the only exceptions made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Table 4.D.1: Information Sources for Environmentally Constrained Areas				
Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	1/1/02

V. FUTURE WASTEWATER DEMAND AND FACILITIES

This chapter describes the build out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP.

The Borough of Elmer is not currently served by public sewers. The Borough has identified a future wastewater sewer service area (FWSA) necessary to implement a portion of the goals and objectives of the Borough's Master Plan. The FWSA reflects the area currently served by potable water and also accounts for population increases, based on census data. Wastewater treatment facilities are currently not available to support the plan. However, wastewater demand projections have been included within this municipal chapter to reflect build out within the FWSA.

Zoning, as described below, is generally applied to the developable area within the existing sewer service areas after removing those areas where development is not expected to occur: These areas typically consist of small irregular polygons, open space, wetlands, steep slopes and riparian zones. However, the sanitary sewer build out analysis for the Borough was not prepared based on zoning.

Elmer Borough is proposing an FWSA, which is consistent with the area currently served by the potable water system. The Borough's public water supply system currently serves the entire municipality. The number of housing units being supplied with potable water within the Borough has been identified. Consequently, the current number of connections being served by

potable water has been utilized to determine the projected sanitary sewer flows. In addition, population projections have been included to account for growth over a twenty (20) year period. The number of residential units and non-residential floor area were then multiplied by the wastewater planning flow estimates in either N.J.A.C. 7:14A or 7:9A as appropriate. The results of the analysis are presented within this chapter. It should be noted that infill development has not been included within the scope of the build out analysis.

A. Conformance and Nonconformance with Zoning and Prior Land Use Approvals

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter.

B. Municipal Zoning and Composite Zoning

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and is being provided for reference only, as the zoning has not been utilized for the associated build-out analyses.

FWSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Table 5.B.1: Summary of Elmer Municipal Zones

Zone Name	Zone Description	Municipal Area (ac)	FWSA Developable Area (ac)
CONS	CONSERVATION	107.2	20.62
LR-1	LOW DENSITY RESIDENTIAL	38.4	32.66
LR-2	LOW DENSITY RESIDENTIAL	31.4	30.98
LM	LOW MEDIUM RESIDENTIAL	77.3	74.40
MR	MEDIUM DENSITY RESIDENTIAL	194.6	194.60
LC	LIMITED COMMERCIAL	4.4	3.81
GB	GENERAL BUSINESS	24.2	19.93
HB	HIGHWAY BUSINESS	9.2	8.37
C-LI	COMMERCIAL/LIGHT INDUSTRIAL	12.6	11.19
LI	LIGHT INDUSTRIAL	6.1	6.09

C. Calculating Future Wastewater and Water Supply Needs and Capacity

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed municipality, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

The Borough of Elmer does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities. However, the Borough has identified a future wastewater sewer service area (FWSA) that reflects the area currently served by potable water and also accounts for population increases, based on census data.

The method for projecting the Borough's future wastewater management needs consists of utilizing the existing number of units being served by the potable water system and applying a 20-year population projection to the values in an effort to determine the build out for the municipality.

D. Municipal Demand Projections in Urban Municipalities

This Section is not applicable, as the Borough of Elmer is not designated as an urban municipality.

E. Municipal Demand Projections in Non-urban Municipalities

Development of vacant land is typically a predominant factor in determining future wastewater treatment needs. However, the entire population within the Borough of Elmer is currently served by potable water. As a result, the number of existing dwellings has been utilized to determine the demand projections. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

The Borough of Elmer has identified a future wastewater sewer service area (FWSA) necessary to implement a portion of the goals and objectives of the Borough's Master Plan. In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. Since the proposed FWSA identifies an area that is currently served by potable water, the actual number of dwellings currently served by potable water within the sewer service area(s) was utilized to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. The Borough's sewer service is defined on Map No.3.

2. Existing Sewer Service Area Build-Out Analysis

The Borough of Elmer is not currently served by public sewers and treatment facilities are currently not available. All proposed sanitary sewer flows for the Borough, included as part of FWSA for this WMP submission, are identified within section 5.E.3.1 below.

3. Future Sewer Service Area Build-Out Analysis

The Borough of Elmer is not currently served by public sewers. However the entire municipality is served by the Borough's potable water system. The build-out of the FWSA consisted of identifying the number of units and population currently being serviced by potable water. This information was utilized to determine projected sanitary sewer flows for the existing dwellings and facilities. An evaluation of remaining infill within the Borough was not performed. However, population projections have been included to account for growth over a twenty (20) year period.

Future wastewater is calculated from the population and employment projections by multiplying the projected increase in population by 75 gallons per day per person and the projected increase in employment by 25 gallons per day per person. Elmer Borough's population and employment 20-year projection was taken from an estimate made by the South Jersey Transportation Planning Organization (SJTPO), which employed data from historical U.S. Censuses.

Table 5.E.3.1 provides an analysis of the existing number of dwellings as well as the population projection for the Borough of Elmer through the next 20 years. The flows contributed from residential, commercial, and industrial productions are expected to remain stable.

Table 5.E.3.1: FWSA Build-Out Projections

Projection Parameter	Current (2010) Population / Demand	20-Year (2030) Population / Demand	Projected Flow	
			# of People	Flow (gpd)
Current Population Served by Potable Water System	1,395	n/a	1,395	104,625
Population Increase	1,395	1,433	38	2,850
Employment	1,594	2,005	411	10,275
South Jersey Hospital (Based on Permitted Flow)	Existing NJPDES Facility	24,000 gpd	n/a	24,000
		Projected New Flow (gpd)		141,750
		Current 2010 ADF (gpd)		0
		Total 20-year Flow (gpd)		141,750
		Total 20-year Flow (mgd)		0.142

Notes:

- a. There are currently 577 dwelling units with a population of 1,395 people being served by the Potable water system. These same units would be served by the FWSA.
- b. Employment projections for the area were obtained from the SJTPO Regional Transportation Plan 2040 Report, dated July 12, 2012.
- c. Projected Flow has been calculated based on current NJDEP regulations.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

There are currently no areas served by public sewers within the Borough of Elmer. The Borough of Elmer has identified a future wastewater sewer service area (FWSA) necessary to implement a portion of the goals and objectives of the Borough's Master Plan. However, as identified above, treatment facilities are currently not available. Wastewater flow projections have been included at this time to reflect build out within the FWSA.

A. Adequacy of Sewage Treatment Plant Capacity

Elmer does not own or operate a Wastewater Treatment Plant. The Borough of Elmer has identified a future wastewater sewer service area (FWSA) necessary to implement a portion of the goals and objectives of the Borough's Master Plan. However, treatment facilities are not currently available to support the plan.

B. Analysis and Selection of Treatment Alternatives

The Borough of Elmer is not currently served by a public wastewater treatment facility and does not have wastewater treatment capacity available to support future wastewater management needs projected by the plan. The FWSA sanitary build out analysis results above indicate that the Borough of Elmer does not have sufficient wastewater treatment capacity to support future wastewater management needs projected by the plan. Due to the current economic climate, projected growth rate of the population and the anticipated short-term need for additional capacity, the municipality is not proposing new or expanded facilities at this time.

The Borough will begin to review the potential process improvements and available treatment alternatives based on the direction of the governing body. It is anticipated that the Borough would consider the Gloucester-Salem County Regional Alternative to meet future development needs.

The Salem County Pollution Control Financing Authority conducted a sanitary sewer study in an effort to conceptualize a regional sewage system plan for the County. The intent of the plan is to convey sanitary sewer to a newly constructed treatment facility to be located on the Dupont Chambers Works property in Carneys Point Township. The planning of this effort is ongoing and currently in the environmental assessment and preliminary engineering stage of development.

C. Antidegradation Analysis for New and Expanded Domestic Treatment Works

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. Sufficiency of Water Supply

The Borough of Elmer's current water allocation and existing average water demands are identified in Section 2 of this municipal chapter. Population projections, based on census data, was the predominant factor in determining future water supply needs and development of vacant land. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide potable water while protecting surface and ground water quality for the entire projected build out allowable by zoning.

The Borough of Elmer's water distribution system extends to the municipal boundaries and serves the entire population. Consequently, infill development has been considered by utilizing a population based build-out approach as defined below. For this reason, neither the parcel based nor zoning based analysis were applied to identify future demands for this municipality. A 20-year projection has been created based on population and employment projections.

Proposed daily demands required to support development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis. Future demands are generally evaluated and projected based on two sets of data; water demands from projected population increase/decrease within the existing SSA, and water demands from projected employment increase/decrease within the existing SSA.

1. Sewer Service Area: Water Build-Out Analysis

Neither parcel nor zoning based build-out was used in the analysis of the sewer service area as the build-out analysis was prepared utilizing a population and employment based approach. In this type of build-out, future water demand is calculated from the population and employment projections by multiplying the projected increase in population by 100 gallons per day per person and the projected increase in employment by 25 gallons per day per person. These numbers are an adjustment of the multipliers used to estimate wastewater flows in a municipality (set forth by NJDEP). Elmer Borough's population and employment 20-year projection was taken from an estimate made by the South Jersey Transportation Planning Organization (SJTPPO), which employed data from historical U.S. Censuses.

Table 7.A.1 provides an analysis of the population projection for the Borough of Elmer through the next 20 years. The flows contributed from residential, commercial, and industrial production is expected to remain stable.

Table 7.A.1: FWSA Water Demand Build-Out Projections				
Projection Parameter	Current (2010) Population / Demand	20-Year (2030) Population / Demand	Projected Demand	
			# of People	Demand (gpd)
Population	1,395	1,433	38	3,800
Employment	1,594	2,005	411	10,275
South Jersey Hospital (Based on Permitted Flow)	20,000 gpd	24,000 gpd	n/a	4,000
Current 2010 ADD (gpd)	140,645	Projected New Demand (gpd)	18,075	
Current 2010 ADD (mgd)	0.141	Projected New Demand (mgd)	0.018	
Current 2010 ADD (mgm)	4.34	Projected New Demand (mgm)	0.560	
Current 2010 ADD (mgy)	53.03	Projected New Demand (mgy)	6.724	
			Total 20-year Demand (gpd)	158,720
			Total 20-year Demand (mgd)	0.159
			Total 20-year Demand (mgm)	4.920
			Total 20-year Demand (mgy)	59.75

Notes:

- a. There are currently 577 dwelling units with a population of 1,395 people being served by the Potable water system.
- d. Employment projections for the area were obtained from the SJTPO Regional Transportation Plan 2040 Report, dated July 12, 2012.
- e. Projected Demand has been calculated based on current NJDEP regulations.
- f. TOTAL Projected Demands represents the potential build-out within the FWSA.

2. Future Sewer Service Area: Water Build-out Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

As indicated in section 7.A.1 above, a potable water build out analysis for the Borough of Elmer reflects anticipated demand through the next 20 years, based on the population projection for the Borough.

3. Analysis of Water Capacity to Meet Supply Needs

This section of the wastewater management plan analyzes whether there is sufficient potable water treatment capacity to meet the needs of the Municipality based on the projections described above. This requires a comparison of the projected future demand to the existing capacity of the water supply system.

Table 7.A.3.1 provides a comparison of existing water allocation with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected daily demands.

TABLE 7.A.3.1: Water Supply Capacity					
Water System	Permit No.	Current Water Allocation	Average Daily Demand 2010	Proposed SSA Build-Out Projection	Remaining Water Allocation
		(mgm)/(mgd)	(mgm)/(mgd)	(mgd)	(mgm)/(mgd)
Elmer Water Department		10.0 / 80.0	4.34 / 53.03	0.056/6.72	5.08 / 20.25

The total monthly water allocation for the water system that serves the municipality (10.0 mgm) is greater than the water supply necessary to support existing demands within the sewer service area (4.42 mgm).

VIII. MAPPING REQUIREMENTS

A. Basis for Service Area Delineations

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Elmer WMP provides the most current planning efforts within the Sewer Service Area.

The Borough of Elmer's WMP proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Borough of Elmer WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water

Quality Standards at N.J.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. Mapping Classification

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. This planning area is exclusive to the municipality's boundary. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. Map No.2: Existing Facilities & Service Areas

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of The Borough of Elmer, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. Map No.3: Proposed Facilities & Service Areas

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. Map No.4: Borough of Elmer Zoning Map

The map depicts the current zoning of The Borough of Elmer. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations										
Zone	Zone Title	Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Maximum Building Height	Minimum Habitable Floor Area	Maximum Lot Coverage
CONS	CONSERVATION	1 ACRE	150'	200'	40'	20'	40'	35'	10%	5%
LR-1	LOW DENSITY RESIDENTIAL	30,000 SF	125'	175'	35'	20'	35'	35'	20%	10%
LR-2	LOW DENSITY RESIDENTIAL	30,000 SF	125'	175'	35'	20'	35'	35'	20%	10%
LM	LOW MEDIUM RESIDENTIAL	20,000 SF	100'	150'	35'	15'	30'	35'	10%	10%
MR	MEDIUM DENSITY RESIDENTIAL	12,000 SF	100'	150'	35'	15'	30'	35'	20%	10%
LC	LIMITED COMMERCIAL	12,000 SF	80'	125'	30'	15'	30'	35'	20%	20%
GB	GENERAL BUSINESS	12,000 SF	80'	125'	30'	15'	30'	35'	20%	20%
HB	HIGHWAY BUSINESS	30,000sf	125'	175'	40'	30'	40'	35'	10%	20%
C-LI	COMMERCIAL/ LIGHT INDUSTRIAL	20,000 sf	100'	150'	35'	15'	30'	35'	10%	20%
LI	LIGHT INDUSTRIAL	1 ACRE	150'	200'	40'	30'	40'	35'	10%	20%

5. Map No.5A: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. Map No.5B: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. Map No.5C: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.4

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

ELSINBORO TOWNSHIP CHAPTER

PREPARED BY:

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*Wastewater Management Plan for
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Sickels & Associates, Inc.

*Wastewater Management Plan for
Salem County, New Jersey
Elsinboro Township Chapter*

I. INTRODUCTION

This chapter represents the Elsinboro Township portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

The Township of Elsinboro is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission. The future wastewater service area (FWSA) for Elsinboro is identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

The Township of Elsinboro is a rural, agriculturally based municipality, bounded by three (3) municipalities including Pennsville Township (to the north-west), Salem City (to the north-east), and Lower Alloways Creek Township (to the south). The Delaware Bay runs along the western boundary of the township as well. Elsinboro encompasses a total area of 8,427 acres (13.2 square miles) including approximately 18.9 acres of which is surface water (ponds, lakes, reservoirs), and 146.9 miles of streams (shown on map No.1) flowing in the municipality. This municipality has been developed mostly agriculturally or for rural residential use, though low to medium density residential development can be found along the Delaware Bay. There are also some sparse tracts of commercial development in the Township's northeast section, where the Salem-Hancocks Bridge Road extends from Salem City. Elsinboro Township has a low population density of approximately 78 people/sq mi according to (2010) U.S. Census data.

Elsinboro Township has a population of 1,036 persons. The municipality's population trend over the last decade can be seen as an average -0.51% decrease in population each year (-5.1% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the Township of Elsinboro. In terms of population change over the next three decades, Elsinboro is expected to stagnate and eventually grow slowly according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Table 1.1: Elsinboro- Historic Population				Table 1.2: Elsinboro- Projected Population			
Year	Population	Population Change		Year	Population	Population Change	
		#	avg yearly %			#	avg yearly %
1980	1,290			2010	1,036		
1990	1,170	-120	-0.93%	2020	1,018	-18	-0.17%
2000	1,092	-78	-0.67%	2030	1,027	9	0.08%
2010*	1,036	-56	-0.51%	2040	1,035	8	0.08%
~Source: 1990 U.S. Census, *2010 U.S. Census				~Source: SJTPO, 2011			

A. STATUS OF PREVIOUS APPROVED WMPs

Elsinboro Township has not previously submitted a Wastewater Management Plan to the New Jersey Department of Environmental Protection, as it has not developed sewer or water infrastructure. However, the Salem County Women's Services facility located in the Township was included as part of an amendment to the Lower Delaware WQMP, adopted on September 24, 2003. This plan is the current WQMP in effect for Elsinboro Township.

The enclosed plan reflects current zoning with a potential future sewer service area consistent with the Municipality's Master Plan and includes the default wastewater management alternative to support development in areas that are not designated as sewer service area, which is a discharge to groundwater of less than 2,000 gallons per day. The Elsinboro Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

Elsinboro Township is not currently served by a public sewer system, nor does it own or operate any wastewater treatment facilities. The Elsinboro Women's Services facility contributes flow to the Salem City Wastewater Treatment Plant and is currently the only facility to be served by sanitary sewer service.

C. CURRENT WATER SERVICES

Elsinboro Township is not currently served a by public community water system, nor does it contain any infrastructure for potable water service. The Elsinboro Women's Services facility receives potable water service from the Salem City Water Department via 8" water main, and is currently the only facility to receive such service.

D. OVERVIEW OF ENVIRONMENTAL AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, state, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

Elsinboro Township does not currently own or operate a public community water supply system and is served by Salem City. However, the Township has identified specific areas of the municipality for inclusion within the FWSA. Upon review of these areas with the Department, the areas under consideration are within the coastal zone and regulated by CAFRA. Consequently, these areas have not been included as part of the FWSA at this time. The County is prepared to assist the Township with the regulatory issues presented by the CAFRA jurisdiction. The Township will pursue an approved SSA, through the amendment process, upon working through the regulatory planning approval process.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

There is currently only one (1) facility served by public sewers within the Township of Elsinboro. The Township has not identified future sewer service areas for inclusion within this submission of the Salem County Wastewater Management Plan (WMP).

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. Elsinboro does not currently have any sewer service areas identified.

1. All areas not proposed to be included in the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Map No.2 depicts the areas actively served by existing wastewater facilities. These facilities consist of on-site treatment works that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Tables located in Chapter 7 (VII) provide detailed information on each facility. “Actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

Elsinboro Township does not own or operate any wastewater treatments or major conveyance systems consisting of major interceptors, trunk lines and pumping stations for public wastewater treatment facilities. Currently the only infrastructure is 675 feet of 8” diameter sanitary sewer main that extends service to the Salem County Women’s Services facility from Salem City.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. All existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater must be regulated under a NJPDES permit. However, Elsinboro Township does not contain any non-industrial treatment facilities under NJPDES permit, or any non-industrial wastewater treatment facilities.

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, Elsinboro Township does not contain any industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Remaining areas within the municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

As noted above, the Salem County Women's Services facility is the only location in Elsinboro that contributes wastewater flow to sewer. The facility discharges approximately 520 gallons per day to the Salem City WWTP.

G. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

Elsinboro Township does not own or operate any public potable water supply wells or distribution mains. Map No.1 generally depicts the areas actively served by existing public water supply facilities. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

The extent of water infrastructure in Elsinboro Township is a (620 L.F) stretch of 8" diameter water main that extends service to the Salem County Women's Services building from the Salem City Water and Sewer Authority.

H. EXISTING PUBLIC WATER SUPPLY DAILY DEMANDS

As noted above, the Salem County Women's Services facility is the only location in Elsinboro Township that is served by a public water system. The facility is supplied by Salem City and has an average demand of approximately 0.277 MGY.

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in **Chapter I** of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A. Surface Waters and Classifications—Refer to Map No.5A of County map set
- B. Riparian Zones -- Refer to Map No.5C of County map set
- C. Flood Prone Areas – Refer to Map No.5A of County map set
- D. Freshwater Wetlands -- Refer to Map No.5B of County map set
- E. Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F. Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G. Preserved Agricultural Areas and Other Conservation Easements on Private Lands –Refer to Map No.5C of County map set
- H. Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I. Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning Area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document. This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.

2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.

5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to the geographical boundary of the municipality. No exceptions were made for the delineations used in this WMP. Environmentally constrained areas that were identified through the process have been removed within the sewer service area boundary, where applicable.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Table 4.D.1: Information Sources for Environmentally Constrained Areas				
Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	8/15/08

V. FUTURE WASTEWATER DEMAND AND FACILITIES

This chapter describes the build out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP.

The Township of Elsinboro is not proposing future wastewater demand or public wastewater treatment facilities at this time. Consequently, wastewater demand projections have not been included within this municipal chapter.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

Zone Name	Zone Description	Municipal Area (ac)	HUC-11 Developable Area (ac)
C	COMMERCIAL	672.7	268.1
CONS	CONSERVATION	4,154.9	41.4
LR	LOW DENSITY RESIDENTIAL	123.5	10.4
MR	MEDIUM DENSITY RESIDENTIAL	100.4	25.8
RR-A	RURAL RESIDENTIAL- AGRICULTURE	3,375.7	1,425.6

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

This Section is not applicable as Elsinboro Township does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities. In addition, Elsinboro Township does not own or operate any public community water supply facilities, potable water wells or distribution mains.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

This Section is not applicable as Elsinboro Township is not designated as an Urban Municipality.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land is the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out depending based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

The Township of Elsinboro has identified areas of existing development that are believed to have failing septic systems. Pursuant to 7:15-3.5(b)4.ix, a revision to an adopted SSA is allowed to provide for connection of an existing structure(s) with a malfunctioning subsurface sewage disposal system that is not currently within an approved sewer service area to an identified sewage treatment plant, provided the applicant demonstrates that it is not feasible to repair or replace the malfunctioning subsurface sewage disposal system under N.J.A.C. 7:9A-3.4 and the property where the existing structure is located is contiguous to the existing sewer line.

The County and the Township are currently working with the Department to identify documentation and reporting requirements necessary to substantiate the inclusion of these areas within the FWSA through the amendment process.

2. Existing Sewer Service Area Build-Out Analysis

Elsinboro Township currently contains an existing SSA of 3.8 acres. This area consists of the above-mentioned Women's Services facility and surrounding residential development. This area is not expected to have infill development or changes due to environmental constraints, nor has Elsinboro Township identified any other change to this area that would require a proposed SSA. Therefore, an analysis of the existing sewer service area does not apply to the Township of Elsinboro as this municipality is not proposing a sewer service area as a part of this submission of the Salem County WMP.

3. Future Sewer Service Area Build-Out Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

An analysis of the future sewer service area does not apply to Elsinboro Township as this municipality is not proposing a sewer service area as a part of this submission of the Salem County WMP.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant. This analysis does not apply to Elsinboro Township as this municipality is not currently served by public sewer.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Elsinboro Township does not own or operate a Wastewater Treatment Plant. The Township is not proposing a future sewer service area at this time. Consequently, wastewater treatment plant capacity and associated demand projections have not been included within this municipal chapter.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

Elsinboro Township identified specific areas of the municipality for inclusion within the FWSA. These areas have not been included within this WMP submission as they are within the coastal zone and regulated by CAFRA.

The build-out analysis and associated evaluation of treatment alternatives will be reviewed as the Township works through the regulatory planning approval process related to CAFRA. However, it should be noted that the City of Salem currently has a surplus of capacity that may be sufficient to accommodate flows generated within this area.

C. ANTIDEGRADATION ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area were compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. These demands are then compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

The Township of Elsinboro does not own or operate any public potable water supply wells or distribution mains, nor proposing a service area included as part of this WMP. Consequently, a Depletive/Consumptive Water Use Analysis was not performed at this time.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows portions of the municipality that lay within the CAFRA areas. The Hackensack Meadowlands District, Pinelands

Areas, Pinelands National Reserves, or franchise areas do not apply to this municipality.

2. Map No.2: Existing Facilities & Service Areas

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Elsinboro Township, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. Map No.3: Potential Future Facilities & Service Areas

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. Map No.4: Elsinboro Township Zoning Map

The map depicts the current zoning of Elsinboro Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Zone	Zone Title	Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Maximum Building Height	Maximum Building Coverage	Maximum Additional Lot Coverage
C	COMMERCIAL	25,000 SF	125'	175'	50'	20'	30'	35'	40%	35%
LR	LOW DENSITY RESIDENTIAL	25,000 SF	125'	175'	40'	20'	35'	35'	20%	35%
MR	MEDIUM DENSITY RESIDENTIAL	18,000 SF	100'	150'	35'	15'	30'	35'	20%	25%
RR- A	RURAL RESIDENTIAL- AGRICULTURE	75,000 SF	175'	200'	50'	25'	50'	35'	15%	15%
CONS	CONSERVATION	5 ACRES	300'	400'	50'	30'	60'	35'	5%	5%

5. Map No.5A: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. Map No.5B: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 14 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. Map No.5C: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 14 watershed.

Chapter IX.5

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

**LOWER ALLOWAYS CREEK TOWNSHIP
CHAPTER**

PREPARED BY:

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I. INTRODUCTION

The purpose of this document is to provide a comprehensive Wastewater Management Plan (WMP) for Salem County. This chapter represents the Lower Alloways Creek Township portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (N.J.A.C 7:15).

Lower Alloways Creek (LAC) Township is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service area (FWSA) for the Township is identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

The Township of Lower Alloways Creek is a rural, agriculturally based municipality bounded by Cumberland County (to the east), and three (3) Salem County municipalities including Salem City (to the North), Elsinboro Township (to the northwest) and Quinton Township (to the northeast). The Delaware Bay runs along the western boundary of the Township as well. Lower Alloways Creek Township encompasses a total area of 30,801 acres (47.8 square miles), making it the largest of Salem County’s municipalities. As its name implies, Lower Alloways Creek is also the wettest of Salem County’s municipalities, containing approximately 591.0 miles of streams, and 229.3 acres of surface water (ponds, lakes, and reservoirs) (shown in Map No.1). This municipality is largely undeveloped containing farms and small residential villages. Three of the state’s four nuclear power generator facilities are located in Lower Alloways Creek Township, as described later in this report. Lower Alloways Creek Township has the lowest population density in Salem County (approximately 39.6 people/sq mi) according to (2009) U.S. Census data.

Lower Alloways Creek Township has a population of 1,770 persons. The municipality’s population trend over the last decade can be seen as a -0.44% average decrease in population each year (-4.4% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the Township of Lower Alloways Creek. In terms of population change over the next three decades, Lower Alloways Creek is expected to experience small very little change. This is according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Table 1.1: Lower Alloways Creek- Historic Population

Year	Population	Population Change	
		#	avg yearly %
1980	1,547		
1990	1,858	311	2.01%
2000	1,851	-7	-0.04%
2010*	1,770	-81	-0.44%

~Source: 1990 U.S. Census, *2010 U.S. Census

Table 1.2: Lower Alloways Creek- Projected Population

Year	Population	Population Change	
		#	avg yearly %
2010	1,770		
2020	1,757	-13	-0.07%
2030	1,771	14	0.08%
2040	1,786	15	0.08%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The Lower Alloways Creek Township (LAC) has submitted several Waster Quality Management Plans (WQMP's) / Amendments since 1985. These amendments have included proposed combinations or expansions of the existing sewer service areas, and proposal and elimination of treatment facilities.

The current WMP in effect for LAC Township is an amendment to the Lower Delaware WQMP, which was adopted on December 7, 1994. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The LAC Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

The Township of Lower Alloways Creek is served by two small "package" Sewage Treatment Plants (STP). The Canton Village STP provides service to the Village of Canton, and Hancocks Bridge STP serves the villages of Harmersville and Hancocks Bridge. Together, these sewer systems serve approximately 624 persons within the LAC sewer service areas according to current municipal data and DEP online sources. This equates to 0.94% of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the sewage treatment plants. The Green Valley Mobile Home Park, which stretches across Block 1, Lots 2 and 4 in Lower Alloways Creek Township and Block 3, Lot 2 in Quinton Township, is served by the Salem City Water and Sewerage Department.

The sewer service areas do not include industrial businesses that discharge process wastewater to the collection system for treatment by a facility. The existing sewer service limits, delineated on Map No.2, are served by the Canton Village STP, Hancocks Bridge STP, and the Salem City Wastewater Treatment Plant (mobile home site), and were derived from existing sanitary sewer infrastructure currently constructed and/or approved.

The Canton Village STP is located on Main Street and operates under NJPDES Permit Number- NJ0062201 effective on August 2003. Wastewater generated within the WMP existing sewer service area is conveyed to the STP, which is permitted to operate at 0.05 million gallons per day. The Canton Village STP currently receives contributing flow from residential living units. The average monthly flow generated by these contributors for 2010 was 0.0143 mgd.

The Hancocks Bridge Village STP is located on Main Street and operates under NJPDES Permit Number- NJ0050423 effective on January 2003. Wastewater generated within the WMP existing sewer service area is conveyed to the STP, which is permitted to operate at 0.05 million gallons per day. The Canton Village STP currently receives contributing flow from mostly residential units and a commercial building (US Post Office). The average monthly flow generated by these contributors for 2010 was 0.0107 mgd.

C. CURRENT WATER SERVICES

The Township of Lower Alloways Creek contains one small community water supply system, which serves the Leisure Arms Complex for nursing and residential care. The Leisure Arms Complex system serves approximately 60 persons within its facilities according to current NJDEP data. This equates to 0.1 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the system. The system is currently supplied by two on-site groundwater wells (Well No.1 and Well No.2).

Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, state, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection’s statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

Lower Alloways Creek Township's existing sewer service area is completely served by individual water wells. The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Township of Lower Alloways Creek has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, FW-2 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consists of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental, and local land use planning objectives discussed above and the identified areas that are currently built but do not currently have adequate wastewater treatment, Map No.2 and Map No.3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area contributing both the Canton Village STP and Hancocks Bridge STP. For this reason, a future expansion of the existing treatment works will not be required to meet the future wastewater generation needs of the Canton Village area.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental

constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term "actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

Lower Alloways Creek owns and operates two small sewage treatment plants; a brief description of each is given below:

1. Canton Village Sewage Treatment Plant

The Canton Village Sewage Treatment Plant is a localized system for the conveyance, treatment, and disposal of a portion of the municipality's wastewater within its service area. The STP treats domestic waste through an extended aeration process, and discharges the treated wastewater to Stow Creek under NJPDES Permit No. NJ0062201. The present permitted capacity of this plant is 0.05 million gallons per day (mgd). The design capacity of this plant is equal to the permitted capacity (0.05 mgd). The treatment system performance meets permitted parameters under current conditions.

2. Hancocks Bridge Sewage Treatment Plant

The Hancocks Bridge Sewage Treatment Plant is a localized system for the conveyance, treatment, and disposal of a portion of the municipality's wastewater within its service area. The STP treats domestic waste through an extended aeration process, and discharges the treated wastewater to Alloway Creek under NJPDES Permit No. NJ0050423. The present permitted capacity of this plant is also 0.05 mgd. The design capacity of this plant is equal to the permitted capacity (0.05 mgd). The treatment system performance meets permitted parameters under current conditions.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

Lower Alloways Creek Township contains two (2) sewage treatment plants (STP), and a series of pump stations and force mains used to convey wastewater flow to the plants. Environmental & Technical Services, LLC operates the infrastructure including treatment plants and the sanitary collection system. The systems contain approximately 0.72 miles of sanitary sewer main with pipes ranging in size from 8 inches to 12 inches in diameter. The Township currently owns and operates eight (8) pump stations to operate the force mains to convey sewage to the STPs. All flow is conveyed to either the Canton Village STP or Hancocks Bridge STP.

Map No.2 depicts the major interceptors, trunk lines and pumping stations within the various sewer service areas for public wastewater treatment facilities.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
11	Lower Alloways Ck - Hancocks Bridge	NJ0050423	DSW- A	11
12	Lower Alloways Ck - Canton Village	NJ0062201	DSW- A	12
13	Meadowview Acres Campground	NJG0112666	DGW- T1	13

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
14	PSE&G - Salem NGS	NJ0005622	DSW- B	14
15	PSE&G - Hope Creek NGS	NJ0025411	DSW-B	15

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally, the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the Lower Alloways Creek Township STPs were calculated based on flows metered by the Township. The present total average annual wastewater for 2010 was 0.025 mgd. The present average flow includes residential and commercial flows.

The following table 2.F.1 summarizes the permitted capacity of the treatment plants serving LAC and the associated average daily flows for 2010.

WWTP	NJPDES Permit No.	Permitted Capacity/ Agreement (mgd)	Average Daily Flow 2010 (mgd)	Build-Out Projection (mgd)
Canton Village STP	NJ0062201	0.050	0.014	0.032
Hancocks Bridge STP	NJ0050423	0.050	0.011	0.029

Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below. The flows from these connections are identified within facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below.

Table 2.F.2: Existing Wastewater Flows					
Month	Monthly Avg. (mgd)	Daily Max (mgd)	Estimated Monthly Avg. (mgd)		
			Canton Village STP	Hancocks Bridge STP	
Jan-10	0.031	0.041	0.016	0.015	
Feb-10	0.032	0.069	0.018	0.015	
Mar-10	0.032	0.055	0.019	0.013	
Apr-10	0.027	0.040	0.017	0.010	
May-10	0.026	0.038	0.015	0.011	
Jun-10	0.021	0.042	0.012	0.009	
Jul-10	0.017	0.034	0.009	0.008	
Aug-10	0.024	0.225	0.016	0.008	
Sep-10	0.019	0.031	0.011	0.008	
Oct-10	0.022	0.035	0.013	0.008	
Nov-10	0.025	0.031	0.012	0.012	
Dec-10	0.025	0.036	0.012	0.012	
Yearly Average	(mgd)	0.025	0.056	0.014	0.011
	(mgm)	0.760		0.431	0.329
	(mgy)	9.125		5.168	3.942

G. EXISTING WASTEWATER TREATMENT

Existing wastewater treatment for Lower Alloways Creek Township contains extended aeration treatment at its two STPs.

1. Canton Village Sewage Treatment Plant

The Canton Village STP is currently operated under NJPDES permit number NJ0062201. The treatment plant consistently operates within current permit limits for BOD and TSS, based on 2010 data.

2. Hancocks Bridge Sewage Treatment Plant

The Hancocks Bridge STP is currently operated under NJPDES permit number NJ0050423. The treatment plant consistently operates within current permit limits for BOD and TSS, based on 2010 data.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Leisure Arms Complex is presently serviced from two (2) on-site ground water wells. Wells No.1 and No.2. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

Lower Alloways Creek Township owns and operates the Leisure Arms community water system, which provides service to the Leisure Arms Complex community. The system is served by two (2) on-site wells. No major transmission lines exist for this system.

The following Table 2.H.1 summarizes each public community water supply facility currently serving the municipality. The franchise areas are depicted on Map No.1.

Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
3400001599	1	65	N/A
3400001600	2	65	N/A

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

This Section is not applicable, as LAC Township does not own currently have any community water system permit for water allocation. The above mentioned Leisure Arms system currently has a firm capacity of 0.094mgd with an average daily usage of approximately 3,700 gallons/day ((0.0037 mgd) based upon the 2010 calendar year.

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in **Chapter I** of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A. Surface Waters and Classifications—Refer to Map No.5A of County map set
- B. Riparian Zones -- Refer to Map No.5C of County map set
- C. Flood Prone Areas – Refer to Map No.5A of County map set
- D. Freshwater Wetlands -- Refer to Map No.5B of County map set
- E. Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F. Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G. Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H. Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I. Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information

described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.

3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.

5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. The boundary holds tightly to block and lot designations from the Lower Alloways Creek Township tax maps. The boundary was delineated using lots served by sanitary sewer, and in some cases, portions of lots where inclusion of the lot as a whole would misrepresent developed SSA. These are the only exceptions made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Table 4.D.1: Information Sources for Environmentally Constrained Areas				
Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	10/1/01

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Canton Village and Hancocks Bridge STPs projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for infill development and the expanded sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
AR	AGRICUTURAL	13,833.9	108.34
C	COMMERCIAL	15.2	0
C-P	CONSERVATION PARK	623.6	0
I	INDUSTRIAL	3,396.3	0.00
V	VILLAGE RESIDENTIAL	437.1	65.11
W	WETLANDS	12,916.7	0.05

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defined as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Township of Lower Alloways Creek does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities’ Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference.

The Township of Lower Alloways Creek’s sewer service area extends as defined on Map No.3. Consequently, infill development has been identified by utilizing a parcel based build-out approach as defined below.

2. Sewer Service Area Build Out Analysis

The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and industrial flows were projected assuming 0.1 GPD/ sq.ft. of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the FWSA. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 5.E.2.1: FWSA Build-Out Projections					
Treatment Facility	Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
		<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
Canton Village STP WWTP	AR	83.35	39.00	300	11,700
	V	13.75	66.00	300	19,800
				TOTAL	31,500 gpd (0.032 mgd)
Hancocks Bridge STP	AR	24.99	14.00	300	3,000
	V	51.36	229.00	300	26,400
	W	0.05	0.00	300	0
				TOTAL	29,400 gpd (0.0294 mgd)

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the available acreage per zone of the Township in accordance with the current Lower Alloways Creek Township Master Plan.
- (b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
 - Residential Zones AR, V and W Average Daily Flow based on 300 gpd established for 3 or more bedroom dwellings.
- (d) TOTAL ADF represents the remaining potential build-out within the existing sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

3. Future Sewer Service Area Build-out Analysis

All potential flows within the FWSA have been included within the above analysis. A separate analysis differentiating between infill development within the existing SSA and the future sewer service area was not necessary.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected flows. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Treatment Works	Permit No.	Permitted Capacity/ Agreement (mgd)	Average Daily Flows 2010 (mgd)	Existing SSA Build-Out Projection (mgd)	Proposed SSA Build-Out Projection (mgd)	Remaining Treatment Capacity (mgd)
Canton Village STP	NJ0062201	0.050	0.014	0.032	0.000	0.004
Hancocks Bridge STP	NJ0050423	0.050	0.011	0.029	0.000	0.010

The total treatment capacity for the Canton Village STP (0.05 mgd) is greater than the projected flow necessary to support the combination of existing demands, proposed development within the sewer service area, and proposed development within the

expanded Canton Village sewer service area (0.032 mgd). The total treatment capacity for the Hancocks Bridge STP (0.05 mgd) is greater than the projected flow necessary to support the combination of existing demands, proposed development within the existing sewer service area (0.040 mgd). Average daily flows are based on information obtained from the NJDEP online resources. Based on the analysis presented above, Sufficient wastewater treatment capacity exists for the Canton Village and Hancocks Bridge STPs to accommodate the currently proposed Sewer Service Areas.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

This section is not applicable to this municipality as existing treatment will be sufficient to meet future goals for this municipality.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water demand within the existing sewer service area were compared. A build-out projection of the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were also compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

Generally, proposed daily demands are evaluated and projected based on two sets of data. This included identified developable land within the existing sewer service area or infill development as well as proposed future development within the expanded sewer service area. However, Lower Alloways Creek Township contains only one small public potable water supply system. The Leisure Arms system, is not anticipating change in demand for the future or any expansion to its water service area. In addition, major infrastructure development is not anticipated for this municipality. Lower Alloways Creek will continue to rely on individual/private wells for water service in its current and proposed sewer service area. Consequently, an analysis of water supply sufficiency for the SSA was not performed.

1. Existing Sewer Service Area: Water Build-Out Analysis

This section is not applicable, as the existing sewer service area being proposed for inclusion within the Salem County WMP will be served by individual water well.

2. Future Sewer Service Area: Water Build-Out Analysis

This section is not applicable, as the future sewer service area being proposed for inclusion within the Salem County WMP will be served by individual water well.

3. Analysis of Water Capacity to Meet Supply Needs

This section is not applicable, as the sewer service area being proposed for inclusion within the Salem County WMP will be served by individual water wells, which are expected to substantially meet future water demands of development.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Lower Alloways Creek Township proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Lower Alloways Creek Township Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6." Areas so designated are included on MapNo.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. This planning area is exclusive to the municipality's boundary. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.2: EXISTING FACILITIES & SERVICE AREAS

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Lower Alloways Creek Township, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP NO.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP No.4: LOWER ALLOWAYS CREEK TOWNSHIP ZONING MAP

The map depicts the current zoning of Lower Alloways Creek Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations										
Zone	Zone Title	Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Maximum Building Height	Floor Area Ratio (FAR)	Maximum Lot Coverage
AR	AGRICULTURAL	1.5 ACRE	200'	200'	75'/100'	20'	50'			10%
C	COMMERCIAL	10,000 SF ONE STORY , 50,000 SF TWO STORY						35'		35%
C-P	CONSERVATION PARK	25 ACRES	250'	200'	150'	100'	300'	35'		1.5%
I	INDUSTRIAL	3 ACRES	200'	200'	75'	40'	30'	45'	0.22 ONE STORY 0.30 MULTI-STORY	50%
VR	VILLAGE RESIDENTIAL	8,500 SF	60'	125'	25'	10'	30'	35'		25% RES / 35% NON
W	WETLANDS	10 ACRES	150'	200'	50'	20'	50'	35'		15%

5. MAP No.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP No.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP No.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.6

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

MANNINGTON TOWNSHIP CHAPTER

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I. INTRODUCTION

This chapter represents the Mannington Township portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

The Township of Mannington is located in the Delaware River Drainage Basin and lies within the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service area (FWSA) for Mannington Township is identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

The Township of Mannington is located in the center of Salem County. The Township is bounded by six (6) municipalities including Pennsville Township (to the west), Carneys Point Township (to the north), Pilesgrove Township (to the northeast), Alloway Township (to the southeast), Quinton Township to the South, and Salem City (to the southwest). Mannington Township encompasses a total area of 24,232 acres (37.9 square miles) including approximately 165.8 acres of which is surface water (ponds, lakes, reservoirs) and 138.4 miles of streams (shown in Map No.1) flowing in the municipality. This municipality has been developed mostly agriculturally, with some mid to high density residential, commercial, and industrial development along the State Route 45 highway (Salem-Woodstown Road). As the township is mostly farmland, Mannington has the second lowest population density in Salem County (approximately 44.8 people/sq mi), according to (2010) U.S. Census data.

Mannington Township has a population of 1,806 persons. The municipality's population trend over the last decade can be seen as a 1.58% growth in population each year (15.8% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the Township of Mannington. In terms of population change over the next three decades, Mannington's growth is expected to slow somewhat, but still continue over the next thirty years, according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	1,740		
1990	1,693	-47	-0.27%
2000	1,559	-134	-0.79%
2010*	1,806	247	1.58%

~Source: 1990 U.S. Census, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010	1,806		
2020	1,971	165	0.91%
2030	2,121	150	0.78%
2040	2,277	156	0.78%

~Source: SJTPO, 2011

]

A. STATUS OF PREVIOUS APPROVED WMPS

Mannington Township has not previously submitted a Wastewater Management Plan to the New Jersey Department of Environmental Protection, as the Township does not own or operate a public sewer or water supply infrastructure. However, certain areas within the municipality have been included within Lower Delaware WQMP Amendments for adjacent municipalities. Specifically, the Borough of Woodstown's amendment dated March 30, 1999 and the September 24, 2003 amendment submitted by Salem City, Alloway Township, and Quinton Township.

The 1999 and 2003 Lower Delaware WQMP amendments noted above are the plans currently in effect for Mannington Township. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Township of Mannington WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

Mannington Township does not currently own or operate a public sanitary sewer system, nor does it own any infrastructure for wastewater service. However, there are facilities along NJ Route 45 in Mannington that are currently served by public sewer from the Salem City and the Woodstown Sewerage Authority (WSA). The Township sewer service area serves a population of approximately 534 people according to current DEP online sources and related municipal data. This equates to 0.81% of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the wastewater treatment plant.

Sanitary Sewer infrastructure within Mannington Township utilized to support the conveyance of wastewater to the Salem City WWTP consists of one (1) pumping station and approximately 2.3 miles of sanitary sewer mains along NJ Route 45. Additional infrastructure has been extended to the Mannington / Pilesgrove municipal boundary in an effort to direct sanitary flows to the Woodstown WWTP. This also consists of One (1) pumping station and approximately 2.0 miles of sanitary sewer mains along NJ Route 45

Sewer service areas may include industrial facilities that discharge process wastewater to the collection system for treatment. The existing sewer service limits, delineated on Map No.2, are serviced by the Salem and Woodstown Wastewater Treatment Plants as mentioned above, and were derived from existing sanitary sewer infrastructure currently constructed and/or approved. The treatment processes and information for these two facilities are located within their respective municipal chapters in this report.

C. CURRENT WATER SERVICES

Mannington Township does not currently own or operate a public community potable water system, nor does it own any infrastructure for potable water service. However, the Salem City Water Department provides potable water to residential, commercial and industrial connections within Mannington Township. The Woodstown Water Department generally provides community drinking water service to the facilities that receive sewer service, as described above. The Woodstown Water Department provides service to institutional facilities, supplying approximately 325 persons within Mannington.

Generally, sanitary sewer service is available where potable water service is currently in place, with the exception of some residential water service connections branching from Route 45 in the south of the municipality. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review. Information with regard to the water systems mentioned above that serve Mannington Township is located within the Woodstown Borough and Salem City municipal chapters in this report.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, state, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection’s statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

Mannington Township does not currently own or operate a public community water supply system and is served by both, Salem City and Woodstown Borough. The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Township of Mannington has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and FW-2 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consist of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the areas planned to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, and projected build-out flow summarized by municipality.

A sanitary build-out analysis has been prepared for the future sewer service area identified on Map No.3. In addition, available wastewater capacity has been evaluated to determine whether sufficient capacity exists to support proposed development. The results of these analyses are summarized within this municipal chapter. Based on the build-out analysis of each sewer service area and the existing permitted capacity of the

sewage treatment plants identified in this plan, sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area. Future expansion of the identified treatment works serving the municipality is not required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included within the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Map No.2 depicts the areas actively served by existing wastewater facilities, and the tables in Chapter 7 (VII) provide detailed information on each facility. "Actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Township of Mannington does not own or operate any wastewater treatment or conveyance systems. However, the municipality does contain two separate sewer collection systems that are owned and operated by (separately) the City of Salem, and the Borough of Woodstown.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

Non-industrial treatment facilities serve single developments, sites or other properties under single ownership that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, Mannington Township does not contain any industrial wastewater treatment facilities.

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, Alloway Township does not contain any industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the Salem WWTP and Woodstown WWTP were calculated based on information provided by the respective municipalities. The present average flow includes residential, commercial and industrial flows.

The existing wastewater flows conveyed to the Salem City STP were calculated based on flows metered by the Salem City Sewer Department. The present average annual wastewater contributed by Mannington to the plant for 2010 is 0.104mgd. The existing wastewater flows conveyed to the Woodstown STP were calculated based on flows provided by the Borough of Woodstown. The present average annual wastewater contributed by Mannington to the plant for 2010 is 0.076mgd. The present average flow includes residential, commercial and industrial flows.

Mannington Township does not have an executed an interlocal service agreement with either the City of Salem or Borough of Woodstown. However, an agreement has been established between Woodstown and the Salem County complex, located in Mannington, allocating 100,000 gpd of capacity for sanitary sewer flows being conveyed to the Woodstown STP. In addition, an agreement has been established between The City of Salem and Mannington Mills allocating 122,500 gpd of capacity for sanitary sewer flows being conveyed to the Salem City STP.

The following Table 2.F.1 summarizes the permitted capacity and associated average daily flows of 2010 for the wastewater treatment plants serving Mannington Township.

WWTP	Allocated Capacity (mgd)	Average Daily Flow 2010 (mgd)	Build-Out Projection (mgd)	Total (mgd)	Remaining Capacity (mgd)
Salem WWTP	0.1225	0.1040	0.0050	0.1090	0.0135
Woodstown WWTP	0.1000	0.0760	0.0027	0.0787	0.0213

The flows from these connections are identified within the specific municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data specific to Mannington Township are identified for 2010 in Table 2.F.2 below. Based upon the above analysis, Mannington Township has sufficient capacity to support the proposed sewer service area.

Month	Estimated Monthly Avg. Contributions to Receiving Facility (mgd)		Total Flow	
	Salem City WWTP	Woodstown WWTP		
Jan-10	0.1513	0.0766	0.228	
Feb-10	0.1683	0.0776	0.246	
Mar-10	0.1725	0.0843	0.257	
Apr-10	0.1439	0.0991	0.243	
May-10	0.0961	0.0710	0.167	
Jun-10	0.0758	0.0758	0.152	
Jul-10	0.0666	0.0699	0.137	
Aug-10	0.0681	0.0668	0.135	
Sep-10	0.0652	0.0662	0.131	
Oct-10	0.0863	0.0720	0.158	
Nov-10	0.0808	0.0766	0.157	
Dec-10	0.0778	0.0701	0.148	
Yearly Average	(mgd)	0.104	0.076	0.180
	(mgm)	3.175	2.297	5.471
	(mgy)	38.100	27.558	65.658

G. EXISTING WASTEWATER TREATMENT

Mannington Township does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities. Specific information on the wastewater treatment plants in Salem City and Woodstown is provided in Salem City and Woodstown Borough's respective municipal chapter.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

Mannington Township does not own or operate any public community water supply facilities, water treatment plants, potable water wells or distribution mains. However, the Woodstown Water Department and Salem City Water and Sewerage Departments serve areas within the Township.

The Salem City Water and Sewerage Department owns and operates water supply facilities with water main and associated piping ranging in size from 12-16 inches in diameter along NJ Route 45 near the Mannington-Salem City municipal boundary.

The Woodstown Water Department owns and operates approximately one (1) mile of 12-inch diameter water main located along NJ Route 45 at the Mannington-Pilesgrove municipal boundary. A water allocation agreement exists between Salem County and the Borough of Woodstown for 125,000 gpd of potable water to service the Salem County facilities inside Mannington.

Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

Mannington Township does not own or operate any public community water supply facilities, water treatment plants, potable water wells or distribution mains. However, a portion of the Township is currently served by Woodstown Water Department, and Salem City Water Department. The Township of Mannington currently has an average daily usage of approximately 0.21 mgd from these two public drinking water systems, based upon the 2010 calendar year.

The following table 2.I.2 summarizes historical daily, monthly and annual water demands for the public community water systems that provide service to Mannington. The districts and franchise areas are depicted on Map No.1.

Table 2.I.2: Annual Water Demand Summary				
Service Provider	Year	Annual Demand Total (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)
Salem City Water Department	2006	75.193	0.206	6.266
	2007	71.234	0.195	5.936
	2008	71.181	0.195	5.932
	2009	55.112	0.151	4.593
	2010	58.388	0.160	4.866
Woodstown Water Department	2006	16.740	0.046	1.395
	2007	17.842	0.049	1.487
	2008	17.910	0.049	1.493
	2009	16.540	0.045	1.378
	2010	17.508	0.048	1.459

***Note:** The information above was provided by Salem City and the Borough of Woodstown for 2010. Information presented for 2006 through 2009 was calculated as a percentage of yearly water demand utilized by the respective water system.*

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in **Chapter I** of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing

grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.

2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.

5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to geographical features and political boundaries within the municipality. No exceptions were made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Table 4.D.1: Information Sources for Environmentally Constrained Areas				
Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	July, 2010

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
A	AGRICUTURAL	14,973.8	47.71
CONS	CONSERVATION	4,479.6	0
CR	CONDITIONAL RESIDENTIAL	1,874.5	0
GC	GENERAL COMMERCIAL	86.3	0
HR	HIGH DENSITY RESIDENTIAL	86.2	0
I	INDUSTRIAL	170.3	0
MR	MEDIUM DENSITY RESIDENTIAL	675.5	0
RR	RURAL RESIDENTIAL	1,806.9	1.78
LC	LIMITED COMMERCIAL	79.0	0.98

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defines as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Township of Mannington does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land is the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out depending based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference.

Proposed future sanitary sewer flows conveyed to the City of Salem WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the expanded sewer service area. Future flows within the existing sewer service area utilize a "parcel based" method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a "zoning based" method for calculating the build-out. The build out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

2. Sewer Service Area Build-out Analysis

Mannington Township identified 50.47 acres of developable area within the SSA, as indicated above. This area consists of the above-mentioned areas contributing to the Salem City Water and Sewerage Department, and WSA. These areas require no changes due to environmental constraints, nor has Mannington Township identified any other change to this area that would require a proposed SSA. Therefore, an analysis of the existing sewer service area does not apply to Mannington Township, and is not included as a part of this submission of the Salem County WMP.

The build-out of the sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and Industrial flows were projected assuming 0.10 gpd/sq.ft. of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Treatment Facility	Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
		<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
Salem City WWTP	A*	12.65	224	Varies	3,930
	LC	0.98	1	1,000	1,000
Woodstown WWTP	A	35.06	9	300	2,700
	RR	1.78	0	300	0
TOTAL					7,630 gpd 0.008 mgd

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the available acreage per zone of the Township in accordance with the current Mannington Township Master Plan.
- (b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
 - Commercial Zone LC, GC, Average Daily Flow Based on 0.1 gal/SF established for Offices and Industry (40% coverage of 25,000 square foot lots or 10,000 sf)
- (d) TOTAL ADF represents the remaining potential build-out within the existing sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value
- (e) (A*) reflects specific average daily flow values for proposed school and/or municipal building..

3. Future Sewer Service Area Build-out Analysis

An analysis of the future sewer service area does not apply to Mannington Township, as this municipality is not proposing a sewer service area as a part of this submission of the Salem County WMP. All potential flows within the FWSA have been included within the above analysis.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected flows. Details of the projections are included within the Salem City and Woodstown municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 6.A.1: Wastewater Treatment Plant Capacity							
Treatment Works	Permit No.	Current Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)		Existing SSA Build-Out Projection (mgd)	Proposed SSA Build-Out Projection (mgd)	Remaining Treatment Capacity of System (mgd)
			Mannington Township	WWTP System			
Salem WWTP	NJ0024856	1.4	0.104	0.696	0.005	0.000	0.700
Woodstown WWTP	NJ0022250	0.53	0.076	0.346	0.003	0.000	0.181

The total treatment capacity for the Salem City WWTP (1.40 mgd) that serves Mannington Township is greater than the projected flow necessary to support the combination of existing demand within the sewer service area and proposed build-out flows (0.105 mgd) that is contributed to the system. Similarly, the total treatment capacity for the Woodstown WWTP (0.53 mgd) that serves Mannington Township is greater than the projected flow necessary to support the combination of existing demand within the sewer service area and proposed build-out flows (0.079 mgd) that is contributed to the system. Average daily flows are based off of information provided by the Salem City Water and Sewerage Department and the WSA. Based on the analysis presented above, Sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Areas.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

This section is not applicable to this municipality, as sufficient capacity currently exists to address the future wastewater management needs projected by the plan.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water demand within the existing sewer service area were compared. A build-out projection of the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were also compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development. The information provided was made available by the Salem Water Department or obtained from DEP online sources. The comparison of water allocation and projected build-out for the proposed sewer service area are summarized in the table below.

A. SUFFICIENCY OF WATER SUPPLY

Mannington Township does not currently own or operate a public community water supply system. Mannington Township is generally supplied by individual private water wells. However, the City of Salem and Borough of Woodstown community water supply system provides potable water to a portion of Mannington Township as identified within this chapter. No further expansion of the Salem or Woodstown water distribution systems is planned within Mannington Township. Future development within the Township will continue to be supplied by individual water wells.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Mannington WMP provides the most current planning efforts within the Sewer Service Area.

The Mannington proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Mannington Township Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. This planning area is exclusive to the municipality's boundary. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the

Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.2: EXISTING FACILITIES & SERVICE AREAS

This map depicts the existing wastewater service area. This map also identifies the present extent of the actual sewer infrastructure within the municipal boundary of Mannington Township, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP NO.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP NO.4: MANNINGTON TOWNSHIP ZONING MAP

The map depicts the current zoning of Mannington Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations											
Zone	Zone Title		Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Maximum Building Height	Maximum Building Cover	Other Impervious Cover
A	AGRICUTURAL		3 ACRES	250'	350'	75'	40'	60'	35'	10%	15%
CONS	CONSERVATION		5 ACRES	300'	400'	80'	30'	60'	35'	5%	5%
CR	CONDITIONAL RESIDENTIAL		3 ACRES	250'	350'	75'	40'	60'	35'	10%	15%
GC	GENERAL COMMERCIAL		25,000SF	125'	175'	50'	20'	20'	35'	40%	35%
HR	HIGH DENSITY RESIDENTIAL	SINGLE FAMILY	20,000 SF	100'	150'	35'	15'	30'	35'	20%	25%
		TOWNHOUSES	5 ACRES	300'	400'	40'	20'	40'	35'		
		APARTMENTS	5 ACRES	300'	400'	40'	20'	40'	35'	40%	30%
I	INDUSTRIAL					60'	30'	50'	50'	40%	30%
MR	MEDIUM DENSITY RESIDENTIAL		25,000 SF	125'	175'	40'	20'	35'	35'	20%	25%
RR	RURAL RESIDENTIAL		3 ACRES	250'	350'	75'	40'	60'	35'	10%	15%
LC	LIMITED COMMERCIAL		25,000SF	125'	175'	50'	20'	20'	35'	40%	35%

5. MAP NO.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP NO.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 14 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP NO.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 14 watershed.

Chapter IX.7

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

OLDMANS TOWNSHIP CHAPTER

PREPARED BY:

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***Wastewater Management Plan for
Salem County, New Jersey
Oldmans Township Chapter***

I. INTRODUCTION

This chapter represents the Oldmans Township portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

The sewer service area for the Township of Oldmans includes the entire township’s area of 12,814 acres (20.0 square miles). The planning area does not include any areas that lay within adjacent municipalities.

The Township of Oldmans is located in the Delaware River Drainage Basin and lies within the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area.

The Township of Oldmans is mainly an agricultural based municipality bounded by the Delaware River to the northwest, and three (3) municipalities including: Pilesgrove Township to the southeast, Carneys Point Township (to the southwest), and Logan Township of Gloucester County (bounded by Oldmans Creek along the northeast of the municipality). Oldmans Township encompasses a total area of 12,814 acres (20.02 square miles) including approximately 146.2 acres of surface water (ponds, lakes, reservoirs) and 59.7 miles of streams (shown in Map No.1) flowing in the municipality. This municipality is largely undeveloped, though commercial, industrial, and residential developments can be found throughout the central region of the municipality bounded by Rt.130, Railroad Avenue, I-295, and Perkintown Road. Other than this region, the land is mostly forested or wetlands, used as public area or as residential/agricultural plots. For this reason, the Oldmans Township has one of the lowest population densities in Salem County (approximately 90 people/sq mi), according to (2010) U.S. Census data.

Oldmans Township has a population of 1,773 persons. The municipality’s population trend over the last decade can be seen as a –1.39% decrease in population each year (-13.9% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the Township of Oldmans. In terms of population change over the next three decades, Oldmans Township is expected to have steady slow growth according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	1,847		
1990	1,683	-164	-0.89%
2000	1,798	115	0.68%
2010*	1,773	-25	-0.14%

~Source: U.S. Census Bureau, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010*	1,773		
2020	1,785	12	0.07%
2030	1,796	11	0.06%
2040	1,806	10	0.06%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The Township of Oldmans has submitted several Wastewater Management Plans (WMP's) / Amendments since 1991. These amendments, submitted in coordination with the Carneys Point Sewerage Authority, have included proposed expansions to an existing industrial WWTP, expansions of the Carneys Point Sewerage Authority (CPSA) SSA to serve small areas in Oldmans Township and the inclusion of the Gateway Business Park.

The current WMP in effect for Oldmans Township is an amendment to the Lower Delaware WQMP submitted on behalf of the Carneys Point Sewerage Authority, which was adopted on July 9, 2001 and associated revision dated July 20, 2007. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Oldmans Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

The Township of Oldmans is primarily served by individual septic system. Various facilities within Oldmans Township are served by sanitary sewer collection systems. All sanitary flow collected by the system is sent to the Carneys Point Wastewater Treatment Plant for treatment. In all, the Carneys Point Sewerage Authority (CPSA) serves approximately 300 persons within sewer service area located in Oldmans Township. This equates to 0.45 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) that are served by the wastewater treatment plant.

The Carneys Point Sewerage Authority receives flows from the following facilities in Oldmans Township:

- The NJ Turnpike Service Area 1S, Clara Barton.
- The NJ Turnpike Service Area 1N, John Fenwick
- Auburn Village

Sewer service areas may include industrial facilities that discharge process wastewater to the collection system for treatment. The existing sewer service limits, delineated on Map No.2, are maintained by the NJ Turnpike Authority and contribute sanitary flow to the Carneys Point Sewerage Authority system. The limits were derived from existing sanitary sewer infrastructure currently constructed and/or approved. The treatment process and information for the Carneys Point Sewerage Treatment Plant (STP) is located within the Carneys Point municipal chapter.

C. CURRENT WATER SERVICES

The New Jersey American Water Company serves approximately 1,238 persons within the Oldman Township planning area, and is currently the largest provider of water service to the municipality according to current NJDEP data. This equates to 1.87 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the water provider. In addition, Oldmans Township is also served by the smaller Auburn Village Water Supply, which provides water to approximately 300 persons, or 0.5% percent of the total Salem County population. The remaining population within Oldmans Township is served by individual private water wells.

Oldman's Township does not own or operate its own public community water supply system, and is served by the New Jersey American Water Company (NJAW). NJAW presently draws from seven (7) ground water wells, all located within Carneys Point. Two of the wells pump water from the lower PRM and the other five draw from the upper PRM, as noted in Table 2.H.1. In addition, NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1.

Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, State, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

Oldmans Township does not currently own or operate a public community water supply system or wastewater treatment plant. The Township's sewer service area is primarily served by the Carneys Point WWTP and NJAW. The Township's water supply is sufficient to meet the current demand. However, an additional source of water supply will be necessary in order to accommodate development within the FWSA. Other than the need for additional water supply in the future, the municipality has not identified any other issues regarding water quality or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Township of Oldmans has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, FW-2 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consist of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental, and local land use planning objectives discussed above and the identified areas that are currently built but do not currently have adequate wastewater treatment, Map 2 and Map 3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, insufficient wastewater treatment capacity exists to accommodate the complete buildout of the FWSA, in its entirety. Future expansion of the identified treatment works or identification of an alternative treatment works will be required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the WSA sewer service areas in this WMP will be served by ISSDS's with 2,000 gpd or less flows.
2. Construction of a new treatment facility or interconnection with an existing treatment facility along with the installation of infrastructure will be required to meet the future wastewater generation needs of the municipality, as wastewater treatment facilities are not currently available .

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. WASTEWATER TREATMENT PLANT

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term "actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected. This Section is not applicable as Oldmans does not own or operate a wastewater treatment plant. Refer to the Carneys Point municipal chapter regarding information pertaining to the receiving treatment facility.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Township of Oldmans does not own or operate any wastewater treatment or conveyance systems, though areas within the municipality are served by small-scale collection systems. All wastewater generated from collection systems is conveyed to the Carneys Point WWTP via approximately 10.3 miles of force mains and two (2) pump stations. Further discussion of the sanitary sewer system is more clearly defined within the Carneys Point municipal chapter of this report. Map No.2 depicts the areas actively served by existing wastewater facilities, and the tables in Chapter 7 (VII) provide detailed information on each facility. The term "actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.C.1: Non-Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
17	Fort Dix - Pedricktown Sup Fac	NJ0024635	DSW- A	17
18	Oldmans Township School	NJ0137707	DGW-T1	18
19	295 Auto Truck Plaza Inc	NJG0100684	DGW- T1	19

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. Table 2.D.1 lists all existing industrial treatment works that discharge 2,000 gallons per day or more of process and wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.D.1: Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
16	Polyone Corp - Pedricktown	NJ0004286	DSW -B	16

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

This Section is not applicable as Oldmans does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities.

The existing wastewater flows conveyed to the Carneys Point WWTP were calculated based on information provided by the Carneys Point Sewerage Authority. The present average flow includes residential, commercial and industrial flows. The following Table 2.F.1 summarizes the permitted capacity and associated average daily flows of 2010 for the wastewater treatment plant serving Oldmans Township.

WWTP	NJPDES Permit No.	Permitted Capacity (MGD)	Average Daily Flow 2010 (MGD)	Build-Out Projection (mgd)
Carneys Point WWTP	NJ0021601	1.3	1.069	1.362

The existing average daily flows identified above include wastewater contributed by both Carneys Point and Oldmans Township. The flows from these connections are identified within the Carneys Point municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data estimates specific to Oldmans Township are identified for 2010 in Table 2.F.2 below.

Table 2.F.2: Existing Wastewater Flows	
Month	Monthly Average Flow to Carneys Point WWTP (MGD)
Jan-10	0.0137
Feb-10	0.0112
Mar-10	0.0131
Apr-10	0.0161
May-10	0.0211
Jun-10	0.0243
Jul-10	0.0279
Aug-10	0.0264
Sep-10	0.0264
Oct-10	0.0281
Nov-10	0.0236
Dec-10	0.0230
Yearly Average	0.021

G. EXISTING WASTEWATER TREATMENT

This Section is not applicable as Oldmans Township does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities. Refer to the Carneys Point municipal chapter regarding information pertaining to the receiving treatment facility.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

Map No.1 depicts the areas actively served by existing public water supply facilities. Oldmans Township does not own or operate its own public community water supply system, and is primarily served by the New Jersey American Water Company (NJAW). In addition, Oldmans Township is also served by the Auburn Village Water Supply, which provides water to a smaller portion of the municipality. The public water supply infrastructure of this system consists of approximately 11.1 miles of water main ranging in size from 1 - 12 inch diameter.

The following Table 2.H.1 summarizes the potable water well information for the community water supply facilities currently serving this municipality. All wells supplying the NJAW (Penns Grove) system are located within the Carneys Point Township municipal boundary. In addition, the five (5) ground water wells included as part of the NJAW (Logan System) have also been identified within the table. The franchise areas are depicted on Map No.1.

Water System	Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
Auburn Village Water Supply	3000001151	1	N/A	N/A
	3000011400	2	N/A	N/A
NJAW Penns Grove System	3000000563	7	500	Lower PRM
	3000001113	2	500	Upper PRM
	3000001815	4	450	Upper PRM
	3000003310	RF1A	250	Upper PRM
	3000003535	RF3A	100	Upper PRM
	3000008511	RF2B	250	Upper PRM
	3000019273	11A	250	Lower PRM
NJAW Logan System	3000001371	2	800	Mid PRM
	3000009444	4	590	Mid PRM
	3000005212	5	100	Mid PRM
	3000014797	6	600	Mid PRM
	E201002435	7	800	Mid PRM

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

New Jersey American Water (NJAW) is currently the primary source of water to Oldmans Township. NJAW purchased the Penns Grove Water System in 2007. NJAW operates under permit No.WAP070002 to provide water to a service area, which includes Carneys Point Township, Borough of Penns Grove and Oldmans Township. As a result, a specific allocation for each of these municipalities has not been established.

General information presented within this municipal chapter regarding the water systems overall annual demand and the estimated yearly demand for each municipality from 2008 through 2010 has been obtain from NJAW. Projected average daily demand values have been estimated for each of the three (3) municipalities served by this system. This was necessary as NJAW meters each connection to their system and not the municipality as a whole. Based on available water demand information provided, between 2008 through 2010, the following average demand percentages have been used to represent the water supplied by NJAW to the three municipalities: Borough of Penns Grove 30.5%, Carneys Point Township 62.5% and Oldmans Township 7%.

The Township of Oldmans currently has an estimated average daily demand of approximately 0.100 million-gallons per day based upon the 2010 calendar year. The Township’s peak annual and monthly water demand over a period of 5 years between 2006 through 2010 was shown to occur in the month of July 2008, which is based on the peak month of the system supplier. Estimates of monthly flows to Oldmans Township from 2006-2010 were made based on data supplied by NJAWC. Monthly data was formulated by adjusting total water supplied by NJAW by the associated demand percentage utilized by Oldmans Township as indicated above. The reduction in average

demand, over the last few years, is partially due to the enforcement of water restrictions and water conservation appurtenances in residential and commercial buildings and improvements/replacements within the system's infrastructure.

The following table 2.I.1 summarizes current water demands and allocation diversion limits permitted for the Auburn Village Water Supply and the greater New Jersey American Water system (which includes the Borough of Penns Grove and Carneys Point Township as well as Oldmans Township).

Water Company (Breakdown by Municipality)		Permit No. / Program Interest ID	2010 Water Allocation *		Average Demand 2010		Build-Out Projection	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
Auburn Village Water Supply		N/A	N/A	N/A	0.38	4.55	N/A	N/A
New Jersey American Water (Penns Grove System)	% of System Demand	WAP070002/ 5328	70.4	753	37.95	455.409	140.07	1649.66
Penns Grove	30.5	N/A	N/A	N/A	11.299	135.586	2.05	24.57
Oldmans Township	7.0	N/A	N/A	N/A	2.653	31.842	53.54	630.41
Carneys Point Township	62.5	N/A	N/A	N/A	23.998	287.981	84.48	994.68

*Source: The Average Demand indicated above represents data obtained from DEP water use results.

The following table 2.I.2 summarizes historical daily, monthly and annual water demand estimates specific to the demands of Oldmans Township on the Auburn Village and NJAW (Penns Grove) water system. The districts and franchise areas are depicted on Map No.1.

Service Provider	Year	Annual Demand Total (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)
Auburn Village Water Supply	2006	5.343	0.015	0.45
	2007	4.836	0.013	0.40
	2008	4.248	0.012	0.35
	2009	3.809	0.010	0.32
	2010	4.552	0.012	0.38
New Jersey American Water	2006	34.800	0.095	2.90
	2007	36.024	0.099	3.00
	2008	33.168	0.091	2.76
	2009	33.295	0.091	2.77
	2010	31.842	0.087	2.65

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands –Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area. The WQMP rules at NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to geographical features and political boundaries within the municipality. No exceptions were made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	July, 2011	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	7/2/08

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Table 5.B.1: Summary of Oldmans Municipal Zones			
Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
AR	AGRICUTURAL RESIDENTIAL	6,988.2	65.46
C	COMMERCIAL	18.1	14.98
C/I	COMMERCIAL/INDUSTRIAL	1,266.6	339.54
I	INDUSTRIAL	310.7	152.61
IPRA	INDUSTRIAL PARK REDEVELOPMENT AREA	148.1	20.14
P	PUBLIC	1,926.9	96.80
R	RESIDENTIAL	2,008.4	484.21
VC	VILLAGE COMMERCIAL	53.2	44.55
VR	VILLAGE RESIDENTIAL	146.8	115.64

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defined as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Township of Oldmans does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities’ Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference. The Township’s sewer service is defined on Map No.3.

2. Sewer Service Area Build Out Analysis

Oldmans Township currently contains an existing SSA consisting of the industrial park and turnpike interchanges: and Camp Pedricktown. The area consists of the above-mentioned areas contributing to the Carneys Point Wastewater Treatment Plant. The build-out of the FWSA consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and Industrial flows were projected assuming 0.1 GPD/sq.ft of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the FWSA. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Zone	Developable Acres	Zoned Lot Areas	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>		<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
AR	65.46	2 Acres	26	300	7,800
C	14.98	1 Acre	12	1,089	13,068
C/I	339.54	2 Acre	129	6,534	842,886
I	152.61	2 Acres	33	6,534	215,622
IPRA	20.14	2 Acres	0	4,356	0
P	96.80	N/A	0	0	0
R	484.21	1 Acre	424	300	127,200
VC	44.55	10,000 SF	147	300	44,100
VR	115.64	10,000 SF	372	300	111,600
Total FWSA Projected Sanitary Flows (GPD)					1,362,276
Total FWSA Projected Sanitary Flows (MGD)					1.362

The notes referenced below are indicated in the above table.

Notes:

(a) “Developable Acres” represents the developable acreage per zone, within the sewer service area, excluding the environmentally constrained areas..

(b) “Potential Units” represent the projected number of units that may be constructed within each zone within the FWSA.

(c) Average Daily Flow has been calculated based on current NJDEP regulations.

(d) TOTAL ADF represents the potential build-out within the FWSA. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

3. Future Sewer Service Area Build-out Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

All proposed sanitary sewer flows for the Township, included as part of this WMP submission, are identified within section 5.E.2.1 above.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected flows. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Treatment Works	Permit #	Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)		FWSA Build-Out Projection (mgd)	Remaining Treatment Capacity of System (mgd)
			Oldmans Township	Entire System		
Carneys Point WWTP	NJ0021601	1.3	0.021	1.069	1.362	-1.131

The total treatment capacity (1.3 mgd) of the wastewater treatment plant (Carneys Point WWTP) that serves the municipality is less than the projected flows necessary to support existing demands and proposed development within the Oldmans Township FWSA. The calculations were based on the proposed build-out projections and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, sufficient wastewater treatment capacity is not currently available to accommodate the FWSA.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

The FWSA sanitary buildout analysis results above indicate that Oldmans Township) does not have sufficient wastewater treatment capacity to support future wastewater management needs projected by the plan. The wastewater treatment plant does have sufficient capacity to support existing flows from this municipality and marginal capacity for growth in the future. Due to the current economic climate, projected growth rate of the population and the anticipated short-term need for additional capacity, the municipality is not proposing new or expanded facilities at this time.

Oldmans Township will begin to review the potential process improvements and available treatment alternatives based on the direction of the governing body. It is anticipated that the Township would consider the Gloucester-Salem County Regional Alternative to meet future development needs.

The Salem County Pollution Control Financing Authority conducted a sanitary sewer study in an effort to conceptualize a regional sewage system plan for the County. The intent of the plan is to convey sanitary sewer to a newly constructed treatment facility to be located on the Dupont Chambers Works property in Carneys Point Township. The planning of this effort is ongoing and currently in the environmental assessment and preliminary engineering stage of development.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development. The information provided was made available by NJAW or obtained from DEP online sources. The comparison of water allocation and projected build-out for the proposed sewer service area is summarized in the table below.

A. SUFFICIENCY OF WATER SUPPLY

The Township of Oldmans 's current water allocation and existing average water demands are identified in Section 2 of this municipal chapter. Development of vacant land was the predominant factor in determining future water supply needs. Further, because external market and economic forces, such as interest rates, are a dominant factor

in determining the rate of construction, this analysis assesses the ability to provide potable water while protecting surface and ground water quality for the entire projected build out allowable by zoning.

Proposed daily demands required to support development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis. Future demands are generally evaluated and projected based on two sets of data; water demands projected within the existing sewer service area and proposed water demands for the expanded sewer service area. Future water demands within the existing sewer service area utilize a “parcel based” method for calculating the demand of infill development. Whereas, future water demands within the expanded sewer service area utilize a “zoning based” method for calculating the demand.

Water demand was evaluated based on current zoning of identified developable land. All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

Proposed daily demands were evaluated and projected based on two sets of data. This included identified developable land within the existing sewer service area or infill development as well as proposed future development within the expanded sewer service area. The summaries for each of these sets of data are provided below.

1. Existing Sewer Service Area: Water Build Out Analysis

The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected utilizing 400gpd / dwelling unit. Commercial and Industrial flow flows were projected assuming 0.125 gpd/sq.ft. of building area.

Table 7.A.1.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 7.A.1.1: FWSA Water Supply Build-Out Projections				
Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
AR	65.46	26	400	10,400
C	14.98	12	1,361	16,332
C/I	339.54	129	8,168	1,053,672
I	152.61	33	8,168	269,544
IPRA	20.14	0	5,445	0
P	96.80	0	0	0
R	484.21	424	400	169,600
VC	44.55	147	400	58,800
VR	115.64	372	400	148,800
Total FWSA Projected Water Demand (GPD)				1,727,148
Total FWSA Projected Water Demand (MGD)				1.73
				(mgm) 53.54
				(mgy) 630.41

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the developable acreage per zone, within the sewer service area, excluding the environmentally constrained areas..
- (b) “Potential Units” represent the projected number of units that may be constructed within each zone within the FWSA.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
- (d) TOTAL ADF represents the potential build-out within the FWSA. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

2. Future Sewer Service Area: Water Build-out Analysis

All proposed potable water demand for the Township, included as part of this WMP submission, are identified within section 5.E.2.1 above.

3. Analysis of Water Capacity to Meet Supply Needs

This section of the wastewater management plan analyzes whether there is sufficient potable water treatment capacity to meet the needs of the Municipality based on the projections described above. This requires a comparison of the projected future demand to the existing capacity of the water supply system.

Table 7.A.3.1 provides a comparison of existing water allocation with existing and future flow demands within the municipality. The final column determines whether existing capacity is sufficient to support projected daily demands. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 7.A.3.1: Water Supply Capacity								
Water Company (Breakdown by Municipality)		Permit # / Program Interest ID	2010 Water Allocation / Avg. Demand*		Total Projected Water Demand		Remaining Water Allocation	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water (Logan System)		WAP100001/ 5003	60	392	N/A	N/A	(Alternative Source)	
New Jersey American Water (Penns Grove System)	% of System Demand	WAP070002/ 5328	70.4 / 37.95	753 / 455.41	178.02	2,105.07	-107.62	-1,352.07
Penns Grove	30.5	n/a	n/a	n/a	13.35	160.16	n/a	n/a
Oldmans	7	n/a	n/a	n/a	56.19	662.25	n/a	n/a
Carneys Point Township	62.5	n/a	n/a	n/a	108.48	1,282.66	n/a	n/a
Note: Total Projected Water Demand reflects the Average Daily Demand in 2010 and additional demand associated with the FWSA build-out projections.								

Based on the analysis presented above, the total monthly water allocation for the water purveyor (NJAW), supplying the Carneys Point Township, Oldmans Township and the Borough of Penns Grove water systems (70.4mgm/ 753mgy) is less than the water supply necessary to support existing demands and proposed development within the Oldmans Township FWSA. The projected calculations were based on the proposed build-out projections and average daily demand values utilized within the regulations for each type of development.

Oldmans Township will need to obtain additional water supply to support the FWSA in its entirety, as the population increases and development expands. Due to the current economic climate, projected growth rate of the population, and the anticipated short-term need for additional water supply, these municipalities are not seeking additional water supply at this time. As NJAW is only operating at 54% of their monthly allocation and approximately 60% of their annual diversion limit, the existing water capacity is sufficient to support existing demands and short-term development in the future, based on the current water utilization indicated above. However, it should be noted that NJAW system has additional water production capabilities and could supply more than the current allocation.

NJAW supplies water to Penns Grove Boro, Oldmans and Carneys Point Townships through its Penns Grove system, which receives water from its local sources, as permitted by the Department, and from the Tri-County pipeline. NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1. Therefore, NJAW could supply more than the current allocation if necessary. This may require NJAW to make adjustments or infrastructure improvements to its water system in order to supply additional water to the area.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Salem WMP proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Oldmans Township WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

5. Map No.5A: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. Map No.5B: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. Map No.5C: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.8

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

BOROUGH OF PENNS GROVE CHAPTER

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Penns Grove Borough Chapter*

I. INTRODUCTION

This chapter represents the Borough of Penns Grove portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

The sewer service area for the Borough of Penns Grove includes the entire municipal area of the Borough. The planning area encompasses 583 acres. This planning area does not include portions of neighboring municipalities.

The Borough of Penns Grove is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area.

The Borough of Penns Grove is an urban-based municipality bounded by the Delaware River (to the west), and Carneys Point Township (to the north, east, and south). Penns Grove encompasses a total area of 583 acres (0.91 square miles). While no surface water exists, 0.7 miles of streams (shown in Map No.1) flow throughout the municipality. This municipality has been developed extensively and has the highest population density in Salem County (approximately 5,654 people/sq mi), according to (2010) U.S. Census data. There is currently no remaining land area for future development in this municipality. Land available consists of in-fill and redevelopment of existing vacant or abandoned properties.

Penns Grove has a population of 5,147 persons. The municipality’s population trend over the last decade can be seen as a 0.53% growth in population each year (5.3% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the City of Salem. In terms of population change over the next three decades, Penns Grove is expected to steadily continue growing at a rate of 0.52-0.62% each year according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Table 1.1: Penns Grove- Historic Population				Table 1.2: Penns Grove- Projected Population			
Year	Population	Population Change		Year	Population	Population Change	
		#	avg yearly %			#	avg yearly %
1980	5,760			2010	5,147		
1990	5,228	-532	-0.92%	2020	5,480	333	0.65%
2000	4,886	-342	-0.65%	2030	5,776	296	0.54%
2010*	5,147	261	0.53%	2040	6,077	301	0.52%

~Source: U.S. Census Bureau, *2010 U.S. Census

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The current WMP in effect for the Penns Grove Sewerage Authority (PGSA) is an amendment to the Lower Delaware WQMP submitted in coordination with Carneys Point Township, which was adopted on March 30, 1999.

The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Penns Grove Sewerage Authority WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

The Borough of Penns Grove community wastewater system serves approximately 5,147 persons within their sewer service area according to current municipal data. This equates to 7.77 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the waster treatment plant.

Sewer service areas may include industrial facilities that discharge process wastewater to the collection system for treatment. The existing sewer service limits, delineated on Map No.2, are serviced by the Penns Grove Wastewater Treatment Plant and were derived from existing sanitary sewer infrastructure currently constructed and/or approved. The sewer service area includes all of the Borough of Penns Grove. The entire area within the Borough of Penns Grove is completely serviced by the PGSA.

The Penns Grove WWTP is located on Beach Avenue and operates under NJPDES Permit Number-NJ0024023 effective on October 1, 2010. Wastewater generated within the WMP existing sewer service area is conveyed to the WWTP, which is permitted to operate at 0.75 mgd. The PGSA-WWTP currently receives contributing flow from residential living and commercial units. The average monthly flow generated by these contributors for the year of 2010 was 0.372 mgd.

The PGSA wastewater treatment plant that utilizes a grit removal system, in-line grinders, a wet well bubbler system, and settling tanks to remove pollutants from the wastewater. Wastewater entering the plant is treated sequentially through the following process.

- A 5,000 gallon aerated grit chamber with a ring sparger at the bottom. A three-inch airlift is provided for removal of accumulated grit from the chamber's sump. The aerated grit chamber is supplied by (2) 60 cubic feet per minute (cfm) manually operated air blowers which gravity feeds into:
- A set of two (2) bar screens followed by two (2) in-line grinders (muffin monster and channel monster). These devices pulverize solids down to acceptable particle sizes for the sewerage pumps
- The raw sewerage falls into a 4,100 gallon wet well, controlled by a computer operated bubbler system
- This sewage is then pumped by two (2) 800-gpm raw sewerage pumps to the primary settling tanks.
- The primary effluent then flows through a system of (2) side-by-side aeration tanks, (2) side-by-side final settling tanks, and finally (2) side-by-side chlorine contact tanks.
- The final effluent is then pumped to the Delaware River.

C. CURRENT WATER SERVICES

The New Jersey American Water Company serves approximately 5,147 persons within Penns Grove's sewer service area, and is currently the only provider of water service to the municipality according to current NJDEP data. The number of persons served accounts for the residential population as well as commercial uses serving the public. This equates to 7.79 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the water provider.

The Borough of Penns Grove does not own or operate its own public community water supply system, and is served solely by the New Jersey American Water Company (NJAW). NJAW presently draws from seven (7) ground water wells, all located within Carneys Point. Two of the wells pump water from the lower PRM and the other five draw from the upper PRM, as noted in Table 2.H.1. In addition, NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1.

Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF WATER RESOURCE MANAGEMENT ISSUES

The Borough of Penns Grove's existing sewer service area is completely served by New Jersey American Water Company (NJAW). The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Borough of Penns Grove is designated as an urban area. Consequently, infill development and redevelopment of previously developed portions of the municipality will make up the majority of the future wastewater management needs. Therefore, an application of zoning to the undeveloped and developable land area of the municipality in Penns Grove may underestimate its future wastewater management needs. For this reason a 20-year wastewater projection has been created based on population projections in accordance with DEP guidance regarding urban areas. The proposed Sewer Service Area is identified on Map No.3.

Based on the environmental, and local land use planning objectives discussed above, Map 2 and Map 3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plant identified in this plan, sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area. Future expansion of the identified treatment works is not required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the WSA sewer service areas in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. WASTEWATER TREATMENT PLANT

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term "actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

The PGSA WWTP is a localized system for the conveyance, treatment, and disposal of the municipalities' wastewater within its service area. The WWTP treats domestic wastewater. Treated wastewater is discharged to the Delaware River under NJPDES Permit No.NJ0024023. The present permitted capacity is 0.75 MGD. Treatment system performance meets current permitted parameters under current conditions, based on 2010 data.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Penns Grove Sewerage Authority (PGSA) owns and operates one WWTP and a sanitary sewer collection system conveying wastewater flow to the WWTP. The sanitary sewer collection system in Penns Grove is owned and maintained by the Authority. There is approximately 2.1 miles of sanitary sewer main with pipes ranging in size from 6 inches to 20 inches in diameter. The Authority does not currently own or operate any pump stations. All flow is conveyed to the PGSA WWTP for treatment. Map No.2 depicts the areas actively served by existing wastewater facilities, and the tables in Chapter 7 (VII) provide detailed information on each facility. "Actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.C.1: Non-Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
20	Penns Grove SA (WWTP)	NJ0024023	SW	20

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, Penns Grove Borough contains no industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water. However, the proposed SSA for the Borough of Penns Grove includes the entire municipality. Consequently, general wastewater management areas for septic systems have not been designated and do not apply to this municipality.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the PGSA WWTP were calculated based on flows metered by PGSA. The present average annual wastewater flow for 2010 is 0.405 mgd. The present average flow includes residential, commercial and industrial flows as well as an I/I component.

The following table 2.F.1 summarizes the permitted wastewater treatment plant capacity and associated average daily flows for 2010.

WWTP	NJPDES Permit No.	Permitted Capacity (mgd)	Average Daily Flow 2010 (mgd)	Build-Out Projection (mgd)
Penns Grove WWTP	NJ 0024230	0.75	0.405	0.052

Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below.

Month	Monthly Avg. (mgd)	Daily Max (mgd)
10-Jan	0.464	0.71
10-Feb	0.528	0.97
10-Mar	0.61	0.961
10-Apr	0.456	0.702
10-May	0.358	0.439
10-Jun	0.31	0.347
10-Jul	0.307	0.421
10-Aug	0.31	0.361
10-Sep	0.342	0.689
10-Oct	0.419	0.862
10-Nov	0.363	0.484
10-Dec	0.387	0.447
Yearly Average	0.405	0.616

G. EXISTING WASTEWATER TREATMENT

The PGSA WWTP is currently operated under NJPDES Permit number NJ0024023. The present permitted capacity is 0.75 MGD. Treatment system performance meets current permitted parameters under current conditions, based on 2010 data.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Borough of Penns Grove presently receives water service from the New Jersey American Water Company. The public water supply infrastructure of this system consists of 16.6 miles of water main ranging from 4 – 12 inches diameter in size. The following Table 2.H.1 summarizes each public community water supply facility currently serving the municipality. The wells located in this table are owned and operated by

NJAW. The system serves Carneys Point, Oldmans Township, and Penns Grove Borough. All wells in this system are located within the Carneys Point Township municipal boundary. In addition, the five (5) ground water wells included as part of the NJAW (Logan System) have also been identified within the table. The franchise areas are depicted on Map No.1.

Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

Water System	Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
Auburn Village Water Supply	3000001151	1	N/A	N/A
	3000011400	2	N/A	N/A
NJAW Penns Grove System	3000000563	7	500	Lower PRM
	3000001113	2	500	Upper PRM
	3000001815	4	450	Upper PRM
	3000003310	RF1A	250	Upper PRM
	3000003535	RF3A	100	Upper PRM
	3000008511	RF2B	250	Upper PRM
	3000019273	11A	250	Lower PRM
NJAW Logan System	3000001371	2	800	Mid PRM
	3000009444	4	590	Mid PRM
	3000005212	5	100	Mid PRM
	3000014797	6	600	Mid PRM
	E201002435	7	800	Mid PRM

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

New Jersey American Water (NJAW) is currently the sole source of water to the Borough of Penns Grove. NJAW purchased the Penns Grove Water System in 2007. NJAW operates under permit No.WAP070002 to provide water to a service area, which includes Carneys Point Township, Borough of Penns Grove and Oldmans Township. As a result, a specific allocation for each of these municipalities has not been established.

General information presented within this municipal chapter regarding the water system’s overall annual demand and the estimated yearly demand for each municipality from 2008 through 2010 has been obtained from NJAW. Projected average daily demand values have been estimated for each of the three (3) municipalities served by this system. This was necessary as NJAW meters each individual connection to their system and not the municipality as a whole. Based on available water demand information provided, between 2008 through 2010, the following average demand percentages have been estimated to represent the water supplied by NJAW to the three municipalities: Borough of Penns Grove 30.5%, Carneys Point Township 62.5% and Oldmans Township 7%.

The Borough of Penns Grove currently has an estimated average daily demand of approximately 0.371 MGD based upon the 2010 calendar year. The Borough's peak annual and monthly water demand over a period of 5 years between 2006 through 2010 was shown to occur in the month of July 2008, which is based on the peak month of the system supplier. Estimates of monthly flows to Penns Grove Borough from 2006-2010 were made based on data supplied by NJAWC. Monthly data was formulated by adjusting total water supplied by NJAW by the associated demand percentage utilized by Penns Grove as indicated above. The reduction in average demand, over the last few years, is partially due to the enforcement of water restrictions and water conservation appurtenances in residential and commercial buildings and improvements/replacements within the system's infrastructure.

The following table 2.I.1 summarizes current water demands and allocation diversion limits permitted for the NJAW/Penns Grove water system, estimated as described above.

Table 2.I.1: Water Allocation and Demand 2010

Water Company (Breakdown by Municipality)		Permit No. / Program Interest ID	2010 Water Allocation		Average Demand 2010		Build-Out Projection	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water (Penns Grove System)	% of System Demand	WAP070002/ 5328	70.400	753.000	37.95	455.409	140.07	1649.66
Penns Grove	30.5	N/A	N/A	N/A	11.299	135.586	2.05	24.57
Oldmans	7.0	N/A	N/A	N/A	2.653	31.842	53.54	630.41
Carneys Point Township	62.5	N/A	N/A	N/A	23.998	287.981	84.48	994.68

The following Table 2.I.2.a summarizes historical daily, monthly and annual water demand estimates for the entire New Jersey American Water System. These demands are inclusive of the water service areas in Penns Grove Borough, Oldmans Township, and Carneys Point Township. The districts and franchise areas are depicted on Map No.1.

Table 2.I.2.a: Annual Water Demand Summary: New Jersey American Water

Year	Annual Demand Total (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)	Peak Monthly Demand (MGM)	
2006	499.983	1.370	41.665	48.735	August
2007	517.576	1.418	43.131	49.626	June
2008	499.035	1.367	41.586	49.665	July
2009	454.020	1.244	37.835	43.426	July
2010	461.434	1.264	38.453	45.862	July

Table 2.I.2.b summarizes Penns Grove Borough's historical daily, monthly and annual estimates of water demand on the NJAW system. The Average Demand values indicated below represent data obtained from DEP water use results.

Year	Annual Demand Total (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)
2006	152.372	0.417	12.698
2007	157.734	0.432	13.144
2008	154.829	0.424	12.902
2009	140.824	0.386	11.735
2010	135.586	0.371	11.299

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas**, below).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINEATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.

4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to geographical features and political boundaries within the municipality. No exceptions were made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	10/19/99

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter.

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and is being provided for reference. As indicated previously within this chapter, the Borough of Penns Grove is designated as an urban area. Therefore, a 20-year wastewater projection has been created based on population projections and is not based on zoning.

Zone Name	Zone Description	Municipal Area (ac)
R-1	RESIDENTIAL (SINGLE-FAMILY DETACHED, CLUSTERING PERMITTED)	121.1
R-2	RESIDENTIAL (SINGLE-FAMILY ATTACHED, MULTIPLEX CLUSTERING)	282.3
R-3	RESIDENTIAL (TOWNHOUSE, GARDEN APARTMENT, MID-RISE)	35.1
MD-1	MARINA DISTRICT 1	34
MD-2	MARINA DISTRICT 2	19.6
COS	COMMERCIAL, OFFICE, SERVICE	42.5
H-C/I	HIGHWAY COMMERCIAL INDUSTRIAL	48.1

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defines as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Borough of Penns Grove qualifies as an urban municipality according to the definitions stated above. Table 5.D.1 lists the borough’s 2002 land usage data collected from the NJDEP municipal profile for Penns Grove. It is assumed that redevelopment of previously developed portions of the municipality will make up the majority of the future wastewater management needs. Therefore, an application of zoning to the undeveloped and developable land area of the municipality in Penns Grove may underestimate its future wastewater management needs. For this reason a 20-year wastewater projection has been created based on population and employment projections.

Municipality	% Urban	% Preserved	% Developable	Urbanized?
Penns Grove Borough	96	2	2	Yes

Future wastewater is calculated from the population and employment projections by multiplying the projected increase in population by 75 gallons per day per person and the projected increase in employment by 25 gallons per day per person. Penns Grove Borough’s population and employment 20-year projection was taken from an estimate made by the South Jersey Transportation Planning Organization (SJTPO), which employed data from historical U.S. Censuses.

Table 5.D.2 provides an analysis of the population projection for the Borough of Penns Grove through the next 20 years. The flows contributed from residential, commercial, and industrial production are expected to remain stable.

Projection Parameter	Current (2010) Population	20-Year (2030) Population	Projected Flow	
			No. of People	Flow (gpd)
Population	5,147	5,776	629	47,175
Employment	1,119	1,295	176	4,400
Projected New Flow (gpd)				51,575
Current 2010 ADF (gpd)				405,000
			Total 20-year Flow (gpd)	456,575
			Total 20-year Flow (mgd)	0.457

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

The Borough of Penns Grove does not meet the definition of a non-urban municipality as defined above. Consequently, future wastewater build out projections are based solely on the 20-year growth projection above.

F. FUTURE WASTEWATER OUTSIDE OF SEWER SERVICE AREAS

Generally, the default wastewater management alternative to support development in areas that are not designated as sewer service area is discharge to groundwater less than 2,000 gallons per day. A nitrate dilution analysis for septic systems is typically performed, in similar fashion to that conducted for sewer service areas, except that environmentally sensitive areas are not removed prior to performing the build out analysis. The intent of this analysis is to assess the available dilution on a HUC 11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the regulatory nitrate target.

The Borough of Penns Grove’s existing sewer service area extends to the municipal boundary. Consequently, the nitrate dilution analysis necessary for assessing the future wastewater outside of a sewer service area is not applicable.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected flows. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

TABLE 6.A.1: Wastewater Treatment Plant Capacity					
Treatment Works	Permit No.	Current Treatment Capacity	Average Daily Flows 2010	Population Build-Out Projection	Remaining Treatment Capacity
		(mgd)	(mgd)	(mgd)	(mgd)
Penns Grove WWTP	NJ 0024023	0.750	0.405	0.052	0.293

The total treatment capacity for the sanitary sewer system that serves the municipality (0.75 mgd) is greater than the projected flows necessary to support existing demands and proposed development within the sewer service area (0.457 mgd). The calculations were based on the proposed build-out projections and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, Sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

D. DISCHARGES TO GROUND WATER

This Section is not applicable as the Borough of Penns Grove's existing sewer service area extends to the municipal boundary and a nitrate dilution analysis has not been provided, as indicated above.

E. ADEQUACY OF DILUTION TO MEET FUTURE NON-SEWER SERVICE AREA DEMAND

Generally, a wastewater estimation tool, provided by the Department is used to compare existing zoning to the available nitrate dilution within each HUC11 in an effort to determine whether adequate dilution is available to meet future non-sewer service area demands. However, as indicated above, the Borough of Penns Grove's existing sewer service area extends to the municipal boundary and this analysis is not applicable for this municipality.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water demand within the existing sewer service area were compared. A build-out projection of the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were also compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A population-based water build-out projection (similar to the wastewater build-out) was used for this municipality. The information provided was made available by the New Jersey American Water Company or obtained from DEP online sources. The comparison of water allocation and projected build-out for the urbanized municipality are summarized in the table below.

A. SUFFICIENCY OF WATER SUPPLY

The Borough of Penns Grove's current water allocation and existing average water demands are identified in Section 2 of this municipal chapter. In terms of identifying demand, the projected changes in population and employment were the predominant factors in determining future water supply needs.

The Borough of Penns Grove is an urbanized municipality. It is assumed that redevelopment of previously developed portions of the municipality will make up the majority of the future potable water needs, with urban development throughout the municipality. Consequently, infill development has been considered by utilizing a population based build-out approach as defined below. For this reason, neither the parcel based nor zoning based analysis used in non-urbanized municipalities were applied to identify future demands for this municipality. A 20-year projection has been created based on population and employment projections.

Proposed daily demands required to support urban development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis. Future demands are generally evaluated and projected based on two sets of data; water demands from projected population increase/decrease within the existing SSA, and water demands from projected employment increase/decrease within the existing SSA.

1. Water Build-out Analysis

Neither parcel nor zoning based build-out was used in the analysis of the sewer service area as the build-out analysis was prepared utilizing a population and employment based approach. In this type of build-out, future water demand is calculated from the population and employment projections by multiplying the projected increase in population by 100 gallons per day per person and the projected increase in employment by 25 gallons per day per person. These numbers are an adjustment of the multipliers used to estimate wastewater flows in an urban municipality (set forth by NJDEP). This adjustment takes into account the most current NJDEP and NJAW data for water demand, in order to create a more accurate future water demand projection. Penns Grove Borough's population and employment 20-year projection was taken from an estimate made by the South Jersey Transportation Planning Organization (SJTPPO), which employed data from historical U.S. Censuses.

Table 7.A.1 provides an analysis of the population projection for the Borough of Penns Grove through the next 20 years. The flows contributed from residential, commercial, and industrial production is expected to remain stable.

Table 7.A.1: 20-Year Water Demand Build-Out Projections

Projection Parameter	Current (2010) Population	20-Year (2030) Population	Projected Demand	
			# of People	Demand (gpd)
Population	5,147	5,776	629	62,900
Employment	1,119	1,295	176	4,400
Current 2010 ADD (gpd)				
Current 2010 ADD (gpd)	362,896	Projected New Demand (gpd)	67,300	
Current 2010 ADD (mgd)	0.363	Projected New Demand (mdg)	0.067	
Current 2010 ADD (mgm)	11.250	Projected New Demand (mgm)	2.086	
Current 2010 ADD (mgy)	132.457	Projected New Demand (mgy)	24.565	
Total 20-year Demand (gpd)				
			430,196	
Total 20-year Demand (mgd)				
			0.430	
Total 20-year Demand (mgm)				
			13.336	
Total 20-year Demand (mgy)				
			157.022	

2. Analysis of Water Capacity to Meet Supply Needs

This section of the wastewater management plan analyzes whether there is sufficient potable water treatment capacity to meet the needs of the Municipality based on the projections described above. This requires a comparison of the projected future demand to the existing capacity of the water supply system.

Table 7.A.3.1 provides a comparison of existing water allocation with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected daily demands. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 7.A.3.1: Water Supply Capacity

Water Company (Breakdown by Municipality)		Permit # / Program Interest ID	2010 Water Allocation / Avg. Demand*		Total Projected Water Demand		Remaining Water Allocation	
			(MGM)	(MGY)	(MGM)	(MGY)	(MGM)	(MGY)
New Jersey American Water (Logan System)		WAP100001/ 5003	60	392	N/A	N/A	(Alternative Source)	
New Jersey American Water (Penns Grove System)	% of System Demand	WAP070002/ 5328	70.4 / 37.95	753 / 455.41	178.02	2,105.07	-107.62	-1,352.07
Penns Grove	30.5	n/a	n/a	n/a	13.35	160.16	n/a	n/a
Oldmans	7	n/a	n/a	n/a	56.19	662.25	n/a	n/a
Carneys Point Township	62.5	n/a	n/a	n/a	108.48	1,282.66	n/a	n/a

Note: Total Projected Water Demand reflects the Average Daily Demand in 2010 and additional demand associated with the FWSA build-out projections.

The total monthly water allocation for the water purveyor (NJAW) that serves the municipality (70.4mgm/ 753mgy) is greater than the water supply necessary to support existing demands and proposed development within the Penns Grove sewer service area (13.34 mgm/ 157.022 mgy). The projected calculations were based on the proposed build-out projections and average daily demand values utilized within the regulations for each type of development. Based on the analysis presented above, sufficient water supply exists to accommodate the currently proposed Sewer Service Area. However, the existing water allocation would not be sufficient if all of the municipalities currently connected to the NJAW system reached the FWSA buildout condition.

The available water supply for the water purveyor (NJAW), supplying the Carneys Point Township, Oldmans Township and the Borough of Penns Grove water systems is less than the water supply necessary to support the FWSA of these three (3) municipalities in its entirety. Due to the current economic climate, projected growth rate of the population, and the anticipated short-term need for additional water supply, these municipalities are not seeking additional water supply at this time. As NJAW is only operating at 54% of their monthly allocation and approximately 60% of their annual diversion limit, the existing water capacity is sufficient to support existing demands and short-term development in the future, based on the current water utilization indicated above. However, it should be noted that NJAW system has additional water production capabilities and could supply more than the current allocation.

NJAW supplies water to Penns Grove Boro, Oldmans and Carneys Point Townships through its Penns Grove system, which receives water from its local sources, as permitted by the Department, and from the Tri-County pipeline. NJAW completed improvements in 2010 to interconnect their Penns Grove water system and Logan Township water system to allow for operational flexibility. The Logan system of NJAW draws from five (5) ground water wells, as noted in Table 2.H.1. Therefore, NJAW could supply more than the current allocation if necessary. This may require NJAW to make adjustments or infrastructure improvements to its water system in order to supply additional water to the area.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Penns Grove WMP proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Penns Grove Borough WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map 3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the current WMP planning area of for the municipality. This planning area is exclusive to the municipality's boundary. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.2: EXISTING FACILITIES & SERVICE AREAS

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Penns Grove Borough, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP NO.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP NO.4: PENNS GROVE BOROUGH ZONING MAP

The map depicts the current zoning of Penns Grove Borough. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations

ZONE	ZONE TITLE	MAXIMUM GROSS DENSITY	MINIMUM LOT AREA	MINIMUM AREA / DWELLING UNIT	MINIMUM LOT WIDTH	MINIMUM FRONT YARD SETBACK	MINIMUM SIDE YARD SETBACK	MINIMUM REAR YARD SETBACK	MAXIMUM BUILDING HEIGHT	MAXIMUM LOT COVER AGE
R-1	SINGLE-FAMILY DETACHED (CLUSTERING PERMITTED)	3.2	10,500 SF	10,500 SF	90/75	35'	12' EACH	35'	35'	30%
R-2		3.8	9,000 SF	9,000 SF	80/65	25'	10'	25'	35' 3 STORIES	35%
	SINGLE-FAMILY ATTACHED	4	14,000 SF	6,000 SF	60/60	25'	10'	25'	35' 3 STORIES	35%
	ATRIUM	6.5	14,000 SF	2,500 SF	40'	25'	10'	25'	35' 3 STORIES	
	PATIO HOUSE	3.8	1 ACRE	4,500 SF	45'	25'	10'	25'	24'	
	MULTIPLY (CLUSTERING)	5.8	1 ACRE	3,000 SF	80'	25'	10'	25'	3 STORIES	
R-3	TOWNHOUSE	12	3 ACRES	2,000 SF	20/20	25'	35'	35'	35' 3 STORIES	30%
	GARDEN APARTMENT	15	3 ACRES	2,940 SF	200/200	50'	35'	35'	35' 3 STORIES	30%
	MID-RISE	25	3 ACRES	SEE 220-14	100/100	50'	35'	35'	8 STORIES	30%
COS								5 STORIES	85%	
H-C/I	COMMERCIAL		30,000 SF		100/100	35'	15'	15'		30%
	INDUSTRIAL		80,000 SF		150/150	35'	15'	15'		40%

5. MAP NO.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP NO.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP NO.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

**PENNSVILLE TOWNSHIP CHAPTER
PREVIOUSLY PENNSVILLE TOWNSHIP
WMP**

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Chapter IX.9

CHAPTER SUMMARY

This chapter represents the Pennsville Township portion of the Salem County WMP. The Salem County WMP has been submitted to the New Jersey Department of Environmental Protection (NJDEP) for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment procedure (N.J.A.C. 7:15).

The current WMP in effect for the Pennsville Sewerage Authority is an amendment to the Lower Delaware WQMP, which was adopted on May 13, 2010, the Pennsville Township WMP. **The PSA has not made any revisions or amendments to the previously approved plan as part of this submission of the Salem County Wastewater Management Plan.** The Pennsville Township WMP has been incorporated with this Salem County WMP as is. All text, maps, and attachments are included in this chapter.

The Salem County WMP and this chapter, which incorporates the Pennsville Township WMP, upon adoption, supersedes previous plans and will remain in force and effect until the expiration date noted in Chapter 1, Salem County Summary.

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Sickels & Associates, Inc.

*Wastewater Management Plan for
Pennsville Township, Salem County, New Jersey
Lower Delaware Water Quality Management Planning Area*

I. INTRODUCTION

The purpose of this document is to provide a comprehensive Wastewater Management Plan (WMP) for the Pennsville Sewerage Authority (PSA). The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

1. PSA WMP EXISTING SEWER SERVICE AREA

The current PSA sewer service area boundary delineated on Map #2 is serviced by the Pennsville Sewerage Authority Wastewater Treatment Plant (PSA-WWTP) and is generally defined by the Glenside, Churchtown, Central Park, Penns Beach, and Mahoneyville sections of Pennsville Township and a portion of the Township of Carneys Point adjacent to the north boundary of Pennsville. Within the Deepwater section of Pennsville, the wastewater from the Deepwater Generating Station is conveyed to the DuPont Chambers Works Wastewater Treatment Plant (WWTP). The PSA-WWTP is located on Industrial Park Road and was constructed in approximately 1960. The PSA-WWTP currently receives contributing flow from 5,337 residential living units, 551 commercial uses, and one (1) industrial use (Ganes Chemical Plant). The monthly flow generated by these contributors for the 2008 was 1.366 mgd.

An I&I study was completed in May, 2004 which investigated the infrastructure for a large portion of the Township and identified source(s) of "extraneous water" entering the system. "Extraneous water" is defined as water entering the system from sources other than the typical sanitary sewage uses such as bathroom facilities, laundry, bathing, food processing etc. Infiltration and inflow had been observed in varying degrees during large storm events. The Pennsville Sewerage Authority has been proactive in correcting localized infiltration problems within the existing infrastructure.

Wastewater generated within the PSA WMP existing sewer service area is conveyed to the PSA-WWTP which is designed to operate at 1.875 mgd. Wastewater entering the treatment plant is treated sequentially through primary settling tanks, trickling filters, rotating biological contactors (RBC's), secondary settling tanks, and chlorine contact tanks prior to discharging to the Delaware River. The plant has been modified to provide a pipe manifold which will allow the trickling filters to treat the wastewater prior to flow through the RBC's. The modified flow sequence has allowed the plant to operate more efficiently with a reduction in system maintenance by utilizing the existing over-designed trickling filters for primary treatment, and moving the RBC's which had become a high maintenance issue due to high bio-mass loading to secondary treatment.

The adopted amendment currently in effect is the "Corrective Action Plan" that was adopted several years ago to bring approximately ten (10) existing facilities into compliance with the Water Quality Management Plan (WQMP). The Township has completed a major overhaul of the Township's Master Plan and Zoning Ordinances. The enclosed plans reflect current zoning with proposed sewer service areas consistent with the Township's Master Plan. The existing sewer service limits, depicted on Map #2, were derived from existing sanitary sewer infrastructure currently constructed and/or approved.

The Authority has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township's Master Plan. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors and FW-2 Waters.

The proposed future sewer service areas depicted on Map 3 consists of proposed future areas outside the existing sewer service area. There are ten (10) projects that were previously permitted by the Department, and contribute flows to the PSA-WWTP. These areas were identified in the Corrective Action Report submitted to the Department on February 8, 2000 and have been included as part of the existing sewer service area. The additional proposed sewer service areas target existing developed areas serviced by Individual Subsurface Sewage Disposal Systems (ISSDS), which could feasibly be connected to existing sanitary sewer infrastructure. The remaining areas will continue to be serviced by ISSDS's with wastewater flows less than or equal to 2,000 gpd.

The proposed Sewer Service Area reflects current zoning changes adopted by Pennsville Township. **The proposed Sewer Service Area defined on Map #3 has been reduced, from our original submission, not to exceed the current permitted treatment plant capacity of 1.875 mgd.** This approach is being pursued in an effort to expedite the approval process and eliminate the need for upgrades to the WWTP at this time. In an effort to accommodate additional wastewater flows generated by future site specific amendments, population growth and development, the Authority will consider re-rating the WWTP at a future date rather than including this process as part of this WMP application. Any expansions or re-rating of the PSA WWTP will require further WMP amendments and anti-degradation analysis.

II. SUMMARY OF SIGNIFICANT ACTIONS

1. The WMP planning area for Pennsville depicted on Map #1 includes the entire Township, and a portion of Carneys Point adjacent to Pennsville and south of the Salem Canal. In addition, the Dupont Facility has been removed from this area, as it is currently included within the Carney's Point WMP.
2. The following additional future sewer service areas are proposed:
 - a. The Authority has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Township's Master Plan.
3. There are currently NJPDES regulated facilities within the existing sewer service area. There are no proposed changes to these facilities with relation to the WMP.
4. All areas not proposed to be included in the PSA sewer service areas in this WMP will be served by ISSDS's with 2,000 gpd or less flows.
5. Development within the WMP existing sewer service area consists primarily of infill development. The proposed sewer service area closely reflects current zoning.
6. The intent of this application is to obtain an approved WMP that does not exceed the current permitted treatment plant capacity of 1.875mgd. In an effort to accommodate additional wastewater flows generated by further expansion of the SSA, the Authority will consider re-rating the WWTP at a future date rather than including the re-rating process as part of this application. Any expansions or re-rating of the PSA WWTP will require further WMP amendments and anti-degradation analysis.

III. EXISTING AND FUTURE WASTEWATER TREATMENT FACILITIES

The Pennsville Sewerage Authority (PSA) owns and operates one WWTP and a series of pump stations, and force mains used to convey wastewater flow to the WWTP. The sanitary sewer collection system in Pennsville is owned and maintained by the Authority. There is approximately 80 miles of sanitary sewer main with pipes ranging in size from 8 inches to 24 inches in diameter. The Authority currently owns and operates sixteen (16) pump stations. Twelve (12) of these pump stations are tributary to the 5th Street (main) pumping station. The remaining pump stations pump directly to the treatment plant. The exception is the Chestnut Pump Station, it pumps through the Goose Lane Pump Station. All flow is conveyed to the PSA WWTP for treatment.

1. EXISTING WASTEWATER FACILITIES

1.1 PSA Wastewater Treatment Plant

The PSA WWTP is a localized system for the conveyance, treatment, and disposal of the municipalities' wastewater within its service area. The WWTP treats domestic waste as well as industrial waste. Treated wastewater is discharged to the Delaware River under NJPDES Permit No. NJ0021598. The present permitted capacity is 1.875 MGD. A process flow diagram for the WWTP is located in Appendix "A". Treatment system performance is excellent under current conditions. Biochemical oxygen demand (BODs) and total suspended solids (TSS) removal efficiencies of the overall treatment system continue to be excellent under current operating conditions, averaging 96.26% (TSS) and 97.39% (BOD's). Table # 1.1.1 and Table # 1.1.2, located within the Environmental Assessment Report, summarizes the monthly reporting of BOD and TSS data for 2008 with percent removal limits indicated.

1.2 WMP NOTES

- All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent.
- Development in areas mapped as wetlands; flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to- special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.
- Individual subsurface sewage disposal systems (ISSDS) for individual residences can only be constructed in depicted sewer service areas if legally enforceable guarantees are provided, before such construction, that use of such systems will be discontinued when the depicted sewer service becomes available. This applies to ISSDS that require certification from the Department under the Realty Improvement Sewerage and Facilities Act (NJ.S.A. 58:11-23) or individual Treatment Works Approval or New Jersey Pollutant Discharge Elimination System Permits (under NJ.A.C. 7:14A). It also applies to ISSDS which require only local approvals if the WMP acknowledges adequate arrangements for enforcement of the requirement (such as through a municipal or sewerage authority ordinance). The PSA has established a provision within their Rules and Regulations that when the Authority provides for sanitary sewer to pass immediately adjacent to a property owner's boundary line, structures or houses, will be required to make the necessary arrangements to tie into the sanitary sewer system, if within the approved SSA.

- Pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas, are unaffected by adoption of this WMP and compliance is required.
- Proposed developments tying into existing and proposed sewer service areas which require coastal permits must demonstrate compliance with all applicable sections of the Coastal Zone Management rules including, but not limited to, Wetlands. (N.J.A.C. 7:7E-3.27), Wetlands Buffers (N.J.A.C. 7:7E-3.28), Endangered or Threatened Wildlife or Vegetation Species Habitat (N.J.A.C. 7:7E-3.38), Secondary Impacts (N.J.A.C. 7:7E-6.3), Public Facility. Use Policies (N.J.A.C. 7:7E-7.6), Water Quality (N.J.A.C. 7:7E-8.4), Ground Water Use (N.J.A.C. 7:7E-8.6 and the policies wider General Land Areas rules, Subchapters 5, 5A and 5B.
- Non-degradation water areas shall be maintained in their natural state (set aside for posterity) are subject to restrictions including, but not limited to, the following: 1) DEP will not approve any pollutant discharges to an FWI stream, with the exception of upgrades to or continued operation of existing facilities serving existing development. 2) DEP will not approve any pollutant discharge to ground water nor approve any human activity which results in a degradation of natural quality except for the upgrade' or continued operation of existing facilities serving existing development. For additional information please see the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6.

1.3 Wastewater Flows

The existing wastewater flows conveyed to the PSA WWTP were calculated based on flows metered by PSA. The present average annual wastewater for 2008 is 1.366 mgd. The present average flow includes residential, commercial and industrial flows as well as an I/I component.

Included within the above existing wastewater flows are connections located within Carney's Point. The flow from these connections is not metered. Consequently, flow estimates from these connections were determined by utilizing the regulatory average daily flow values utilized within the regulations for each type of connection. These connections are identified in Table 1.3 below.

TABLE 1.3: Existing Flows within Carneys Point

CARNEYS POINT EXISTING SANITARY FLOW PROJECTIONS					
Block	Lot	Units	Description	Daily Demand	ADF (gpd)
223	2	34	Motel Bedrooms	60	2,040
401	10	39	Trailers	200	7,800
215	2	1	2,3,4 BR SFH	300	300
197	1	1	2,3,4 BR SFH	300	300
225	7	2100 S.F.	DOT Maintenance Facility	210	210
			(Note, used 0.1 gal/sf)		
Total calculated daily flow: 10,650					

Proposed future flows to be conveyed to the PSA WWTP projected under build-out conditions were evaluated based current zoning of identified developable land. All projected flows were separated into residential, commercial, and industrial components. Note that future residential flow calculations utilize a flow of 300 gpd per household. The 300 gpd estimate exceeds the current realized ADF per household, which more closely resembles 250 gpd. The 300gpd flow projection includes an allowance for I/I.

Total projected build-out flow for residential, commercial and industrial development was determined based on current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

1.3.1 Existing Sewer Service Area Build Out of Infill Development

Residential flows within the existing Sewer Service Area were projected by determining the maximum number of dwelling-units based on current zoning. The current regulated NJDEP average daily flow of 300 gpd was then applied to the calculations for each dwelling-unit.

Commercial flows were projected by determining the maximum number of office and retail stores based on current zoning. The current regulated NJDEP average daily flow of 0.1 gpd/sf was then applied to the calculations for each unit based on an established commercial use of approximately 8,250 s.f. office and retail store space (33% of 25,000 s.f.).

Industrial flows were projected by determining the maximum number of units based on current zoning. An average daily flow of 25 gals/person/8hr Shift was applied, based on 50 employees per facility.

A summary of the Existing Sewer Service Area Build-out Analysis is located in Section 4, Environmental Constraints Analysis, Table 4.1.1.

1.4 Other Wastewater Treatment Facilities in the Planning Area

There are a total of seven (7) domestic or industrial treatment facilities located with the Pennsville Township planning area. Facility Table(s) have been completed for each facility NJPDES permit. Facilities tables related to industrial wastewater and discharge to groundwater permits have been included in Appendix “B”. A Facility Table has been completed for the DuPont Chambers Works. However, only those flows from the Deepwater Generating Plant are accounted for, as this facility is within the Pennsville WMP planning area. A separate facility table for the Deepwater Generating Plant has not been provided.

The Ganes/Siegfried (USA) Inc. Chemical Plant is located within Pennsville Township. However a facility table has not be provided for this facility as it is an SIU discharger and its industrial process flows are accounted for in the Industrial Flow section of the Pennsville STP Facility Table.

The following table identifies existing facilities within the existing Sewer Service Area that have NJPDES permits.

TABLE 1.4.1: NJPDES REGULATED FACILITES

	Facility	NJPDES # & Discharge Type	Wastewater Description	Facility Table
A	Water Street Water Treatment Plant	NJ0068730 DSW NJ0102385 DGW	Sanitary flow only to Pennsville STP. Filter backwash to SW and GW.	Facility Tables 6 & 7
B	Heron Avenue Water Treatment Plant	NJ0068705 DSW NJ0102369 DGW	Sanitary flow only to Pennsville STP. Filter backwash to SW and GW.	Facility Tables 4 & 5
C	Pennsville STP	NJ0021598 DSW		Facility Table 1
D	Fort Mott State Park	NJG0133159 DGW	Sanitary to GW	Facility Table 3
E	Pennsville SFL	NJ0056499 DGW	GW Sampling/Site Remediation	Facility Table 8
F	Deepwater Generating Plant	NJ0005363 DSW NJ0103357 DGW	Multiple outfalls of non-process wastewater to Delaware River. DGW is all process and sanitary wastewater flow to a surface impoundment which then is transported to Dupont.	Covered under Facility Table 2

G	Dupont Chamber Works WTP	NJ0005100 DSW		Facility Table 2
H	Ganes/Siegfried (USA) Inc. Chemical Plant	NJ0035394 DSW NJ0103721 DSW	Emergency discharge of non-contact cooling water to Miles Creek. SIU Permit – Industrial process and sanitary wastewater flow to Pennsville STP.	No table

Note: The Facility Table for the DuPont Chambers Works only accounts for flow from the Deepwater Generating Plant, as this facility is within the Pennsville WMP planning area.

2. FUTURE WASTEWATER FACILITIES

Growth within the proposed Sewer Service Area is expected due to population increases and infill development. To accommodate the anticipated increases in development within the Planning Area, an increase in the Sewer Service Area is being proposed. However, the proposed Sewer Service Area will not exceed the current permitted treatment plant capacity of 1.875 mgd.

The PSA is currently planning the design of a new primary clarifier located at the wastewater treatment plant (WWTP) within Pennsville Township in an effort to improve operational flexibility. Additional treatment plant modifications would be evaluated as the need for increased capacity arises. Upgrades to the conveyance system would also be investigated as site-specific amendments to the WMP are proposed. A summary of the proposed Sewer Service Area Build-out Analysis is located in Section 4, Environmental Constraints Analysis, Table 4.2.1.

IV. SUMMARY OF ENVIRONMENTAL ASSESSMENTS AND ANALYSIS

1. POINT SOURCE POLLUTANT LOADING ANALYSIS

New Jersey anti-degradation policies specify that existing uses be maintained and that designated uses be achieved and maintained unless “the Department finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Departments continuing planning process as set forth in the Statewide Water Quality Management Plan (See NJAC 7:15) which includes, but is not limited to NJAC 7:14, NJPDES Regulations that allows lowering water quality if necessary to accommodate important economic or social development in the area in which the waters are located.” DRBC Water Quality regulations define Zone 5 Delaware River Waters as follows:

- A. Description. Zone 5 is that part of the Delaware River extending from R.M. 78.8 to R.M. 48.2, Liston Point, including the tidal portions of the tributaries thereof.

B. Water Uses to be Protected. The quality of waters in Zone 5 shall be maintained in a safe and satisfactory condition for the following uses:

- Industrial water supplies after reasonable treatment;
- Maintenance of resident fish and other aquatic life,
- Propagation of resident fish from R.M. 70.0 to R.M. 48.2,
- Passage of anadromous fish,
- Wildlife;
- Recreation;
- Navigation.

Activities under this WMP will comply with anti-degradation policies and objectives. Increases in discharges up to the current permitted limit of 1.875 mgd will proceed in a manner to prevent increases in load or concentration of parameters of concern. This will be accomplished by improving, as necessary, the management and treatment systems to continue to comply with NJDEP effluent discharge requirements established in accordance with the anti-degradation policies. The PSA is currently reviewing and revising their local limits for the facilities of Significant Industrial Users to protect effluent quality. Treatment improvements will be investigated as development increases. Potential improvements may include expansion and upgrade of individual unit processes of the treatment system as a whole to improve treatment process performance and ensure compliance with applicable criteria.

The PSA WWTP is currently operated under NJPDES Permit number NJ0021598 issued on 8/15/2005 with an expiration date of 10/31/2010. The PSA treatment plant consistently operates within its current permit limits for BOD and TSS. Permitted effluent limits for BOD correspond to (185 kg/day monthly average and 319 kg/day weekly average) with TSS limits being (213 kg/day monthly average and 319 kg/day weekly average). Effluent reporting, based on 2008 data, reflects an average monthly limit for BOD of 35.68 kg/day, with an average monthly TSS limit of 50.80 kg/day. A summary of the BOD and TSS Sampling through 2008 is located in Section 1, Environmental Constraints Analysis, Table(s) 1.1.1 and 1.1.2.

Assuming that concentration based limits remain, at future flows, the PSA WWTP is expected to continue to meet those limits with appropriate plant expansions and upgrades. When flows conveyed to the WWTP approach the current permit capacity of 1.875 MGD, upgrades to the plant will be evaluated as needed with the first phase being a re-rating of the WWTP. Any expansions or re-rating of the PSA WWTP will require further WMP amendments and anti-degradation analysis.

2. NONPOINT SOURCE POLLUTANT LOADING ANALYSIS

Pennsville Township has prepared a Stormwater Management Plan for the municipality. It is assumed that a plan prepared to meet NJDEP requirements will meet the requirements of the wastewater management planning process. The Storm Water Management Plan has been adopted by Pennsville Township. The final resolution

establishing minimum storm water management requirements with Ordinance # A-32-2006 was submitted to Salem County on December 19, 2006. In addition, a nitrate dilution model zoning overlay ordinance was adopted on December 3, 2009 establishing a limitation on the nitrate loading of each subdivision that proposes the use of an onsite subsurface sewage disposal system.

3. CONSUMPTIVE WATER USE ANALYSIS

3.1 Background

The Township of Pennsville is presently serviced from eight (8) ground water wells located throughout the Township. Wells #1 through #8 withdraw water from the Upper and Middle PRM (Potomac Raritan Aquifer). Generally, sanitary sewer service is available where potable water service is currently in place. However, there are a few sections of water main along Hook Road and Fort Mott Road where sanitary sewer is not available.

Table #3.1.1, below, summarizes each well with its designation and pump capacity. The location of existing wells have been provided on Map #2 for your convenience.

TABLE #3.1.1: EXISTING PENNSVILE TWP. WELLS

Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
5000041	1	250	Middle PRM
3000018	2	400	Middle PRM
3005148	3A	700	Upper PRM
3008335	4A	500	Upper PRM
2810466	5	700	Upper PRM
3003013	6	700	Upper PRM
3000012165	7	355	Middle PRM
3000012164	8	435	Upper PRM

The Township has a total of 1.75 million gallons of storage capacity at locations listed in Table #3.1.2 below.

Table #3.1.2: STORAGE CAPACITY

WATER TOWER	CAPACITY (MGD)
Water Street	0.15 mg
Tufts Road	0.6 mg
Sharp Street	1.0 mg

The Township of Pennsville currently has an average daily usage of approximately 1.016 million-gallons/day based upon the 2008 calendar year. The peak annual and monthly water demand over a period of 5 years between 2004 through 2008, occurred in 2006. The reduction in average demand, over the last few years, is partially due to the enforcement of water restrictions and water conservation appurtenances in residential and commercial buildings and improvements/replacements within the system's infrastructure. Additional historical flow data has been provided in Table 3.1.3 below.

a) **TABLE # 3.1.3: ANNUAL FLOW SUMMARY**

	ANNUAL	AVERAGE	AVERAGE	PEAK
	FLOW	DAILY	MONTHLY	MONTHLY
YEAR	TOTAL	FLOW	FLOW	FLOW
2008	370.75 MGY	1.016 MGD	30.895 MGM	40.023 MGM June
2007	387.36 MGY	1.061 MGD	32.280 MGM	39.330 MGM July
2006	445.65 MGY	1.221 MGD	37.138 MGM	46.650 MGM August
2005	420.58 MGY	1.152 MGD	35.048 MGM	38.861 MGM June
2004	349.16 MGY	0.957 MGD	29.097 MGM	34.069 MGM May

3.2 Comparison of Water Allocations and Projected Build-out

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the Township. The analysis should compare the Buildout water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water utilized within Pennsville Township were compared. A build-out projection of the infill development within the existing sewer service area and development within the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were then added to the current water demand within the township and then compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development. The information provided was made available by the Pennsville Water Department and the PSA. The comparison of water allocation and projected build-out is summarized in the table below.

Table 3.2.1: Water Allocation within Pennsville Township for 2008

Water Company	Permit #	Water Allocation (mgm) / (mgy)	Avg. Demand 2008 (mgm) / (mgy)	Build-Out Projection (mgm)/ (mgy)
Pennsville Water Dept.	5047	54.25 / 580.0	30.90 / 370.75	10.22 / 122.64

Note: Build-out calculations reflect an increase of 0.336 mgd being necessary to support the projected development.

The Pennsville Water Department “planning area” consists of the entire municipality. However, infrastructure is not currently constructed along all roadways thereby limiting the number of residents being supplied with potable water. The current water distribution system infrastructure closely matches where existing sanitary sewer infrastructure is installed with the exception of few areas. Water demand within the existing SSA was not calculated. This report reflects water demands based on all water utilized by Pennsville, both inside and outside the SSA.

Proposed future water demand to be utilized by projected development under build-out conditions were evaluated based on similar criteria utilized for the sanitary sewer analysis. All projected flows were separated into residential, commercial, and industrial components. The current regulated NJDEP average daily demand was then applied to the calculations for each type of use to determine whether sufficient water exists to serve the proposed development.

The total monthly water allocation for the water system that serves the municipality (1.808 mgd) is greater than the water supply necessary to support existing demands and proposed development within the sewer service area (1.352mgd). The projected calculations were based on the proposed build-out projections and average daily flow values utilized within the regulations for each type of development.

3.3 2000-2025 Water & Demand Projections

The population of the Township of Pennsville, as of the 2000 U.S. Census, was 13,194. The U.S. Census indicated 13,794 people resided in the Township in 1990. The population decrease over that 10 year period was approximately 4.3%. The Delaware Valley Regional Planning Commission (D.V.R.P.C.) forecasted the population growth in Salem County from 2000-2025 to be 7.6%. This translates into a projected population of 14,279 for the Township of Pennsville. These predictions were based on current available data.

Total projected build-out flow for residential, commercial and industrial development was determined based on current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report. **Sufficient water allocation exists to accommodate the currently proposed Sewer Service Area.**

Growth within the proposed Sewer Service Area is expected due to population increases and infill development. To accommodate anticipated increases in water consumption within the proposed Sewer Service Area upgrades to the water distribution system will be evaluated as development is proposed. Table 3.3.1 below identifies the Future Water Demand Projections of the “Existing Sewer Service Area Build-out” based on current zoning. Table 3.3.2 below identifies the Future Water Demand Projections of the “Proposed -Build-out” based on current zoning.

TABLE 3.3.1: POTENTIAL FUTURE DEMAND PROJECTIONS				
(Existing Sewer Service Area Infill Development Build Out)				
ZONE	Units	(a) Description	Daily Demand	ADF (gpd)
R-1	106	2,3 & 4 BR SFH	320– Note(A)	33,920
R-2	22	2,3 & 4 BR SFH	320– Note(A)	7,040
R-3	19	2,3 & 4 BR SFH	320– Note(A)	6,080
C	4	8,250 SF Office / Retail Store	1031– Note(B)	4,124
CBD	0	Office / Store Front	395– Note(D)	0
LI	3	50 employees total / facility	1250– Note(C)	3,750
HI	0	50 employees total / facility	1250– Note(C)	0
C/O	0	26,136 SF Commercial Facility	3267– Note(E)	0
CONS	0	1800 SF Building Limit	320– Note(F)	0
Total Projected Additional Future Demand - Projected Development				0.055 mgd

TABLE 3.3.2: POTENTIAL FUTURE DEMAND PROJECTIONS				
(Proposed Sewer Service Area Build Out)				
ZONE	Units	(b) Description	Daily Demand	ADF (gpd)
R-1	0	2,3 & 4 BR SFH	320– Note(A)	0
R-2	0	2,3 & 4 BR SFH	320– Note(A)	0
R-3	97	2,3 & 4 BR SFH	320– Note(A)	31,040
C	229	8,250 SF Office / Retail Store	1031– Note(B)	236,099
CBD	0	Office / Store Front	395– Note(D)	0
LI	11	50 employees total / facility	1250– Note(C)	13,750
HI	0	50 employees total / facility	1250– Note(C)	0
C/O	0	26,136 SF Commercial Facility	3267– Note(E)	0
CONS	0	1800 SF Building Limit	320– Note(F)	0
Total Projected Additional Future Demand - Projected Development				0.281 mgd

The notes referenced in the above table are indicated below.

NOTES:

- (A) Residential Average Daily Flow Based on 320 GPD established as a percentage for 2, 3 & 4 bedroom dwellings
- (B) Commercial Average Daily Flow Based on 0.125 gal/SF established for 8,250 SF Offices and Retail Stores (33% of 25,000 SF)
- (C) Light/Heavy Industrial Average Daily Flow Based on 25 gals/person/8hr. Shift
- (D) Commercial Business District Average Daily Flow Based on 395 GPD, which is more stringent than the 0.125gal/sf established for offi
- (E) C/O Average Daily Flows based on 0.125 gal/SF established for 26,136 SF Offices and Retail Stores (30% coverage on 2 acres)
- (F) Conservation District Average Daily Flow Based on 300 GPD as maximum allowable building size is 1,800 SF.

4. ENVIRONMENTAL CONSTRAINTS ANALYSIS

The information included in the Environmental Constraints Analysis for the future sewerage of properties identifies land area that is currently undeveloped and not environmentally constrained. The environmental constraints analysis for the future sewerage of properties focused on wetlands; floodplains; stream corridors; Natural Heritage priority sites, threatened and endangered species site or designated habitats; and parks, preserves and open space. Buffering of environmentally constrained areas are indicated on Map #5. Table 4-1 highlights the information and sources used to delineate environmentally constrained areas.

Table 4-1 Information Sources for Environmentally Constrained Areas

Category	Source	Source Location
Wetlands	NJDEP	www.state.nj.us/dep/gis
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs
Stream Corridors	NJDEP	www.state.nj.us/dep/gis
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis
Zoning	Pennsville Township	Current Master Plan

4.1 Existing Sewer Service Area- Analysis

The present annual wastewater flow from 2008 is 1.366 mgd. The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial flows were projected assuming 0.1 GPD/sq.ft. of building area with Industrial flows being based on 25 gals/person/8hr Shift. Table 4.1.1 summarizes the zoning build-out flow projections for the existing sewer service area.

TABLE 4.1.1: Existing Sewer Service Area Build-Out Projections

ZONE	TOTAL AREA (ACRES) <i>NOTE (A)</i>	POTENTIAL UNITS <i>NOTE (B)</i>	AVERAGE DAILY FLOW (GPD) <i>NOTE (C)</i>	TOTAL ADF (GPD) <i>NOTE (D)</i>
R-1	854.8 Acres	106	300 gpd Note E*	31,800 gpd
R-2	2,521 Acres	22	300 gpd Note E*	6,600 gpd
R-3	1,854.5 Acres	19	300 gpd Note E*	5,700 gpd
Commercial	2,200 Acres	4	825 gpd Note F*	3,300 gpd
Industrial	2,519.8 Acres	3	1,250 gpd Note G*	3,750 gpd
CONS	5,966 Acres	0	300 gpd	0 gpd
			TOTAL	51,150 gpd (0.051 mgd)

Notes:

- (A) The TOTAL AREA represents the overall acreage per zone of the entire Township in accordance with the current Pennsville Township Master Plan.
- (B) The POTENTIAL UNITS represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (C) Average Daily Flow has been calculated based on current NJDEP regulations.
- (D) The TOTAL ADF represents the remaining potential build-out within the existing sewer service area.
- (E) Residential Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings
- (F) Commercial Average Daily Flow of 825 gpd was based on 0.1 gal/SF established for 8,250 SF Offices and Retail Stores
- (G) Industrial Average Daily Flow of 1,250 gpd was based on 25 gals/person/8hr. Shift.

As indicated in Section 1 above, there is a small portion of Carneys Point which is served by the Pennsville WWTP. The future wastewater flows projected from the section of Carney's Point that are to be conveyed for residential, commercial and industrial development to the PSA WWTP were calculated based on the current zoning ordinances for the municipality within areas designated as developable lands. The total developable area within each district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Commercial flows were projected assuming 0.1 GPD / sqft of building area. A reduction of available lot area has been indicated to account for Right-of-Way requirements of potential development. Table 4.1.2 summarizes the zoning build-out flow projections by

municipality for the future sewer service area. There is one parcel with approximately developable 3.5 acres within Carney's Point, which may potentially be developed and conveyed to the PSA. It is zoned for general commercial and may result in 10 units based on the 15,000sf lot area for that zone.

TABLE 4.1.2: Existing Carneys Point Section Build-Out Projections

ZONE	TOTAL PROPOSED DEVELOPABLE (ACRES)	LOT AREAS	POTENTIAL UNITS	AVERAGE DAILYFLOW (GPD) NOTE (A)	TOTAL ADF (GPD)
Commercial	3.5 Acres	15,000 S.F	10	450 gpd	4,500 gpd

NOTE(s):

(A) Commercial Average Daily Flow of 450 gpd was based on 0.1 gal/SF established for 4,500 SF Offices and Retail Stores (30% of 15,000 SF).

4.2 Future Sewer Service Area- Analysis

The future wastewater flows projected to be conveyed for residential, commercial and industrial development to the PSA WWTP were calculated based on the current zoning ordinances for the municipality within areas designated as developable lands, which resulted from the environmental constraints analysis. Residential, commercial and industrial flow projections were calculated using the developable land area zoned for each use. The total developable area within each district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial flows were projected assuming 0.1 GPD / sqft of building area with an average daily flow of 25 gals/person/8hr Shift being applied to Industrial flows, based on 50 employees per facility. A reduction of available lot area has been indicated to account for Right-of-Way requirements of potential development. Table 4.2.1 summarizes the zoning build-out flow projections by municipality for the future sewer service area.

TABLE 4.2.1: Future Sewer Service Area Build-Out Projections

ZONE	TOTAL AREA (ACRES) NOTE (A)	TOTAL PROPOSED DEVELOPABLE (ACRES) NOTE (B,L)	LOT AREAS NOTE (C)	POTENTIAL UNITS NOTE (D)	AVERAGE DAILYFLOW (GPD) NOTE (E)	TOTAL ADF (GPD) NOTE (F)
R-1	854.8 Acres	0 Acres	10,000 SF	0	300 gpd Note G*	0 gpd
R-2	2,521 Acres	0 Acres	15,000 SF	0	300 gpd Note G*	0 gpd
R-3	1,854.5 Acres	89.38 Acres	40,000 SF	97	300 gpd Note G*	29,100 gpd
C	2,159.6 Acres	131.89 Acres	25,000 SF	229	825 gpd Note H*	188,925 gpd
CBD	40.4 Acres	0 Acres	4,000 SF	0	300 gpd	0 gpd
LI	788.3 Acres	22.77 Acres	2 Acres	11	1,250 gpd Note I*	13,750 gpd
HI	420.3 Acres	0 Acres	2 Acres	0	1,250 gpd Note I*	0 gpd
C/O	1,311.2 Acres	0 Acres	2 Acres	0	2,614 gpd Note J*	0 gpd
CONS	5,966 Acres	0 Acres	10 Acres	0	300 gpd Note K*	0 gpd
					TOTAL	234,775 gpd (0.232 mgd)

The notes referenced below are indicated in the above table.

Notes:

- (A.) The TOTAL AREA represents the overall acreage per zone of the entire Township in accordance with the current Pennsville Township Master Plan.
- (B.) The TOTAL DEVELOPABLE AREA represents the overall acreage per zone being proposed for the expanded Pennsville Township sewer service area.
- (C.) The LOT AREA represents current requirement for development within each zone.
- (D.) The POTENTIAL UNITS represent the number of potential units that could be built within each zone within the future sewer service area. (Units were rounded to next whole number)
- (E.) Average Daily Flow has been calculated based on current NJDEP regulations.
- (F.) The TOTAL ADF represents the potential build-out within the proposed sewer service area.
- (G.) Residential Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings.
- (H.) Commercial Average Daily Flow of 825 gpd was based on 0.1 gal/SF established for 8,250 SF Offices and Retail Stores (33% of 25,000 SF).

- (I.) Light/Heavy Industrial Average Daily Flow based on 25 gals/person/8hr. Shift
- (J.) C/O Average Daily Flow of 2,614 gpd was based on 0.1 gal/SF established for 26,136 SF Offices and Retail Stores (30% coverage on 2 acres).
- (K.) Conservation District Average Daily Flow Based on 300 GPD as maximum allowable building size is 1,800 SF.
- (L.) A reduction of developable lot area has been included within the calculations to account for Right-of-Way requirements of potential development.
- (M.) Carney's Point Zoning District Average Daily Flow Based on 300 GPD.

5. RIPARIAN CORRIDOR ANALYSIS

The objective of the stream corridor analysis is to ensure that there is no loss of value due to potential short-term or long-term disturbance as well as maintain compliance with the Flood Hazard Act. Within this plan, the stream network coverage listed in Table 4.1 was used to create areas that are considered undevelopable. There are no FW I-Trout Production or FW 2- Trout Production designated waters within the proposed Sewer Service Area. Map #5 shows the results of this analysis and identifies those areas that are undevelopable.

"Pursuant to N.J.A.C. 7:15, Riparian zones are: 300 feet from top of bank (or centerline of a first order stream where no bank is apparent) for waters designated as Category One and all upstream tributaries within the same HUC 14; 150 feet for waters designated Trout Production and all upstream waters; 150 feet for water designated Trout Maintenance and all upstream waters within one linear mile as measured along the length of the regulated water; 150 feet for any segments of water flowing through an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one linear mile as measured along the length of the surface water body; 150 feet for waters that run through acid-producing soils, and; 50 feet for all waters not designated as C1, trout waters, critically water dependent Threatened and/or Endangered Species Habitat, or associated with acid soils.

Surface waters that are designated Category One are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B. The Department's "Surface Water Quality Standards" GIS data layer was utilized to determine these waters. The applicable 300 foot buffer has been applied to these waterways and removed from the proposed sewer service areas on the mapping. Lesser width buffers have not been graphically removed from the sewer service area but are not proposed for sewer service. Jurisdictional determinations by the Department will be utilized to determine the extent of the sewer service area on individual lots.

Further compliance with the riparian zone standard will be demonstrated by the adoption of Pennsville Township's Riparian Corridor Ordinance. This Ordinance has been updated to be in compliance with the Flood Hazard Control Act Rules (N.J.A.C. 7:13) and Water Quality Management Rules (N.J.A.C. 7:15), and has been reviewed by the Pennsville Township Committee and Pennsville Planning Board. The Pennsville Township Committee adopted this ordinance on May 20, 2010. A copy of Ordinance A-13-2010 has been forwarded to the Department.

6. ENDANGERED AND THREATENED SPECIES ANALYSIS

The protection of Threatened and Endangered Species and their habitat is important to the ecology of Salem County. The intent is to minimize impacts to threatened and endangered species and their habitat. Accordingly, areas that are identified as Landscape Project Area, Rank 3, 4, or 5 in NJDEP, Division of Fish Wildlife, Natural Heritage Priority Sites, Endangered Non-Game Species Program (ENSP), are considered undevelopable lands under this plan. Map # 5 shows the results of this analysis for the proposed Sewer Service Area and identifies those areas that are undevelopable.

7. ALTERNATIVES ANALYSIS

The PSA-WWTP has modified its process to reverse the treatment sequence of the trickling filters and RBC's for improved wastewater treatment efficiency as discussed in Section I of this report. The PSA is currently planning the design of a new primary clarifier and grit removal system located at the wastewater treatment plant (WWTP) within Pennsville Township in an effort to improve operational flexibility.

The proposed Sewer Service Area identified on Map #3 has been defined not to exceed the current permitted treatment plant capacity of 1.875 mgd. This approach is being pursued in an effort to expedite the approval process and eliminate the need for upgrades to the WWTP at this time. In an effort to accommodate additional wastewater flows generated by further expansion of the SSA, the Authority will consider re-rating the WWTP at a future date rather than including the re-rating process as part of this application. Any expansions or re-rating of the PSA WWTP will require further WMP amendments and anti-degradation analysis.

When flows conveyed to the WWTP approach the current permit capacity of 1.875 MGD, upgrades to the plant will be made as needed with the first phase being a re-rating of the WWTP. Such a re-rating would require an additional amendment to the WMP and would include an anti-degradation analysis.

V. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section IV, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The PSA WMP provides the most current planning efforts within the Sewer Service Area. A table summarizing the principally permitted uses, conditionally permitted uses and minimum lot size permissible in each zone has been included below.

Summary Table of Permitted Uses

ZONE	LOT AREA	PRINCIPALLY PERMITTED USES	CONDITIONALLY PERMITTED USES
R-1 R-2 R-3	10,000 SF 15,000 SF 40,000 SF	Single Family Dwellings Municipal Use Private/ Public Education Facility Non-Profit Library	Home Occupation Plant Nursery (accessory structure) Farm Stand
C	25,000 SF	Retail Stores, Personal Service Shops (tailor, barber etc...) Professional Business Office, Lodge, Tavern, Theater Restaurant, Bank, Mortuary, Marina, Nursery, Floral shop Service, Repair, Supply shop	Repair garage/ service station Dry Cleaning, Laundry pickup, Hotel / Motel Bakery, Shopping center with individual entrances, Apartments that occupy portion of commercial building Telecommunications / wireless facilities
CBD	4,000 SF	Business facilities devoted to retail sales of goods and personal services, including restaurants Banks and other financial institutions Professional Business, administrative, social, consulting and health services only on second or third floor.	Outdoor dining areas as accessory to permitting food establishment
LI	2 Acres	Retail Stores, Warehouse or yard for storage Copy or Business Service Center, Office Complexes Personal service businesses such as beauty salon, shoe repair, dry cleaners, insurance	Plant Nursery Farm Stand Parking Facilities
HI	2 Acres	Any use permitted in LI zone Manufacture of non-toxic durable products or materials	Parking Facilities
C/O	2 Acres	Offices for administrative, executive, professional, business sales and similar uses Retail sales and service including newspapers, novelties, clothing, spirits, general merchandise and repair Personal service businesses such as beauty salon, shoe repair, dry cleaners, insurance	
CONS	10 Acres	Outdoor recreation facilities, Maintenance of Waterways, Emergency Activities, Gardening, farming, grazing Conservation efforts in accordance with NJSSCC, USDI, NJDEP, Fish and Wildlife Service	Farm Stand Parking Facilities

The PSA WMP proposed Sewer Service Area encompasses the future sewer service area necessary to implement a portion of the goals and objectives of the Pennsville Township's Master Plan. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors. Development intensity was been addressed within the Township Master Plan and Land Development Ordinance adopted August 24, 2005. The Storm Water Management Plan has been adopted by Pennsville Township. The final resolution establishing minimum storm water management requirements with Ordinance # A-32-2006 was submitted to Salem County on December 19, 2006.

The proposed PSA sewer service area delineation does not conflict with Coastal Zone Management rules, including the Wetland rule, N.J.A.C. 7:7E-3.27; Wetland Buffers rule, N.J.A.C. 7:7E-3.28; General Land Area rules, N.J.A.C. 7:7E-5, 5A and 5B; Secondary Impacts rule, N.J.A.C. 7:7E6.3; Public Facility Use rule, N.J.A.C. 7:7E-7.6; Water Quality rule, N.J.A.C. 7:7E-8.4; and Groundwater Use rule, N.J.A.C. 7:7E-8.6.

The proposed PSA WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map 3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

VI. INTRODUCTION – MAPPING REQUIREMENTS

The mapping for this WMP was created by using available data from NJDEP, online GIS data sets. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. . Additional 11" x 17" maps have been provided within each report for convenience. Mapping, as summarized below, are provided as per the NJDEP WMP guidelines:

1. MAP #1: WMP PLANNING AREA

The map depicts the current Pennsville WMP planning area, which includes all of Pennsville Township with the addition of the NJDOT facility on the Border of Carney's Point and excluding the Dupont facility, which is included within the Carney's Point WMP. The map also includes municipal boundaries, major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), CAFRA regulated areas municipal wells and the water service area boundary for Pennsville Township. There are no areas within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas within the Township of Pennsville. The Pennsville Sewerage Authority regulates all public sewer within the WMP planning area.

2. MAP #2: EXISTING FACILITIES & SERVICE AREAS

This map depicts the existing wastewater service areas as well as the present extent of the actual sewer infrastructure, including sewage pumping stations, major interceptors and trunk lines, and the PSA-WWTP. In addition, existing NJPDES regulated facilities, with permit number, and their discharge locations are included. All areas outside the existing sewer service area are areas served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd. Also identified within this map is the Dupont Chambers Works sewer service area including the Deepwater Generating Plant.

3. MAP #3: PROPOSED FACILITIES & SERVICE AREAS

This map illustrates the wastewater service areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. All existing infrastructure and facilities will remain as shown on Map 2. No new NJPDES regulated facilities are proposed in the WMP Sewer Service Area. The Gaines/Siegfried Chemical Plant proposes to increase its TWA regulated discharge limits to the PSA-WWTP, but the regulated NJPDES area will remain unchanged. The existing NJPDES regulated facilities are shown on this map.

4. MAP #4: PENNSVILLE TOWNSHIP ZONING MAP

The map depicts the current zoning of the Township of Pennsville. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in the table below were utilized to determine calculated flows within the future sewer service area.

ZONING REGULATIONS							
ZONE	LOT AREA	LOT FRONTAGE	FRONT YARD	SIDE YARD	REAR YARD	MAX. BUILDING AREA	BUILDING HEIGHT
R-1	10,000 SF	100 ft.	35 Ft.	15 Ft.	20 Ft.	28%	45 Ft.
R-2	15,000 SF	100 ft.	35 Ft.	15 Ft.	20 Ft.	28%	45 Ft.
R-2	40,000 SF	200 ft.	50 Ft.	30 Ft.	50 Ft.	28%	45 Ft.
COM	25,000 SF	100 ft.	25 Ft.	6 Ft.	20 Ft.	*	45 Ft.
CB	4,000 SF	30 ft.	25 Ft.	6 Ft.	20 Ft.	43%	45 Ft.
LI	2 Acres	200 ft.	50 Ft.	10 Ft.	10 Ft.	30%	50 Ft.
HI	2 Acres	200 ft.	50 Ft.	10 Ft.	10 Ft.	30%	50 Ft.
C/O	2 Acres	200 ft.	50 Ft.	10 Ft.	10 Ft.	30%	50 Ft.
CONS	10 Acres	200 ft.	50 Ft.	30 Ft.	50 Ft.	*	45 Ft.

** As shall be determined as suitable and proper for the particular lot and use intended by the Board upon site plan application.*

5. MAP #5A: ENVIRONMENTAL FEATURES

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). The Pennsville WMP proposed Sewer Service Area does not contain any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP #5B: ENVIRONMENTAL FEATURES

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 14 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. The Pennsville WMP proposed sewer service area does not contain any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP #5C: ENVIRONMENTAL FEATURES

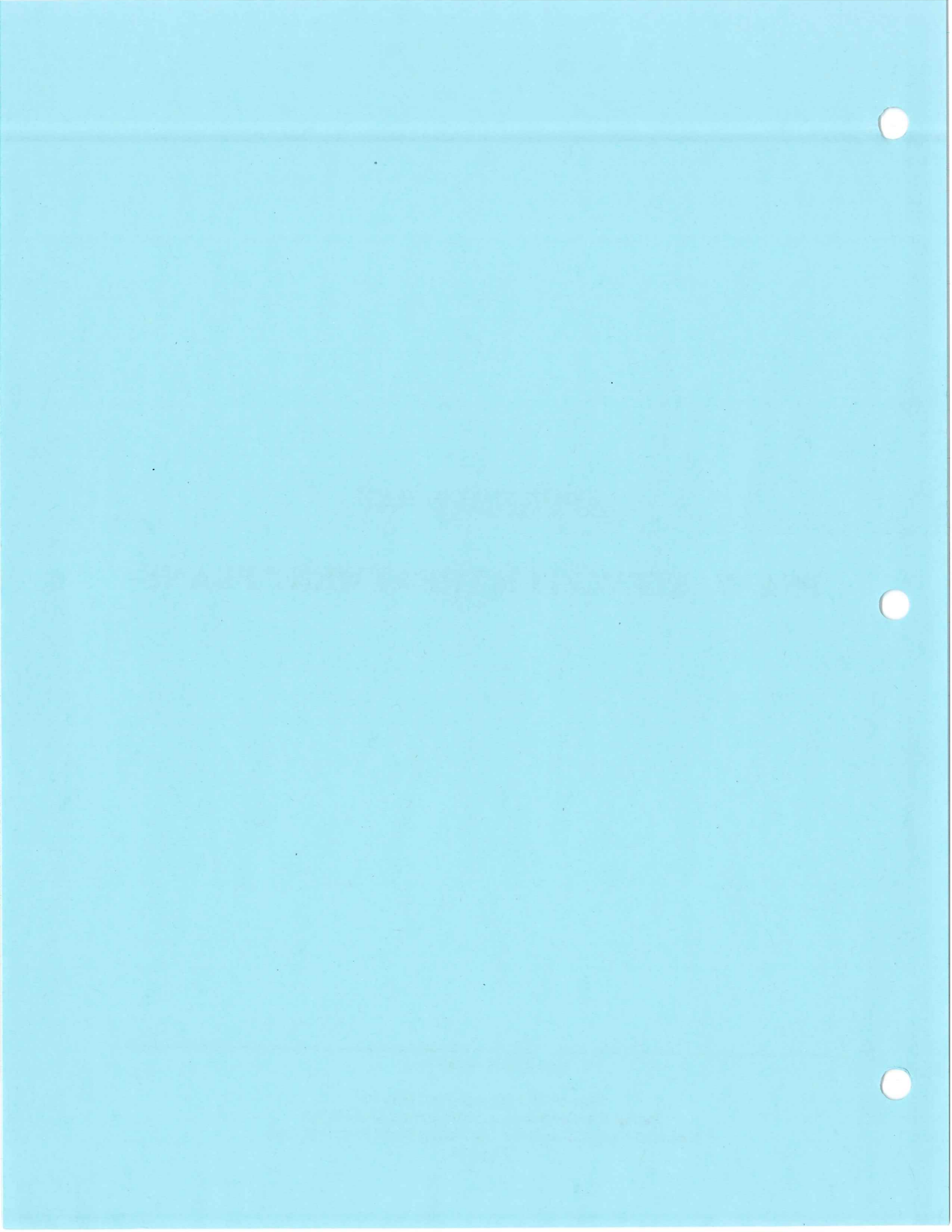
The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority site for threatened and endangered species, the pigs eye NHPS. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. The Pennsville WMP proposed sewer service area does not contain any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are located within the southern portion of the Township.

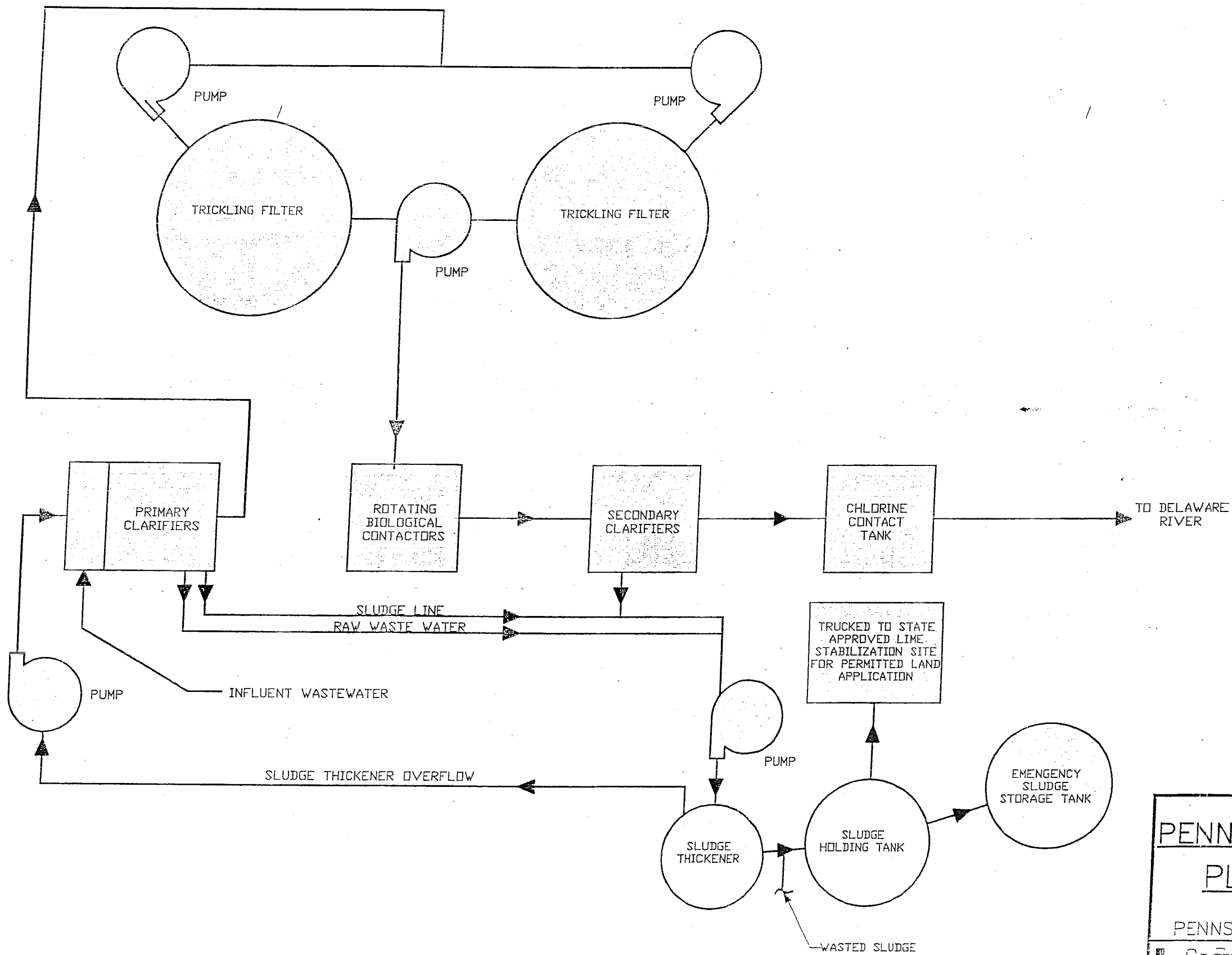
APPENDIX "A"

PSA WASTEWATER TREATMENT PLANT

Sickels & Associates, Inc.

***Wastewater Management Plan for
Pennsville Township, Salem County, New Jersey
Lower Delaware Water Quality Management Planning Area
Page-26***





PENNSVILLE SEWER AUTHORITY
PLANT FLOW DIAGRAM
 PENNSVILLE TOWNSHIP, SALEM COUNTY, N.J.

SICKELS & ASSOCIATES INC.
 SHERWOOD MEWS
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Chapter IX.10

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

PILESGROVE TOWNSHIP CHAPTER

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SEE APPENDIX “B” OF WMP REPORT FOR:
PILESGROVE WMP, DATED NOVEMBER 9, 2010
PREPARED BY Alaimo Association of Engineers

Sickels & Associates, Inc.

*Wastewater Management Plan for
Salem County, New Jersey
Pilesgrove Township Chapter*

I. INTRODUCTION

This chapter represents the Pilesgrove Township portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

Pilesgrove Township has prepared a SSA for inclusion within the Salem County Wastewater Management Plan. This Pilesgrove SSA report was prepared by Richard A. Alaimo Association of Engineers dated November 9, 2010. A copy of Pilesgrove WMP has been included at the end of this municipal chapter. However, certain modifications of the proposed future sewer service area are contained in the mapping prepared by the County, subsequent to the preparation of the Township plan.

The Township of Pilesgrove is located in the Delaware River Drainage Basin and lies within the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service area (FWSA) for Pilesgrove Township is identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

Pilesgrove Township does not currently have an adopted WMP in effect. The enclosed plan reflects current zoning and includes the default wastewater management alternative to support development in areas that are not designated as sewer service area, which is a discharge to groundwater of less than 2,000 gallons per day. The Pilesgrove Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

Pilesgrove Township does not own or operate any wastewater treatment or conveyance systems. The Woodstown Sewerage Authority serves a portion of Pilesgrove Township. The extent of this service area is further defined within the Woodstown municipal chapter and the attached Pilesgrove WMP prepared by Alaimo Engineers. Map No.2 depicts the areas actively served by existing wastewater facilities. These facilities consist of on-site treatment works that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Tables located in Chapter 7 (VII) provide detailed information on each facility. "Actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected

Pilesgrove Township does not own or operate any public potable water supply wells, water treatment plants or distribution mains. Map No.1 generally depicts the areas actively served by existing public water supply facilities. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

Pilesgrove Township does contain a few on-site non-industrial facilities serving single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. In addition, some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial and industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands –Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above and within the report prepared by Richard A. Alaimo Association of Engineers, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

Pilesgrove Township prepared their own WMP for inclusion within the Salem County Wastewater Management Plan. The methods used to delineate future sewer service areas have been defined within the Pilesgrove WMP prepared by Richard A. Alaimo Association of Engineers dated November 9, 2010. A copy of Pilesgrove WMP has been included within Appendix "B" of the WMP document.

V. FUTURE WASTEWATER DEMAND AND FACILITIES

This section is intended to describe the build out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP.

Pilesgrove Township is proposing changes to their current sewer service area as defined within the attached November 9, 2010 document. The proposed changes and associated wastewater build-out projections have been provided within section 2.4 of the attached Pilesgrove WMP document.

Generally, the default wastewater management alternative to support development in areas that are not designated as sewer service area is discharge to groundwater less than 2,000 gallons per day. A nitrate dilution analysis for septic systems is typically performed, in similar fashion to that conducted for sewer service areas, except that environmentally sensitive areas are not removed prior to performing the build out analysis. The intent of this analysis is to assess the available dilution on a HUC 11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the regulatory nitrate target.

The nitrate dilution analysis for septic systems was performed independently by Alaimo Engineers on behalf of Pilesgrove Township. The methodology utilized to develop the net nitrate dilution and associated build-out capacity of each zone is further defined within section 4 of the November 2010 report.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

In areas outside of sewer service areas, the default wastewater management alternative is discharge to groundwater less than 2,000 gallons per day, commonly referred to as septic systems. The assessment of water quality impacts from development on septic systems relies on nitrate concentration. In this analysis, Nitrate acts as a conservative surrogate for any of a number of constituents that could be discharged from a septic system (e.g. cleaners, solvents, pharmaceuticals, etc.). Nitrate was chosen because it is highly soluble in water, and because it is a stable compound that by itself could render water unsuitable for human consumption. The capacity to support septic systems without violating groundwater quality standards is determined by the amount of dilution available. The Water Quality Management Planning Rules advocate a watershed approach to assessing the adequacy of available dilution to meet future development on septic systems. Using this approach, available dilution, (essentially groundwater recharge), is calculated within a HUC 11 watershed and translated into a finite amount of wastewater that can be discharged, which in turn can be translated into a finite number of housing units that can be supported while maintaining a target concentration of nitrate in groundwater. Zoning is then applied to the available land in that same watershed, outside of any sewer service area, to calculate the number of units that could be developed on septic systems.

The results of these two analyses are then compared and if the number of units based on zoning does not exceed the maximum units that can be supported, adequate capacity has been demonstrated. If the number of units allowed by zoning exceeds that which can be supported in a particular watershed, then some adjustment to zoning within that watershed may be required.

Pilesgrove evaluated the capacity for the sewer service areas and non-sewer service areas. The associated analysis has been provided within the November 10, 2010 document prepared by Alaimo Engineers. This document has been included within Appendix "B".

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water demand within the existing sewer service area were compared. A build-out projection of the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were also compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development. The specific details related to this analysis are further defined in section 4.3 of the attached Pilesgrove WMP.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Pilesgrove WMP provides the most current planning efforts within the Sewer Service Area.

The Pilesgrove WMP proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Pilesgrove Township WMP Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map 3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. Map No.2: Existing Facilities & Service Areas

This map depicts the existing wastewater service area. This map also identifies the present extent of the actual sewer infrastructure within the municipal boundary of Pilesgrove Township, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. Map No.3: Proposed Facilities & Service Areas

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. Map No.4: Pilesgrove Township Zoning Map

The map depicts the current zoning of Pilesgrove Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations

Zone	Zone Title	Minimum Lot Area	Minimum Lot Frontage	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Minimum Open Space	Maximum Building Coverage	Maximum Lot Coverage	
AH-1	AFFORDABLE HOUSING	5 ACRES	300'						25%		30%	
AR-1	AGRICULTURAL RETENTION (ADA)	DETACHED DWELLINGS	2.0 ACRES	200'	200'	300'	75'	40'	75'		4%	5%
		DETACHED DWELLING (MAJOR SUBDIVISION)	3.0 ACRES	250'	250'	350'	100'	50'	75'		4%	5%
		COMMERCIAL STABLES, RIDING ACADEMIES, CHURCHES	4.0 ACRES	300'	300'	300'	75'	75'	100'		10%	15%
AR-2	AGRICULTURAL RETENTION	DETACHED DWELLINGS	2.0 ACRES	200'	200'	300'	75'	40'	75'		4%	5%
		DETACHED DWELLING (MAJOR SUBDIVISION)	3.0 ACRES	250'	250'	350'	100'	50'	75'		4%	5%
		COMMERCIAL STABLES, RIDING ACADEMIES, CHURCHES	4.0 ACRES	300'	300'	300'	75'	75'	100'		10%	15%
HC-1	HIGHWAY COMMERCIAL	RETAIL	1 ACRE	150'	150'	150'	75'	25'	50'			55%
		SHOPPING CENTERS	10 ACRES	500'	500'	500'	100'	100'	100'			55%
		HOTELS & MOTELS	4 ACRES	300'	300'	300'	75'	75'	100'			55%
HC-2	HIGHWAY COMMERCIAL	RETAIL	1 ACRE	150'	150'	150'	75'	25'	50'			55%
		SHOPPING CENTERS	10 ACRES	500'	500'	500'	100'	100'	100'			55%
		HOTELS & MOTELS	4 ACRES	300'	300'	300'	75'	75'	100'			55%
HC-3	HIGHWAY COMMERCIAL	RETAIL	1 ACRE	150'	150'	150'	75'	25'	50'			55%
		SHOPPING CENTERS	10 ACRES	500'	500'	500'	100'	100'	100'			55%
		HOTELS & MOTELS	4 ACRES	300'	300'	300'	75'	75'	100'			55%
JCOAH	JUDICIALLY ORDERED COAH	24,000 SF	125'	125'	100'	40'	10'	30'			20%	
NC	NEIGHBORHOOD COMMERCIAL	1 ACRE	150'	150'	175'	60'	25'	50'			55%	
PLI	PLANNED LIGHT INDUSTRIAL	1							10%		50%	
		2							25%		55%	
		3								40%		60%
		4								50%		65%
PPE	PUBLIC PARKS, EDUCATION	5 ACRES		400'	400'	50'	25'	50'		35%	60%	
PRD-1	PLANNED RESIDENTIAL - SAME AS											
RR	RESTRICTED RESIDENTIAL	DETACHED DWELLING	2.0 ACRES	200'	200'	300'	75'	40'	75'		4%	5%
		DETACHED DWELLING (MAJOR SUBDIVISION)	3.0 ACRES	250'	250'	350'	100'	50'	75'		4%	5%
		CHURCHES	4.0 ACRES	300'	300'	300'	75'	75'	100'		10%	15%
SR	SINGLE FAMILY RESIDENTIAL	DETACHED DWELLING	1.0 ACRE	150'	150'	200'	50'	30'	50'		8%	12%
		CLUSTER	0.75 ACRES	125'	125'	175'						
		CHURCHES	4.0 ACRES	300'	300'	300'	75'	75'	100'		10%	15%
SR-5	SINGLE FAMILY RESIDENTIAL	DETACHED DWELLING	8,000 SF	70'	70'	100'	35'	15'	25'		20%	30%
		CHURCHES	25,000 SF	150'	150'	150'	50'	25'	35'		10%	15%
		DETACHED SINGLE-FAMILY DWELLING	0.5 ACRES	100'	100'	150'	30'	20'	35'		15%	25%
VN	VILLAGE NEIGHBORHOOD	PROFESSIONAL & RETAIL USE	1 ACRE	150'	150'	150'	40'	25'	50'		20%	60%
		CHURCHES	2 ACRES	200'	200'	300'	50'	40'	50'		10%	20%
		CONSERVATION	5 ACRES									

5. Map No.5A: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. Map No.5B: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 14 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. Map No.5C: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 14 watershed.

Chapter IX.11

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

PITTSBORO TOWNSHIP CHAPTER

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Salem County, New Jersey
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I. INTRODUCTION

This chapter represents the Pittsgrove Township portion of the Salem County WMP. The Salem County WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (N.J.A.C 7:15).

Pittsgrove Township is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service areas (FWSA) for the Township are identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

The Township of Pittsgrove is a rural, agriculturally based municipality, bounded by two (2) municipalities within Salem County including Upper Pittsgrove Township and Elmer Township (both to the north-west). Two (2) other counties bound the Township as well, including Gloucester County (to the northeast) and Cumberland County (to the east and south). Pittsgrove encompasses a total area of 29,273 acres (45.7 square miles) including approximately 518.7 acres of which is surface water (ponds, lakes, reservoirs) and 87.4 miles of streams (shown on map No.1) flowing in the municipality. This municipality has been developed mostly agriculturally and for rural residential use. Commercial development is concentrated along the highways US Route 40 and NJ State Route 56 as well. Pittsgrove Township has a population density of approximately 205.5 people/sq mi according to (2010) U.S. Census data.

Pittsgrove Township has a population of 9,393 persons. The municipality’s population trend over the past decade can be seen as a 0.56% average increase in population each year (5.6% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for Pittsgrove Township. In terms of population change over the next three decades, Pittsgrove is expected to continue growing steadily according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	6,954		
1990	8,121	1,167	1.68%
2000	8,893	772	0.95%
2010*	9,393	500	0.56%

~Source: 1990 U.S. Census, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010	9,393		
2020	10,307	914	0.97%
2030	11,145	838	0.83%
2040	12,018	873	0.83%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

Pittsgrove Township has not submitted any Water Quality Management Plans (WQMP's) / Amendments to date. A small sewer service area (the B&B Poultry Co. site) within Pittsgrove Township was recognized in Vineland City's 1995 revision to the Tri-County WQMP as having a service connection to the Landis Sewerage Authority Sewage Treatment Plant in Cumberland County. The Township has not currently identified any need that necessitates an amendment at this time.

Pittsgrove Township does not currently have an adopted WMP in effect. The enclosed plan reflects current zoning and includes the default wastewater management alternative to support development in areas that are not designated as sewer service area, which is a discharge to groundwater of less than 2,000 gallons per day. The Pittsgrove Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

Pittsgrove Township is not currently served by a public sanitary sewer system, nor does it contain any infrastructure for wastewater service.

C. CURRENT WATER SERVICES

Pittsgrove Township does not own or operate a community public water supply system. However, the municipality does contain six small (fewer than 1,000 people) privately owned community water supply systems. These systems are the Harding Woods Mobile Home Park, Picnic Grove Mobile Homes park, Village I mobile home park, Rainbow Nursing Homes, and the two serving Holly Tree Acres Mobile Home Park. Together, these systems serve approximately 1,852 persons within Pittsgrove Township (according to NJDEP data). The remaining portion of the municipality is served by individual private water wells.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, state, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process.

E. OVERVIEW OF WATER RESOURCE MANAGEMENT ISSUES

Pittsgrove Township's existing sewer service area is completely served by individual water wells. The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

Pittsgrove Township does not own or operate any wastewater facilities or associated infrastructure. The Township has identified a future wastewater service area (FWSA) for inclusion within the Salem County Wastewater Management Plan (WMP). The area identified is in need of redevelopment and includes an Atlantic City Electric property. Areas not designated as a sewer service area will continue to be serviced by Individual subsurface sewage disposal systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the areas planned to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System (NJPDES) permit. Future expansion of a treatment works facility is not required to meet the future wastewater generation needs of the municipality. The identified Atlantic City Electric area will be proposing an onsite sewerage treatment plant to meet the needs of the facility.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included within the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Pittsgrove Township does not own or operate any wastewater treatment or conveyance systems. Map No.2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term "actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

This Section is not applicable as Pittsgrove Township does not own or operate a sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations for public wastewater treatment facilities.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.C.1: Non-Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
30	Harding Woods Inc	NJ0099678	GWIND	30
31	Arthur Shalick High School	NJ0090221	GWIND	31
32	Daytop of NJ	NJ0157716	GWIND	32
33	Picnic Grove Mobile Homes	NJG0066214	T1	33
34	The Villages I	NJG0084883	T1	34
35	Holly Tree Acres Trailer Home	NJG0108405	T1	35
36	Centerton Country Club	NJG0129577	T1	36
37	Parvin State Park	NJG0133167	T1	37
38	Rainbow Center	NJG0158496	T1	38

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. Table 2.D.1 lists all existing industrial treatment works that discharge 2,000 gallons per day or more of process and wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.D.1: Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
39 (*)	B&B Poultry Co., Inc.	NJ0061841	D-STP	39
39A (**)	N/A	Pepco Site (Future Facility)	D-STP	39A

(*): This is an SIU Permit that conveys industrial wastewater to the LSA (NJ0025364)

(**): This is a future site located in Pittsgrove Township being proposed by Atlantic City Electric

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally, remaining areas of a municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING AREAS SERVED BY PUBLIC WATER SUPPLY FACILITIES

Pittsgrove Township does not own or operate any public potable water supply wells or distribution mains. Map No.1 generally depicts the areas actively served by existing public water supply facilities.

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules at NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

Pittsgrove Township has not identified a delineated SSA at this time. Consequently, there are no exceptions necessary for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	12/1/10

V. FUTURE WASTEWATER DEMAND AND FACILITIES

This chapter describes the build out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP.

Pittsgrove Township is not currently served by public sewers. The Township has identified a future wastewater service area (FWSA) for inclusion within the Salem County Wastewater Management Plan (WMP). The area identified includes specific sites intended to be utilized by Atlantic City Electric. Wastewater treatment facilities are currently not available to support the proposed development for the site. However, Atlantic City Electric will be proposing an onsite sewerage treatment plant to meet the needs of the facility. Wastewater flow projections have been included within this municipal chapter to reflect the anticipated build out of the proposed development.

Zoning, as described below has been utilized to assess the potential build out and available dilution for each HUC-11 area. A build out analysis for the non sewer service area was prepared for Pittsgrove Township by Clarke Caton Hinz in August 2009. The build out in the non-sewer service area was calculated by applying the zoning, as defined within the August 2009 report, over all undeveloped land. The number of residential units and non-residential floor area were then multiplied by the wastewater planning flow estimates in either N.J.A.C. 7:14A or 7:9A as appropriate. The results of the analysis are presented within Appendix “A”. The methodology of preparing the build-out analysis is further defined within the Clarke Caton Hinz report, which has been provided within Appendix “C”.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. A composite zoning map has not been developed as municipal zoning ordinances are not uniform in their nomenclature or definitions. Table 5.B.1 below identifies the zoning specific to this chapter and was utilized for the associated non-sewer service area build-out analyses. The HUC-11 areas referenced were obtained from the data presented within the report prepared by Clarke Caton Hinz

Zone	Zone Description	HUC-11 Area (ac)
A	AGRICULTURAL	5,206.9
B-1	NEIGHBORHOOD BUSINESS	321.7
B-40	HIGHWAY BUSINESS RT. 40	144.1
B-56	HIGHWAY BUSINESS RT. 56	161.1
C	CONSERVATION	6,261.5
MC-1	INDUSTRIAL/ COMMERCIAL	412.6
P	PUBLIC	1,423.9
PHB	PLANNED HIGHWAY BUSINESS	282.7
R-1	RESIDENTIAL (SINGLE-FAMILY DETACHED, CLUSTERING PERMITTED)	2,651.3
R-2	RESIDENTIAL (SINGLE-FAMILY ATTACHED, MULTIPLEX CLUSTERING)	1,383.8
R-3	RESIDENTIAL (30,000 S.F.)	296.6
R-4	RESIDENTIAL (0.5 AC.)	4,530.5
RR	RURAL RESIDENTIAL	9,979.1

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Pittsgrove Township does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities. In addition, Pittsgrove Township does not own or operate any public community water supply facilities, wells, or distribution mains. However, the Township has identified a future wastewater sewer service area (FWSA) that reflects the area in need of redevelopment. The anticipated development by Atlantic City Electric is proposing to utilize individual water wells and onsite wastewater treatment to meet the needs of the facility.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

This Section is not applicable, as Pittsgrove Township is not designated as an Urban Municipality.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. However, the Township has only identified specific sites for use by Atlantic City Electric. As a result, the intended use of the proposed facility has been utilized to determine the demand projections. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

The Township of Pittsgrove has identified a future wastewater sewer service area (FWSA) necessary to include an area of redevelopment. In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries.

2. Sewer Service Area Build Out Analysis

The Township of Pittsgrove is not currently served by public sewers. However, a build out analysis has been prepared for the proposed redevelopment area. The build-out of the FWSA consisted of identifying the intended use of the proposed facility. This information was utilized to determine projected sanitary sewer flows for the office and warehouse facilities.

Future wastewater is calculated by multiplying the projected number of employees and square footage of warehouse space with the required gallons per day per person and the gallons per square foot of the identified facility.

Table 5.E.3.1 provides an analysis of the anticipated flow projected within the redevelopment area.

Table 5.E.3.1: FWSA Build-Out Projections			
Projection Parameter	Potential Units	Average Daily Flow (GPD) or (gal/sf)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>
Atlantic City Electric. Office Staffing (Full time)	50	25	1,250
Atlantic City Electric. Office Staffing (Full time)	150	15	2,250
Washdown Area	1	5,000	5,000
Atlantic City Electric. Warehouse	35,000	0.10	3,500
	Projected New Flow (gpd)		12,000
	Projected New Flow (mgd)		0.012

Notes:

- (a) Office Staff Average Daily Flow Based on 25 gals/person/8hr. Shift. Assumed 50 employees / facility.
- (b) Field Operations Staff Average Daily Flow Based on 15 gals/person/8hr. Shift. Assumed 150 employees / facility.
- (c) Washdown Bay flow was based upon the Applicant’s representation of the overall water use anticipated for the facility during the November 1, 2013 pre-application conference.
- (d) Warehouse Average Daily Flow Based on 0.1 gal/SF established for Offices and Industry

F. FUTURE WASTEWATER OUTSIDE OF SEWER SERVICE AREAS

Generally, the default wastewater management alternative to support development in areas that are not designated as sewer service area is discharge to groundwater less than 2,000 gallons per day. A nitrate dilution analysis for septic systems is typically performed, in similar fashion to that conducted for sewer service areas, except that environmentally sensitive areas are not removed prior to performing the build out analysis. The intent of this analysis is to assess the available dilution on a HUC 11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the regulatory nitrate target.

The nitrate dilution analysis for septic systems was performed independently by Clarke Caton Hinz on behalf of Pittsgrove Township. The methodology utilized to develop the net nitrite dilution and associated build-out capacity of each zone is further defined within the August 2009 report, located in Appendix “C”.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Pittsgrove Township does not own or operate a Wastewater Treatment Plant. The Township is not proposing future wastewater demand or public wastewater treatment facilities at this time. Consequently, wastewater treatment plant capacity and associated demand projections have not been included within this municipal chapter.

There are currently no areas served by public sewers within the Township of Pittsgrove. The Township has identified a future wastewater sewer service area (FWSA) that reflects the area in need of redevelopment. However, as identified above, treatment facilities are currently not available. Wastewater flow projections have been included to reflect build out for the Atlantic City Electric development within the FWSA.

B. ANTIDEGRADATION ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to Pittsgrove Township, as the Township is not proposing any new or expanded wastewater facilities.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

Pittsgrove Township is not currently served by a public potable water supply or distribution system. Development within this municipality is primarily supplied by individual water wells. Consequently, a comparison of water allocation was not performed.

The Township has identified a future wastewater service area (FWSA) for inclusion within the Salem County Wastewater Management Plan (WMP). The area identified includes specific sites intended to be utilized by Atlantic City Electric. Public water supply facilities are currently not available to support the proposed development

for the site. However, Atlantic City Electric will be proposing an individual water supply well to meet the needs of the facility. Potable water demand projections have been included within this municipal chapter to reflect the anticipated build out of the proposed development. Proposed daily demands required to support development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis.

1. Future Sewer Service Area: Water Build Out Analysis

The Township of Pittsgrove is not currently served by a public potable water system. However, a build out analysis has been prepared for the proposed redevelopment area. The build-out of the FWSA consisted of identifying the intended use of the proposed facility. This information was utilized to determine projected potable water demand for the office and warehouse facilities.

Future water demand is calculated by multiplying the projected number of employees and square footage of warehouse space with the required gallons per day per person and the gallons per square foot of the identified facility. Table 7.A.1 provides an analysis of the anticipated demand projected within the redevelopment area.

Projection Parameter	Potential Units	Average Daily Flow (GPD) or (gal/sf)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>
Atlantic City Electric. Office Staffing (Full time)	50	25	1,250
Atlantic City Electric. Field Operations	150	15	2,250
Equipment Washdown Bay	1	5,000	5,000
Atlantic City Electric. Warehouse	35,000	0.125	4,375
	Projected New Demand (gpd)		12,875
	Projected New Demand (mgd)		0.013

Notes:

- (a) Office Staff Average Daily Flow Based on 25 gals/person/8hr. Shift. Assumed 50 employees / facility.
- (b) Field Operations Staff Average Daily Flow Based on 15 gals/person/8hr. Shift. Assumed 150 employees / facility.
- (c) Washdown Bay demand was based upon the Applicant’s representation of the overall water use anticipated for the facility during the November 1, 2013 pre-application conference.
- (d) Warehouse Average Daily Flow Based on 0.125 gal/SF established for Offices and Industry

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Pittsgrove Township Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The Pittsgrove Township Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map 3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP No.2: EXISTING FACILITIES & SERVICE AREAS

This map depicts the existing wastewater service area. This map also identifies the present extent of the actual sewer infrastructure within the municipal boundary of Pittsgrove Township, including any sewer department buildings and existing NJPDES facility locations. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP No.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, and related infrastructure that may be proposed in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP No.4: PITTSGROVE TOWNSHIP ZONING MAP

The map depicts the current zoning of Pittsgrove Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP NO.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP NO.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.12

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

QUINTON TOWNSHIP CHAPTER

PREPARED BY:

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I. INTRODUCTION

This chapter represents the Quinton Township portion of the Salem County WMP. The Salem County WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (N.J.A.C 7:15).

Quinton Township is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service area (FWSA) for Quinton Township is identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

The Township of Quinton is bounded by Cumberland County (to the south-east), and four Salem County municipalities including Alloway Township (to the northeast), Lower Alloways Creek Township (to the south-west), Salem City (to the north-west), and Mannington Township (to the north). Quinton Township encompasses a total area of 15,524 acres (24.3 square miles), including approximately 175.7 acres of which is surface water (ponds, lakes, reservoirs) and 46.5 miles of streams (shown in Map No.1) flowing in the municipality. This municipality is largely undeveloped, containing mostly farms, forests and rural residential developments. However, the area of Quinton Village does contain a medium density of residences. Apart from the village, the Township is very rural it has the low population density of 84.5 people/sq mi according to (2009) U.S. Census data. The remaining land area for future development consists of a large number of underdeveloped and undeveloped parcels throughout the municipality.

Quinton Township has a population of 2,666 persons. The municipality's population trend over the last decade can be seen as a small (-0.43%) average decrease in population each year (-4.3% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for Quinton Township. This is according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	2,887		
1990	2,511	-376	-1.30%
2000	2,786	275	1.10%
2010*	2,666	-120	-0.43%

~Source: U.S. Census Bureau, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010*	2,666		
2020	2,666	0	0.00%
2030	2,667	1	0.00%
2040	2,667	0	0.00%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The current WMP in effect for the Township of Quinton is an amendment to the Lower Delaware WQMP submitted in coordination with Alloway Township, and Salem City. This amendment, which formally included the village of Quinton and other specific sites within Elsinboro Township, Lower Alloways Creek Township, Alloway Township and Mannington Township into the SSA of the City of Salem, was adopted on September 24, 2003.

The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Quinton Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

Quinton Township currently owns and operates a public sewer collection system within the Quinton Village area. All sanitary flow collected by the system is conveyed to the Salem City Sewerage Treatment Plant for treatment. The Township sewer service area serves a population of approximately 673 people according to current DEP online sources and related municipal data. This equates to 1.02% of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the wastewater treatment plant.

Sewer service areas may include industrial facilities that discharge process wastewater to the collection system for treatment. The existing sewer service limits, delineated on Map No.2, are maintained by the Quinton Township and contribute sanitary flow to the larger Salem City sewer system. The limits were derived from existing sanitary sewer infrastructure currently constructed and/or approved. The treatment process and information for the Sewerage Treatment Plant (STP) is located within the Salem City municipal chapter in this report.

C. CURRENT WATER SERVICES

Quinton Township does not currently own or operate a public community water supply system. However, the City of Salem community water supply system provides service to Quinton village. Existing water demands are defined further within this municipal chapter. The Salem City community water supply system is further defined within the Salem City municipal chapter of this report.

Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, state, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

Quinton Township does not currently own or operate a public community water supply system and is served by Salem City. The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Township of Quinton has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Townships Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and FW-2 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consist of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the areas planned to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewer service area is keyed to a specific sewage treatment plant which is the facility authorized under this plan to accept and treat wastewater from that sewer service area. Each sewage treatment plant identified in this plan has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, and projected build-out flow summarized by municipality.

A sanitary build-out analysis has been prepared for the future sewer service area identified on Map No.3. In addition, available wastewater capacity has been evaluated to determine whether sufficient capacity exists to support proposed development. The results of these analyses are summarized within this municipal chapter. Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, the potential future flows slightly exceed the current contractual allocation with the City of Salem. Future expansion of the identified treatment works serving the municipality is not required to meet the future wastewater generation needs of the municipality. The City of Salem appears to have sufficient capacity to increase the amount of flow identified within the existing inter-local service agreement.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.
2. The Township may need to amend the existing interlocal service agreement with Salem City, as development occurs, and increase the amount of capacity to meet the projected flows of the proposed plan.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term “actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

Quinton Township owns and operates a series of pump stations, sanitary sewer mains, and force mains used to convey wastewater flow to the Salem City STP. The system is owned and maintained by the Quinton Township. The sanitary sewer main infrastructure piping ranges in size from 6 inches to 12 inches in diameter. The Township currently owns and operates one (1) pump station located near the center of Quinton Village on Waterworks Road. All flow is conveyed to the Salem City STP for treatment.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
40	Quinton Township Landfill (Closed)	NJ0054909	DGW- T1	40

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, Quinton Township does not contain any industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally, the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the Salem City STP were calculated based on flows metered by the Salem City Water and Sewer Department. The present average annual wastewater contributed by Quinton to the plant for 2010 is 0.027mgd. The present average flow includes residential, commercial and industrial flows as well as an I/I component.

Quinton Township executed an interlocal service agreement with the City of Salem on December 17, 2001. The intent of the agreement was to allocate 63,400 gpd of sanitary sewer capacity from the Salem City Sewerage Treatment Plant to Quinton Township for proposed development.

The following Table 2.F.1 summarizes the wastewater treatment plant capacity allocated to Quinton Township from the City of Salem and associated average daily flows for 2010.

TABLE 2.F.1: Wastewater Treatment Plant Allocated Capacity and Flows 2010					
WWTP	Allocated Capacity (mgd)	Average Daily Flow 2010 (mgd)	Build-Out Projection (mgd)	Total (mgd)	Remaining Capacity (mgd)
Salem WWTP	0.0634	0.0270	0.0970	0.1240	-0.0606

The flows from these connections are identified within the specific municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data specific to Quinton Township are identified for 2010 in Table 2.F.2 below.

Based upon the above analysis, Quinton Township does not have sufficient capacity to support the proposed sewer service area. It should be noted that the City of Salem does have surplus capacity available to accommodate this deficit. This would allow Quinton Township to amend the existing interlocal service agreement and increase the amount of capacity to meet the projected needs of the proposed plan.

Table 2.F.2: Existing Wastewater Flows	
Month	Monthly Avg. Flow to Salem City STP (mgd)
Jan-10	0.0151
Feb-10	0.0168
Mar-10	0.0173
Apr-10	0.0342
May-10	0.0229
Jun-10	0.0180
Jul-10	0.0340
Aug-10	0.0348
Sep-10	0.0333
Oct-10	0.0355
Nov-10	0.0333
Dec-10	0.0320
Yearly Average	0.027

G. EXISTING WASTEWATER TREATMENT

Quinton Township does not own a wastewater treatment plant, or any treatment infrastructure associated with treating the wastewater from township’s collection system. All flow is pumped via force main to the Salem City Sewerage Treatment Plant. Specific information on the Salem City STP is provided in Salem City municipal chapter.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Township of Quinton does not own or operate a public water supply system, though it does contain water infrastructure within the vicinity of Quinton Village. The village of Quinton area maintains its own public water supply infrastructure (water mains), but receives all potable water allocation from the Salem City Water Department. Developments outside of the village are presently served by privately owned wells and systems.

Map No.1 depicts the areas actively served by existing public water supply facilities. The wells supplying the greater Salem City Water Department System (including the Quinton village area) are discussed in the Salem City municipal chapter in this report. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

Quinton Township does not currently own or operate a public community water supply system. However, the City of Salem community water supply system provides potable water to a portion of Quinton Township within the Quinton village area. The average daily demand supplied to this area within the 2010 calendar year was 0.028 million-gallons/day. The larger system’s peak annual and monthly water demand monitored over a period of 5 years between 2006 through 2010, occurred in 2006.

The following Table 2.I.2 summarizes historical daily, monthly and annual water demands currently supplied by the public community water system. The districts and franchise areas are depicted on Map No.1.

Year	Annual Demand Total (MGY)	Average Daily Demand (MGD)	Average Monthly Demand (MGM)
2006	13.021	0.036	1.09
2007	12.336	0.034	1.03
2008	12.326	0.034	1.03
2009	9.544	0.026	0.80
2010	10.111	0.028	0.84

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area. The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.

2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to geographical features and political boundaries within the municipality. No exceptions were made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Table 4.D.1: Information Sources for Environmentally Constrained Areas				
Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	5/1/08

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
HC	HIGHWAY COMMERCIAL	71.8	0
LI/O	LIGHT INDUSTRIAL / COMMERCIAL	828.7	51.51
M	MANUFACTURING	29.5	0
PBR	RESIDENTIAL (PLANNED ADULT COMMUNITY, MOBILE HOME PARK)	14,531.0	132.20
R-1	RESIDENTIAL (PLANNED ADULT COMMUNITY, NURSING HOME, MOBILE HOME PARK)	83.2	25.21
R-2	RESIDENTIAL (PLANNED ADULT COMMUNITY, MOBILE HOME PARK)	57.2	29.17
VR	VILLIAGE RESIDENTIAL (PLANNED COMMUNITY, INDIVIDUAL LOTS)	81.2	0.66

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defined as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Township of Quinton does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities’ Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference.

The Township of Quinton’s sewer service area extends as defined on Map No.3. Consequently, infill development has been identified by utilizing a parcel based build-out approach as defined below. The zoning based analysis was not required for this municipality.

2. Existing Sewer Service Area Build-Out Analysis

The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and industrial flows were projected assuming 0.1 GPD/ sq.ft. of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 5.E.2.1: Existing Sewer Service Area Build-Out Projections				
Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
LI/O	45.69	5	6,534	32,670
PBR	45.06	9	300	2,700
R-1	11.76	26	300	7,800
R-2	3.46	16	300	4,800
VR	0.66	3	300	900
TOTAL				48,870 gpd
				0.049 mdg

The notes referenced below are indicated in the previous table.

Notes:

- (a) “Developable Acres” represents the available acreage per zone of the municipality in accordance with the current Quinton Township Master Plan.
- (b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
 - Residential Zones PBR, R-1, R-2, and VR Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings
 - Industrial/Commercial Zone LI/O, HC and M, Average Daily Flow Based on 0.1 gal/SF established for Offices and Industry (50% coverage of 3 acre lots or 65,340 sf)
- (d) TOTAL ADF represents the remaining potential build-out within the existing sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

3. Future Sewer Service Area Build-out Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
LI/O	5.82	0	6,534	0
PBR	87.14	8	300	2,400
R-1	13.45	35	300	10,500
R-2	25.72	117	300	35,100
TOTAL				48,000 gpd
				0.048 mgd

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the available acreage per zone of the municipality in accordance with the current Quinton Township Master Plan.
- (b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
 - Residential Zones PBR, R-1, R-2, and VR Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings
 - Industrial/Commercial Zone LI/O, HC and M, Average Daily Flow Based on 0.1 gal/SF established for Offices and Industry (50% coverage of 3 acre lots or 65,340 sf)
- (d) TOTAL ADF represents the remaining potential build-out within the existing sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing Salem City wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether additional capacity is available and can be obtained through an amendment to the existing agreement between Quinton Township and the City of Salem. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Treatment Works	Permit No.	Current Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)		Existing SSA Build-Out Projection (mgd)	Proposed SSA Build-Out Projection (mgd)	Remaining Treatment Capacity (mgd) <i>Note (a)</i>
			Quinton Township	Entire System (Salem WWTP)			
Salem WWTP	NJ0024856	1.4	0.027	0.696	0.049	0.048	0.607

Note (a): The remaining capacity identified above reflects the current available surplus of the Salem City WWTP. The capacity analysis is further defined within the Salem City municipal chapter of this report.

Quinton Township executed an interlocal service agreement with the City of Salem on December 17, 2001. The intent of the agreement was to allocate 63,400 gpd of sanitary sewer capacity from the Salem City Sewerage Treatment Plant to Quinton Township for proposed development. The current average daily flows of 0.027 mgd and proposed build-out of 0.097 mgd require an available capacity of 0.124 mgd to support development for the currently proposed WMP.

The total treatment capacity for the sanitary sewer system that serves the municipality (0.0634 mgd) is less than the projected flows necessary to support the combination of existing demands, proposed development within the sewer service area, and proposed development within the expanded sewer service area (0.124 mgd). The calculations were based on the existing build-out projections, proposed build-out projections, and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, Quinton Township has insufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area.

It should be noted that the City of Salem does have surplus capacity available to accommodate this deficit. This would allow Quinton Township to amend the existing inter-local service agreement and increase the amount of capacity to meet the projected needs of the proposed plan.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

The sanitary build-out information provided indicates that the current capacity allocated to Quinton Township may be insufficient as development occurs within the municipality. However, the City of Salem currently has sufficient capacity to accommodate this deficit without the need for expanding the wastewater treatment facility.

C. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

Quinton Township does not currently own or operate a public community water supply system. Quinton Township is generally supplied by individual private water wells. However, the City of Salem community water supply system provides potable water to a portion of Quinton Township within the Quinton village area. No further expansion of the Salem water distribution system is planned within Quinton Township. Future development within the Township will continue to be supplied by individual water wells.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Quinton Township proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Seven (7) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas, where applicable.

2. Map No.2: Existing Facilities & Service Areas

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Quinton Township, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. Map No.3: Proposed Facilities & Service Areas

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. Map No.4: Quinton Township Zoning Map

The map depicts the current zoning of Quinton Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations												
Zone	Zone Title		Minimum Lot Area	Minimum Lot Frontage	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum Side Yard Setback	Minimum Rear Yard Setback	Maximum Building Height	Maximum Floor Area Ratio (FAR)/ Density	Maximum Lot Coverage
HC	HIGHWAY COMMERCIAL		60,000 SF		150'	200'	50'	15'	15'	35'	0.18 -1 STORY 0.2 -2 STORY	55%
LI/O	LIGHT INDUSTRIAL /OFFICE	BULK REQUIREMENTS	5 ACRES		300'		125'	40'	40'	45'	0.22 1 STORY 0.3 MULTISTORY	50%
		RESEARCH-OFFICE	12 ACRES STE, 3 ACRES MIN. LOT	250'			125'	40'	40'	45'	0.22 & .3, PUD 4UNITS/ACRE	50%
M	MANUFACTURING		5 ACRES		300'		125'	40'	40'	45'	0.3-1 STORY 0.4 MULTISTORY	50%
P-BR	RESIDENTIAL		3 ACRES		300'	300'	50'	50'	50'	35'		10%
R-1	RESIDENTIAL		15,000 SF		100'	150'	30'	10'	30'	35'		20%
R-2	RESIDENTIAL		8,000 SF		75'	125'	30'	20'	30'	35'		30%
VR	VILLAGE RESIDENTIAL	STANDARD LOTS	6,500 SF		50'	125'	25'	5'	10'	35'		40%
		FAST FOOD	50,000 SF		200'	200'	50'					
OSC	OPEN SPACE CLUSTER	2 ACRE	50,000 SF	75'	150'	150'	40'	20'	20'			
		1 ACRE	3/4 ACRE	60'	125'	125'	30'	15'	15'			
		3/4 ACRE	20,000 SF	50'	100'	100'	25'	10'	10'			

5. Map No.5A: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. Map No.5B: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 14 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. Map No.5C: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 14 watershed.

Chapter IX.13

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

SALEM CITY CHAPTER

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*Wastewater Management Plan for
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I. INTRODUCTION

This chapter represents the Salem City portion of the Salem County WMP. The Salem County WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (N.J.A.C 7:15).

The sewer service area for the City of Salem encompasses approximately 1,818 acres of area and serves a small portion of adjacent municipalities. The area includes the majority of the City of Salem (1,761 acres), and the remaining smaller portions from the adjacent municipalities of Alloway, Lower Alloways Creek, Quinton, Elsinboro, and Mannington Townships.

The City of Salem is located in the Delaware River Drainage Basin and lies within the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area.

The City of Salem is bounded by five (5) municipalities including Pennsville Township (to the north-west), Mannington Township (to the north-east), Quinton Township (to the south-east), Lower Alloways Creek Township (to the South), and Elsinboro Township (to the south-west). Salem City encompasses a total area of 1,761 acres (2.8 square miles) including approximately 153.9 acres of which is surface water (ponds, lakes, reservoirs) and 16.7 miles of streams (shown in Map No.1) flowing in the municipality. This municipality has been developed extensively in area north of Grieves Parkway, and west of Keasbey Street and has one of the highest population densities in Salem County (approximately 1,838 people/sq mi), according to (2010) U.S. Census data. The remaining land area for future development consists of infill parcels and larger parcels to the south of Grieves Parkway.

Salem City has a population of 5,146 persons. The municipality’s population trend over the last decade can be seen as a –1.21% decline in population each year (-12.1% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the City of Salem. In terms of population change over the next three decades, increases in population within Salem City are expected to be minimal according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Table 1.1: Salem City- Historic Population

Year	Population	Population Change	
		#	avg yearly %
1980	6,959		
1990	6,883	-76	-0.11%
2000	5,857	-1,026	-1.49%
2010*	5,146	-711	-1.21%

~Source: U.S. Census Bureau, *2010 U.S. Census

Table 1.2: Salem City- Projected Population

Year	Population	Population Change	
		#	avg yearly %
2010	5,146		
2020	5,068	-78	-0.15%
2030	5,104	36	0.07%
2040	5,139	35	0.07%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The City of Salem has submitted several Wastewater Management Plans (WMP's) / Amendments since 1994. These amendments have included proposed expansions to the sewer service area for the purpose of including specific sites within Alloway Township, Elsinboro Township, Lower Alloways Creek Township, Quinton Township and Mannington Township.

The current WMP in effect for the City of Salem is an amendment to the Lower Delaware WQMP, which was adopted on September 24, 2003. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The City of Salem has been incorporated within the overall Salem County Wastewater Management Plan. The proposed Salem County WMP and this chapter, upon adoption, supercedes previous plans and will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. OVERVIEW OF CURRENT WASTEWATER SERVICES

The City of Salem community wastewater system serves approximately 7,494 persons within their sewer service area according to current municipal data. This equates to 11.3 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the wastewater treatment plant.

Sewer service areas may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business. The existing sewer service limits, delineated on Map No.2, are serviced by the Salem Wastewater Treatment Plant and were derived from existing sanitary sewer infrastructure currently constructed and/or approved.

Areas served by the Salem WWTP include the City of Salem, and designated areas within Alloway Township, Lower Alloways Creek Township, Quinton Township, Elsinboro and Mannington Township located in Salem County, New Jersey. The facilities served by the Salem WWTP within Alloway Township, Lower Alloways Creek Township, Elsinboro Township, Quinton Township and Mannington Township are further defined within those municipal chapters respectively and clearly identified on the mapping provided in those chapters

C. OVERVIEW OF CURRENT WATER SERVICES

The City of Salem community water supply system serves approximately 6,197 persons within their sewer service area according to current NJDEP data. This equates to 9.4 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the water treatment plant. The water service area includes the City of Salem, and designated areas within Elsinboro Township, Quinton Township and Mannington Township located in Salem County, New Jersey. The facilities served by the Salem water supply system within adjacent municipalities are further defined within those municipal chapters respectively and clearly identified on the mapping provided.

The City of Salem owns and operates its own potable water supply system. The public is presently serviced from three (3) ground water wells located throughout the municipality and two (2) surface water supply sources located in Quinton and Alloway Townships. Wells No.2, No.6 and No.7 withdraw water from the Mt. Laurel-Wenonah Aquifer (MLW). In addition, surface water sources are withdrawn from Elkinton Pond in Alloway Township, and Laurel Lake in Quinton. Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, state, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection’s statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

A majority of the City of Salem is served by potable water and sanitary sewer service. The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The City of Salem has identified the future sewer service area necessary to implement a portion of the goals and objectives of the City's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and C-1 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consist of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewerage treatment plant authorized under this plan to accept and treat wastewater from its corresponding sewer service area has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, and projected build-out flow summarized by municipality.

Based on the build-out analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, sufficient wastewater treatment capacity exists to accommodate the Future Wastewater Service Area (FWSA). Future expansion of the identified treatment works is not currently required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included within the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. EXISTING AREAS SERVED BY WASTEWATER FACILITIES

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term “actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The City of Salem owns and operates one WWTP and a series of pump stations, and force mains used to convey wastewater flow to the WWTP. The sanitary sewer collection system in Salem is owned and maintained by the Authority. There are approximately 21.25 miles of sanitary sewer main and 2.0 miles of forced main with pipes ranging in size from 6 inches to 24 inches in diameter within the municipal boundary. The City of Salem currently owns and operates four (4) pump stations located on Oak Street, Magnolia Street, Walnut Street and Grieves Parkway. All flow is conveyed to the Salem WWTP for treatment.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.C.1: Non-Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
42	Salem City WWTP	NJ0024856	DSW	42

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. Table 2.D.1 lists all existing industrial treatment works that discharge 2,000 gallons per day or more of process and wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Table 2.D.1: Industrial NJPDES Wastewater Facilities				
Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
43	Salem City WTP	NJ0035742	DSW	43

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally, remaining areas of a municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING AREAS SERVED BY PUBLIC WATER SUPPLY FACILITIES

The City of Salem community water supply system serves approximately 6,197 persons within their sewer service area according to current NJDEP data. The water service area includes the City of Salem, and designated areas within Elsinboro Township, Quinton Township and Mannington Township located in Salem County, New Jersey. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

The City of Salem is presently serviced from three (3) ground water wells located within the municipality and two (2) surface water supply sources located in Quinton and Alloway Townships. Wells No.2, No.6 and No.7 withdraw water from the Mt. Laurel-Wenonah Aquifer (MLW). Generally, sanitary sewer service is available where potable water service is currently in place.

The following Table 2.F.1 summarizes each public community water supply facility currently serving the municipality. The franchise areas are depicted on MapNo.1.

Table 2.F.1: Existing Water Supply Wells			
Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
5000000042	2	500	MLW
3000014867	6	250	MLW
3000015191	7	350	MLW
WSIN75171	Laurel Lake	3,000	Surface Water
WSIN788420	Elkinton Pond	4,160	Surface Water

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas, below**).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.

4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to the geographical boundary of the municipality. No exceptions were made for the delineations used in this WMP. Environmentally constrained areas that were identified through the process have been removed within the sewer service area boundary, where applicable.

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out in the non-sewer service area was calculated by applying the zoning over all undeveloped land except polygons too small to support additional development. The number of residential units and non-residential floor area were then multiplied by the wastewater planning flow estimates in either N.J.A.C. 7:14A or 7:9A as appropriate.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter which has been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the future wastewater service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Table 5.A.1: Summary of Salem City Municipal Zones

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
C-1	RETAIL COMMERCIAL	44.02	0.41
M-1	LIGHT MANUFACTURING	30.52	13.64
M-2	GENERAL MANUFACTURING	101.82	1.71
PA	PLANNED APARTMENT OVERLAY DISTRICT	390.95	3.55
C-2	GENERAL COMMERCIAL	40.15	0.22
R-1	RESIDENTIAL	840.96	26.35
R-2	RESIDENTIAL	290.61	15.55
RLC	RESIDENCE-LIMITED COMMERCIAL	40.50	1.44

B. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the Salem WWTP were calculated based on flows metered by City of Salem. The present average annual wastewater flow for 2010 is 0.696mgd. The present average flow includes residential, commercial and industrial flows as well as an I/I component.

The following Table 2.B.1 summarizes the permitted wastewater treatment plant capacity and associated average daily flows for 2010.

Table 5.B.1: Wastewater Treatment Plant Capacity and Flows 2010

WWTP	NJPDES Permit No.	Permitted Capacity (mgd)	Average Daily Flow 2010 (mgd)	Build-Out Projection (mgd)
Salem WWTP	NJ0024856	1.40	0.696	0.378

Included within the above existing wastewater flows and projections are connections located within Alloway Township, Lower Alloways Creek Township, Quinton Township, Elsinboro and Mannington Township. The flows from these connections are identified within the specific municipal chapter or facilities tables provided within Chapter 7 (VII) of this report. Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below.

Table 5.B.2: Existing Wastewater Flows				
Month	Monthly Avg. (mgd)	Estimated Monthly Avg. (mgd)		
		Salem City	Contributing Municipalities	
Jan-10	1.031	0.859	0.172	
Feb-10	1.036	0.844	0.192	
Mar-10	1.176	0.979	0.197	
Apr-10	0.949	0.753	0.196	
May-10	0.655	0.524	0.131	
Jun-10	0.500	0.396	0.104	
Jul-10	0.454	0.333	0.121	
Aug-10	0.464	0.340	0.124	
Sep-10	0.430	0.312	0.118	
Oct-10	0.588	0.438	0.150	
Nov-10	0.533	0.392	0.141	
Dec-10	0.530	0.394	0.136	
Yearly Average	(mgd)	0.696	0.547	0.148
	(mgm)	21.155	16.592	4.508
	(mgy)	253.858	199.105	54.101

C. SEWER SERVICE AREA BUILD-OUT ANALYSIS

The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and Industrial flows were projected assuming 0.10 gpd/sq.ft. of building area.

Table 5.C.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 5.C.1: Sewer Service Area Build-Out Projections				
Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
C-1	0.41	3	220	660
C-2	0.22	1	220	220
M-1	36.92	163	220	35,860
M-2	16.73	59	220	12,980
PA	3.55	34	300	10200
R-1	184.10	941	300	282,300
R-2	17.98	106	300	31,800
RLC	1.44	12	300	3,600
			TOTAL	377,620 gpd 0.378 mgd

The notes referenced below are indicated in the above table.

Notes:

(a) “Developable Acres” represents the available acreage per zone of the entire City in accordance with the current Salem City Master Plan.

(b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.

(c) Average Daily Flow has been calculated based on current NJDEP regulations.

- Residential Zones R-1, R-2, PA and RLC Average Daily Flow based on 300 gpd established for 3 or more bedroom dwellings.
- Commercial Zones C-1 and C-2 Average Daily Flow Based on 0.1 gal/SF established for 2,160 SF Offices and Retail Stores (60% coverage of 3,600 SF).
- Manufacturing M-1 and M-2 Average Daily Flow Based on 0.1 gal/SF established for 2,160 SF Offices and Retail Stores (60% coverage of 3,600 SF).

(d) TOTAL ADF represents the remaining potential build-out within the sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

D. FUTURE SEWER SERVICE AREA BUILD-OUT ANALYSIS

Generally, the future sewer service area build-out is prepared utilizing a “zoning based” build-out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

The City of Salem’s existing sewer service area extends to the municipal boundary. All proposed flows for the City of Salem, included as part of this WMP submission, are identified within section 5.C. above.

E. FUTURE WASTEWATER OUTSIDE OF SEWER SERVICE AREAS

Generally, the default wastewater management alternative to support development in areas that are not designated as sewer service area is discharge to groundwater less than 2,000 gallons per day. A nitrate dilution analysis for septic systems is typically performed, in similar fashion to that conducted for sewer service areas, except that environmentally sensitive areas are not removed prior to performing the build out analysis. The intent of this analysis is to assess the available dilution on a HUC 11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the regulatory nitrate target.

The City of Salem’s existing sewer service area extends to the municipal boundary. Consequently, the nitrate dilution analysis necessary for assessing the future wastewater outside of a sewer service area was not prepared as the defined SSA reflects all lands within the municipal boundary with the exception of environmentally constrained areas.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected flows.

Treatment Works	Permit No.	Current Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)	Existing SSA Build-Out Projection (mgd)	Proposed SSA Build-Out Projection (mgd)	Contributing SSA Build-out (mgd)	Remaining Treatment Capacity (mgd)
Salem WWTP	NJ0024856	1.4	0.696	0.064	0.314	0.136	0.190

The total treatment capacity for the sanitary sewer system that serves the municipality (1.40 mgd) is greater than the projected flows necessary to support the combination of existing demands and proposed development (1.21 mgd). The calculations were based on the proposed build-out projections and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, sufficient wastewater treatment capacity exists to accommodate the currently proposed FWSA.

Included within the summaries above of “Average Daily Flows” and “Contributing SSA Build-out” are existing contributions and proposed contributions from connections to the Salem City sewerage system that are located within Alloway Township, Elsinboro Township, Mannington Township, and Quinton Township. Table 6.A.2 provides a breakdown of the total flow projection from existing and proposed build-out for each of these municipalities. Refer to respective municipal chapters and corresponding water build-out analyses for detailed information on these contributing areas.

Treatment Works	Total Build-out by Municipality (mgd)				
	Salem City	Alloway	Elsinboro	Mannington	Quinton
Salem WWTP	0.378	0.034	0.000	0.0050	0.097

B. ADEQUACY OF DILUTION TO MEET FUTURE NON-SEWER SERVICE AREA DEMAND

Generally, a wastewater estimation tool, provided by the Department is used to compare existing zoning to the available nitrate dilution within each HUC11 in an effort to determine whether adequate dilution is available to meet future non-sewer service area demands. However, as indicated above, the nitrate dilution analysis necessary for assessing the future wastewater outside of a sewer service area was not prepared as the defined SSA reflects all lands within the municipal boundary with the exception of environmentally constrained areas.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water demand within the existing sewer service area were compared. A build-out projection of the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were also compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development. The information provided was made available by the Salem Water Department or obtained from DEP online sources. The comparison of water allocation and projected build-out for the proposed sewer service area are summarized in the section below.

A. SUFFICIENCY OF WATER SUPPLY

The City of Salem's current water allocation and existing average water demands are identified in Section 2 of this municipal chapter. Development of vacant land was the predominant factor in determining future water supply needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide potable water while protecting surface and ground water quality for the entire projected build-out allowable by zoning.

Proposed daily demands required to support development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis. Future demands are generally evaluated and projected based on two sets of data; water demands projected within the existing sewer service area and proposed water demands for the expanded sewer service area. Future water demands within the existing sewer service area utilize a "parcel based" method for calculating the demand of infill development. Whereas, future water demands within the expanded sewer service area utilize a "zoning based" method for calculating the demand.

Flows were evaluated based on current zoning of identified developable land. All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

Proposed daily demands were evaluated and projected based on two sets of data. This included identified developable land within the existing sewer service area or infill development as well as proposed future development within the expanded sewer service area. The summaries for each of these sets of data are provided below.

1. Existing Sewer Service Area: Water Build-out Analysis

The build-out of the sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 400gpd / dwelling unit. Commercial and Industrial flow flows were projected assuming 0.125 gpd/sq.ft. of building area.

Table 7.A.1.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
C-1	0.41	3	270	810
M-1	0.22	1	270	270
M-2	36.92	163	270	44,010
PA	16.73	59	270	15,930
C-2	3.55	34	400	13,600
R-1	184.10	941	400	376,400
R-2	17.98	106	400	42,400
RLC	1.44	12	400	4,800
TOTAL				497,410 gpd
				0.497 mgd

The notes referenced below are indicated in the above table.

Notes:

- (a) “Developable Acres” represents the available acreage per zone of the entire City in accordance with the current Salem City Master Plan.
- (b) “Potential Units” represent the number of remaining units that may be constructed within each zone within the existing sewer service area.
- (c) Average Daily Flow has been calculated based on current NJDEP regulations.
 - Residential Zones R-1, R-2, PA and RLC Average Daily Flow Based on 400 gpd established for 3 or more bedroom dwellings.
 - Commercial Zones C-1 and C-2 Average Daily Flow Based on 0.125 gal/SF established for 2,160 SF Offices and Retail Stores (60% coverage of 3,600 SF).
 - Manufacturing M-1 and M-2 Average Daily Flow Based on 0.125 gal/SF established for 2,160 SF Offices and Retail Stores (60% coverage of 3,600 SF).
- (d) TOTAL ADF represents the remaining potential build-out within the existing sewer service area. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

2. Future Sewer Service Area: Water Build-out Analysis

Generally, the future sewer service area build-out is prepared utilizing a “zoning based” build-out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

The City of Salem’s existing sewer service area extends to the municipal boundary. All proposed water demands for the City of Salem, included as part of this WMP submission, are identified within section 5.A.1 above.

3. Analysis of Water Capacity to Meet Supply Needs

This section of the wastewater management plan analyzes whether there is sufficient potable water treatment capacity to meet the needs of the Municipality based on the projections described above. This requires a comparison of the projected future demand to the existing capacity of the water supply system.

Table 7.A.3.1 provides a comparison of existing water allocation with existing and future flow demands within the municipality. The final column determines whether existing capacity is or is not adequate for the projected daily demands. Where capacities are inadequate, the issue is addressed in later sections. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Water System	Permit No.	Current Water Allocation (mgm)/(mgy)	Average Demand 2010 (mgm)/(mgy)	Existing SSA Build-Out Projection (mgm)/(mgy)	Proposed SSA Build-Out Projection (mgm)/(mgy)	Contributing SSA Build-out (mgm)/(mgy)	Remaining Water Allocation (mgm)/(mgy)
Salem Water Dept.	WAP020001	93.00/ 900.00	24.03 /288.38	15.445/ 183.81	0.167 / 1.964	39.64 / 474.15	63.36/ 425.85

The total monthly water allocation for the Salem City water distribution system, (93.00 mgm/900 mgy), is greater than the water supply necessary to support existing demands and proposed development within the combined sewer service area of Salem City and adjacent municipalities that are supplied by the Salem City WT. The projected calculations were based on the proposed build-out projections and average daily demand values utilized within the regulations for each type of development. Based on the analysis presented above, Sufficient water supply exists to accommodate the currently proposed Sewer Service Area.

Included within the summaries above of “Average Demand” and “Contributing SSA Build-out” are existing demands and proposed demands from connections to the Salem City Water Department system within contributing sewer service areas. These connections are located within Alloway Township, Elsinboro Township, Mannington Township, and Quinton Township.

Table 7.A.3.2 provides a breakdown of the total flow projection from existing and proposed build-out for each of these municipalities. Please refer to respective municipal chapters and corresponding water build-out analyses.

Water System	Total Build-out by Municipality (mgm) / (mgy)				
	Salem City	Alloway	Elsinboro	Mannington	Quinton
Salem City Water	15.445/ 183.81	0.00/0.00	0.00/0.00	0.167 / 1.964	0.00/0.00

B. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

The City of Salem currently has an average daily usage of approximately 0.790 million-gallons/day based upon the 2010 calendar year. The peak annual and monthly water demand over a period of 5 years between 2006 through 2010, occurred in 2006. The reduction in average demand, over the last few years, is partially due to the enforcement of water restrictions and water conservation appurtenances in residential and commercial buildings and improvements/replacements within the system’s infrastructure.

The following Table 7.B.1 summarizes current water allocation diversion limits permitted for the public community water system.

Water Company	Permit No. / Program Interest ID	Water Allocation (mgm) / (mgy)	Average Demand (mgm) / (mgy)	Build-Out Projection (mgm) / (mgy)
Salem City Water Department	5290 / WAP020001	93.00 / 900.00	24.03 / 288.38	15.612 / 183.814

The following Table 7.B.2 summarizes historical daily, monthly and annual water demands currently supplied by the public community water system. The districts and franchise areas are depicted on Map No.1.

Year	Annual Demand Total (mgy)	Average Daily Demand (mgd)	Average Monthly Demand (mgm)	Peak Monthly Demand (mgm) / (Month)	
2006	371.384	1.017	30.949	39.338	June
2007	351.831	0.964	29.319	34.350	July
2008	351.570	0.963	29.298	32.915	July
2009	272.205	0.746	22.684	25.300	October
2010	288.383	0.790	24.032	29.245	August

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Salem City proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Salem City Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based

on the Surface Water Quality Standards at N.J.A.C. 7:9B, and/or the Ground Water Quality Standards at N.J.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP NO.1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.2: EXISTING FACILITIES & SERVICE AREAS

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Salem City, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP NO.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP NO.4: SALEM CITY ZONING MAP

The map depicts the current zoning of Salem City. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Table 8.B.4.1: Zoning Regulations										
Zone	Zone Title	Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum side yard setback	Minimum rear yard setback	Maximum Building Height	Maximum Building Coverage	Maximum Lot Coverage
C-1	Retail Commerical	3,600 sqft w/ Residential							60%	
M-1	Light Manufacturing	3,600 sqft w/ Residential							60%	
M-2	General Manufacturing	3,600 sqft w/ Residential							60%	
PA	Planned Apartment Overlay District	1 BR 3,500 sqft / 2 BR 4,000 sqft / 3+ BR 4,500 sqft						S Story		
C-2	General Commercial	3,600 sqft w/ Residential							60%	
R-1	Residence	7,200 sqft							30%	
R-2	Residence	3,600 sqft							60%	
RLC	Residence- Limited Commercial	3,600 sqft w/ Residential							60%	

5. MAP NO.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP NO.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP NO.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.14

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

**UPPER PITTSBORO TOWNSHIP
CHAPTER**

PREPARED BY:

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I. INTRODUCTION

This chapter represents the Upper Pittsgrove Township portion of the WMP. The WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (NJAC 7:15).

The Township of Upper Pittsgrove is located in the Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area. The future wastewater service area (FWSA) for the Township is identified on Map No.3. This service area does not include any areas that lay within adjacent municipalities.

The Township of Upper Pittsgrove is an agricultural based municipality, bounded by four (4) municipalities within Salem County including Pilesgrove Township (to the north-west), Pittsgrove Township and Elmer Borough (to the south-east), and Alloway Township (to the south-west). Two other counties including Gloucester County (to the north-east) and Cumberland County (to the south) bound the Township as well. Upper Pittsgrove Township encompasses a total area of 21,844 acres (34.1 square miles) including approximately 7.2 acres of which is surface water (ponds, lakes, reservoirs) and 61.8 miles of streams (shown in map No.1) flowing in the municipality. This municipality has been developed mostly agriculturally or for use as low-density residential/agricultural plots, though some commercial development can be found along the US Route 40 highway. Due to its mostly agricultural land use, Upper Pittsgrove has a relatively low population density when compared to the rest of Salem County (approximately 85.9 people/sq mi), according to (2000) U.S. Census data.

Upper Pittsgrove Township has a population of 3,505 persons. The municipality’s population trend over the past decade can be seen as a 0.11% average increase in population each year (1.1% over ten years), according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for Upper Pittsgrove Township. In terms of population change over the next three decades, Upper Pittsgrove is expected to grow steadily according to the most recent study by the South Jersey Transportation Planning Organization, prepared in 2011. A summary of the SJTPO projected population can be found below in Table 1.2:

Table 1.1: Upper Pittsgrove- Historic Population

Year	Population	Population Change	
		#	avg yearly %
1980	3,139		
1990	3,140	1	0.00%
2000	3,468	328	1.04%
2010*	3,505	37	0.11%

~Source: 1990 U.S. Census, *2010 U.S. Census

Table 1.2: Upper Pittsgrove- Projected Population

Year	Population	Population Change	
		#	avg yearly %
2010	3,505		
2020	3,618	113	3.2%
2030	3,716	98	2.7%
2040	3,813	97	2.6%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

Upper Pittsgrove Township has submitted several Water Quality Management Plans (WQMP's) / Amendments since 1992. The previously submitted amendments address NJPDES facilities, which serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. These amendments have included proposed expansions to the existing onsite ground water discharges from the Pittsgrove Township Elementary School and South Jersey Hospital as well as an on-site discharge to ground water serving a commercial development, Wawa Food Market.

Upper Pittsgrove Township does not currently have an adopted WMP in effect. The enclosed plan reflects current zoning and includes the default wastewater management alternative to support development in areas that are not designated as sewer service area, which is a discharge to groundwater of less than 2,000 gallons per day. The Upper Pittsgrove Township WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

B. CURRENT WASTEWATER SERVICES

Upper Pittsgrove Township is not currently served by a public sewer system, nor does it contain any infrastructure for wastewater service.

C. CURRENT WATER SERVICES

Upper Pittsgrove Township does not currently own or operate a public community water supply system. The municipality does contain three privately owned small community water supply systems. These systems are the Country Club Estates, Bancroft Neuro Health Center, and Mater Dei Nursing Home. Together, these systems serve 488 persons within Upper Pittsgrove Township (according to NJDEP data).

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, state, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process.

E. OVERVIEW OF WATER RESOURCE MANAGEMENT ISSUES

Upper Pittsgrove Township's existing sewer service area is completely served by individual water wells. The municipality has not identified any issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

Upper Pittsgrove Township does not own or operate any wastewater facilities or associated infrastructure. The Township has not identified future sewer service areas for inclusion within the Salem County Wastewater Management Plan (WMP). Areas not designated as a sewer service area will continue to be serviced by Individual subsurface sewage disposal systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the areas planned to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System (NJPDES) permit. Future expansion of a treatment works facility is not required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included within the sewer service area in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

Upper Pittsgrove Township does not own or operate any public potable water supply wells or distribution mains. Map No.1 generally depicts the areas actively served by existing public water supply facilities. As with sewer service, "actively served" means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

A. WASTEWATER TREATMENT PLANT

Upper Pittsgrove Township does not own or operate any wastewater treatment or conveyance systems. Map No.2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term "actively served" means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

This Section is not applicable as Upper Pittsgrove Township does not own or operate a sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations for public wastewater treatment facilities.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
44	WaWa	NJ0169889	T1	44
45	Upper Pittsgrove TWP Elementary School	NJ0100625	GWIND	45
46	Country Club Estates	NJG0084603	T1	46
47	Appel Farm Arts & Music Ctr	NJG0133493	T1	47
48	Point 40 Diner	NJG0132624	T1	48
49	Mater Dei Nursing Home	NJG0170208	T1	49
50	Bancroft Neurohealth - Mullica Hill Campus	NJG0170992	T1	50

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. Table 2.D.1 lists all existing industrial treatment works that discharge 2,000 gallons per day or more of process and wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES Permit Number	Discharge Type (Groundwater or Surface Water)	Facility Table Number
43	Burlington Beef	NJ0099198	GWIND	43

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally, remaining areas of a municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water.

F. EXISTING AREAS SERVED BY PUBLIC WATER SUPPLY FACILITIES

Upper Pittsgrove Township does not own or operate any public potable water supply wells or distribution mains. Map No.1 generally depicts the areas actively served by existing public water supply facilities.

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas**, below).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.
4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

Upper Pittsgrove Township has not identified a delineated SSA at this time. Consequently, there are no exceptions necessary for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Category	Source	Source Location	Original Date	Date Last Revised
Wetlands	NJDEP	www.state.nj.us/dep/gis	11/9/99	
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs	1/9/03	
Stream Corridors	NJDEP	www.state.nj.us/dep/gis	8/1/08	12/1/10
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com	11/1/09	2/13/09
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis	2/13/09	
Preserved Agricultural Lands	NJ SADC	www.nj.gov/agriculture/sadc	1/25/11	
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis	10/1/07	1/19/11
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis	2/13/09	
Zoning	Municipality	Current Master Plan	N/A	1/1/02

V. FUTURE WASTEWATER DEMAND AND FACILITIES

This chapter describes the build out methodology used to project future wastewater treatment demand for future sewer service areas and general wastewater management service areas within the County WMP.

Upper Pittsgrove Township is not proposing future wastewater demand or public wastewater treatment facilities at this time.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. A composite zoning map has not been developed as municipal zoning ordinances are not uniform in their nomenclature or definitions. Table 5.B.1 below identifies the zoning specific to this chapter.

Zone	Zone Description	HUC-11 Area (ac)
A	AGRICUTURAL	11,930.0
B	BUSINESS	104.0
HB	HIGHWAY BUSINESS	534.7
LR-A	LOW DENSITY RESIDENTIAL/AGRICULTURAL	3,499.2
P	PUBLIC	140.0
VB	VILLAGE BUSINESS	46.1
VR	VILLAGE RESIDENTIAL	341.5

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

This Section is not applicable as Upper Pittsgrove Township does not own or operate a wastewater treatment plant or sanitary sewer conveyance system consisting of major interceptors, trunk lines and pumping stations associated with public wastewater treatment facilities. In addition, Upper Pittsgrove Township does not own or operate any public community water supply facilities, wells, or distribution mains.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

This Section is not applicable, as Upper Pittsgrove Township is not designated as an urban municipality.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land is the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out depending based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities’ Sewer Service Areas

This Section is not applicable, as Upper Pittsgrove Township is not proposing a sewer service area as a part of this submission of the Salem County WMP.

2. Existing Sewer Service Area Build-Out Analysis

An analysis of the sewer service area does not apply to Upper Pittsgrove Township as this municipality does not currently have an approved sewer service area is not proposing a sewer service area as a part of this submission of the Salem County WMP.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant. This analysis does not apply to Upper Pittsgrove Township, as this municipality is not currently served by a public sewer system.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Upper Pittsgrove Township does not own or operate a Wastewater Treatment Plant. The Township is not proposing future wastewater demand or public wastewater treatment facilities at this time. Consequently, wastewater treatment plant capacity and associated demand projections have not been included within this municipal chapter.

B. ANTIDegradation ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to Upper Pittsgrove Township, as the Township is not proposing any new or expanded wastewater facilities.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water within the existing sewer service area are compared. A build-out projection of the proposed sewer service area is then prepared to determine the additional water demands that may result. Finally, the demands are compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development. However, there currently isn’t any existing or proposed sewer service area included as part of this WMP; therefore a Depletive/Consumptive Water Use Analysis was not performed at this time.

A. SUFFICIENCY OF WATER SUPPLY

Upper Pittsgrove Township does not own or operate any public potable water supply wells or distribution mains. Development within this municipality is supplied by individual water wells. Consequently, a comparison of water allocation was not performed.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Upper Pittsgrove Township Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The Upper Pittsgrove Township Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FWI) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map 3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. MAP #1: WMP MUNICIPAL MAP/WATER INFRASTRUCTURE

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. This planning area is exclusive to the municipality's boundary. The map also includes HUC-11's, and existing water service infrastructure. Map No.1 shows areas of the municipality that lay within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas.

2. MAP NO.2: EXISTING FACILITIES & SERVICE AREAS

This map depicts the existing wastewater service area. This map also identifies the present extent of the actual sewer infrastructure (none) within the municipal boundary of Upper Pittsgrove Township, including all sewer department buildings, existing NJPDES facility locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. MAP NO.3: PROPOSED FACILITIES & SERVICE AREAS

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. MAP NO.4: UPPER PITTSGROVE TOWNSHIP ZONING MAP

The map depicts the current zoning of Upper Pittsgrove Township. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in the table located on the map.

5. MAP NO.5A: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. MAP NO.5B: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. MAP NO.5C: ENVIRONMENTAL FEATURES (REFER TO COUNTY MAP SET)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

Chapter IX.15

**WASTEWATER MANAGEMENT PLAN
FOR
SALEM COUNTY, NEW JERSEY
LOWER DELAWARE WATER QUALITY
MANAGEMENT PLANNING AREA**

WOODSTOWN BOROUGH CHAPTER

PREPARED BY:

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I. INTRODUCTION

This chapter represents the Borough of Woodstown portion of the Salem County WMP. The Salem County WMP has been submitted to the New Jersey Department of Environmental Protection for approval so that it may be incorporated into the Lower Delaware Water Quality Management Plan via the Plan Amendment Procedure (N.J.A.C 7:15).

The sewer service area for the Borough of Woodstown includes the entire Borough of Woodstown, and small portions from the adjacent municipalities of Pilesgrove and Mannington Townships. The planning area encompasses 1,434 acres (1,034 acres of which make-up the entire Woodstown Borough).

The Borough of Woodstown is located in the Delaware River Drainage Basin and lies within the Lower Delaware Water Quality Management Planning Area. The Planning Area is not located within the jurisdiction of the Pinelands Commission nor is it located within the Coastal Area Facility Review Act (CAFRA) area.

The Borough of Woodstown is an enclave of the Township of Pilesgrove. The Borough has a total area of 1,036 acres (1.62 square miles), including approximately 156.4 acres of which is surface water (ponds, lakes, reservoirs) and 3 miles of streams (shown in Map #1) flowing in the municipality.

The Borough of Woodstown has been developed extensively, with little land area available for future development and has one of the highest population densities in Salem County (2,244.3 people/sq mi), according to (2000) U.S. Census data. The remaining land area for future growth consists of infill development.

Woodstown has a population of 3,505 persons, which can be seen as an 11.8% growth in population over a ten-year period, according to the most recent (2010) U.S. Census data. Table 1.1 is a summary of the historic population and trends for the Borough of Woodstown according to June 2011 projections prepared by the South Jersey Transportation Planning Organization (SJTPO). In terms of population change over the next two decades, Woodstown is expected to grow slowly between 0.7-0.85% each year according to the most recent study by the New Jersey Department of Labor, prepared in June, 2006. A summary of the NJDOL projected population can be found below in Table 1.2:

Year	Population	Population Change	
		#	avg yearly %
1980	3,250		
1990	3,154	-96	-0.30%
2000	3,136	-18	-0.06%
2010*	3,505	369	1.18%

~Source: Historical U.S. Census data, *2010 U.S. Census

Year	Population	Population Change	
		#	avg yearly %
2010	3,505		
2020	3,797	292	0.83%
2030	4,061	264	0.71%
2040	4,333	272	0.71%

~Source: SJTPO, 2011

A. STATUS OF PREVIOUS APPROVED WMPs

The Woodstown Sewerage Authority (WSA) has submitted several Wastewater Management Plans (WMP's) / Amendments since 1991. These amendments have included proposed upgrades or expansions to the original WSA Sewage Treatment Plant adopted on April 4, 1991. Amendments also specified the inclusion of sites within Pilesgrove Township and Mannington Township, as well as a re-rating of the WSA WWTP capacity from 0.5 million gallons per day (MGD) to 0.53 MGD.

The current WMP in effect for the Woodstown Sewerage Authority (WSA) is an amendment to the Lower Delaware WQMP, which was adopted on March 30, 1999. The enclosed plan reflects current zoning with proposed sewer service areas consistent with the Municipality's Master Plan. The Woodstown Sewerage Authority WMP has been incorporated within the overall Salem County Wastewater Management Plan. The proposed plan, upon adoption, will remain in force and in effect until the expiration date noted in the Chapter 1, Salem County Summary.

A 2007 WMP amendment WMP prepared by the WSA Engineer, Remington, Vernick and Walberg (RV&W), was proposed October 27, 2007. The WSA performed an analysis of the existing plant capacity and identified upgrades to the WWTP's clarifiers necessary to expand the SSA to service expected future developments in Pilesgrove Township.

B. CURRENT WASTEWATER SERVICES

The Borough of Woodstown sanitary sewer system serves approximately 3,505 persons within their municipal boundary according to current municipal data and DEP online sources. This equates to 5.3 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the waster treatment plant.

Sewer service areas may include industrial businesses that discharge process wastewater to the collection system for treatment by a facility not owned by that business. The existing sewer service limits, delineated on Map No.2, are serviced by the Woodstown Wastewater Treatment Plant and were derived from existing sanitary sewer infrastructure currently constructed and/or approved.

Areas served by the Woodstown WWTP include the Borough of Woodstown, and small portions of the Township of Pilesgrove and the Township of Mannington located in Salem County, New Jersey. The sewer service area includes all of the Borough of Woodstown excluding Memorial Lake, East Lake, Preserved Lands and the Salem River. These areas were not included within the Sewer Service Area as they are environmentally sensitive areas. The remainder of the Borough of Woodstown is completely serviced by the WSA.

The SSA also includes the buildings presently served by the Salem County Vo-Tech School Treatment Plant in Mannington Township, the Salem County Roads Department and garage and office in Pilesgrove Township, and the proposed Salem County Correctional Facilities in Mannington Township. Further information with regard to Pilesgrove Township is provided within Section 2.2.1 of the Pilesgrove municipality chapter. The facilities served by the WSA WWTP within Pilesgrove Township and Mannington Township municipalities are further defined within their respective municipal chapters.

The Woodstown WWTP is located on West Avenue and operates under NJPDES Permit Number-NJ0022250 effective on April 2007. The WSA-WWTP currently receives contributing flow from residential living and commercial units. Wastewater generated within the WMP existing sewer service area is conveyed to the WWTP, which is permitted to operate at 0.53 MGD. The plant is designed to withstand an instantaneous peak flow rate of 1.4 MGD according to the flow study prepared by RV&W, dated April 2005. The monthly flow generated by these contributors for the 2010 calendar year was 0.346 MGD.

C. CURRENT WATER SERVICES

The Borough of Woodstown community water supply system serves approximately 3,505 persons within their sewer service area according to current NJDEP data. This equates to 5.3 percent of the total Salem County population (66,083 persons, 2010 U.S. Census) being served by the waster treatment plant.

The water service area includes the Borough of Woodstown, and designated areas within Pilesgrove and Mannington located in Salem County, New Jersey. The facilities served by the Woodstown water supply system within adjacent municipalities are further defined within those municipal chapters respectively and clearly identified on the mapping provided.

The Borough of Woodstown owns and operates its own potable water supply system. The public is presently serviced from five (5) ground water wells located throughout the Borough. Three of these wells (#2, #3, and #5) withdraw water from the Potomac Raritan Magothy Aquifer (PRM). The other two wells (#4, #6) withdraw from the Mount Laurel-Wenonah Aquifer (MLW). In addition, the Borough of Woodstown constructed a Water Treatment Plant adjacent to Well #4 on West Millbrooke Avenue to treat for iron. Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

D. OVERVIEW OF ENVIRONMENTAL, AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES

Wastewater Management Planning is part of the continuing planning process required by the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) and Section 208 of the federal Clean Water Act. The intent of the continuing planning process is to align federal, State, regional and local land use planning to ensure that these land use plans do not conflict with each other.

The provision of environmental infrastructure, in particular centralized sewer service, has a profound influence on development patterns and intensity. The wastewater management planning process is intended to assign an appropriate wastewater management treatment alternative to geographic areas based on environmental sensitivity and other land use planning objectives such as regional center-based development or farmland preservation. The extension of public sewers into areas designated for protection by federal, State, regional or local land use plans would be inconsistent with those protection objectives.

The adopted Water Quality Management Planning Rules (N.J.A.C. 7:15) generally exclude the extension of sewer service into large contiguous areas, defined as 25 acres or more, of wetlands, category one water buffers, Natural Heritage Priority Sites and/or endangered and threatened species habitat. The extension of sewer service into these areas would encourage their development and thus conflict with the Department of Environmental Protection's statutory mandate to protect these resources.

It should be noted that under limited circumstances environmentally sensitive areas that meet the 25 acre threshold may be included in the sewer service area as necessary to preserve the investment in projects having already received certain local and State approvals, to relate sewer service areas to recognizable geographic features, or to accomplish center based development proposed by the local land use planning authority and approved by the Department of Environmental Protection through the plan endorsement process. Additional local land use planning objectives used in delineating appropriate areas for public sewer service are discussed in this municipal chapter.

E. OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES

A majority of the Borough of Woodstown is served by potable water and sanitary sewer service. The water system utilizes five (5) ground water wells located throughout the Borough. Three (3) wells are located within the Potomac-Raritan-Mogathy (PRM) Aquifer, which have exhibited elevated sodium levels. The secondary drinking water standard for sodium is 50 ppm and levels exceeding 100ppm have been recorded for these wells. The other two (2) wells withdraw from the Mount Laurel-Wenonah (MLW) Aquifer (MLW). The NJDEP has concerns regarding the productivity/sustainability of wells in this aquifer. The municipality has not identified any other issues regarding water quality, water supply or concerns with non-sewered areas.

F. OVERVIEW OF FUTURE WASTEWATER SERVICES

The Woodstown Sewerage Authority has identified the future sewer service area necessary to implement a portion of the goals and objectives of the Borough's Master Plan. Those areas have been reduced to account for the environmental constraints pertaining to wetlands, the habitats of Threatened and Endangered Species, Riparian Corridors, and C-1 Waters. The proposed Sewer Service Area is identified on Map No.3.

The proposed future sewer service areas delineated on Map No.3 consist of proposed future areas outside the existing sewer service area. The remaining areas, not designated as a sewer service area will continue to be serviced by Individual Subsurface Sewerage Disposal Systems (ISSDS's) with wastewater flows less than or equal to 2,000 gpd.

Based on the environmental and local land use planning objectives discussed above, Map No.2 and Map No.3 identify areas presently served by public sewers and the appropriate areas to be served by public sewers in the future. These maps also identify sites that are served by an on-site treatment works, if applicable, that are regulated under a New Jersey Pollutant Discharge Elimination System permit. Each sewerage treatment plant authorized under this plan to accept and treat wastewater from its corresponding sewer service area has an accompanying facility table that provides information concerning that facility's owner, operator, permitted flow, existing flow, remaining permitted flow, and projected build-out flow summarized by municipality.

Based on the buildout analysis of each sewer service area and the existing permitted capacity of the sewage treatment plants identified in this plan, sufficient wastewater treatment capacity exists to accommodate the currently proposed Sewer Service Area. Future expansion of the identified treatment works is not required to meet the future wastewater generation needs of the municipality.

G. SUMMARY OF SIGNIFICANT ACTIONS

Amendments to the Water Quality Management Planning Rules adopted on July 7, 2008, 40 N.J.R. 4000(a), necessitated a modification to certain sewer service areas based on environmental sensitivity and local planning objectives as described in this document. In accordance with the regulatory requirements, undeveloped lands within the existing sewer service area have been removed based on the limits of environmental constrained areas. In addition, areas have been added based on local planning objectives and an environmental sensitivity assessment. Maps No.2 and No.3 reflect the changes in sewer service area as a result of this wastewater management plan.

1. All areas not proposed to be included in the WSA sewer service areas in this WMP will be served by ISSDS's with 2,000 gpd or less flows.

II. EXISTING INFRASTRUCTURE AND TREATMENT FACILITIES

A. WASTEWATER TREATMENT PLANT

Map No. 2 depicts the areas actively served by existing wastewater facilities, and the facilities tables in Chapter 7 (VII) provide detailed information on each facility. As with sewer service, the term “actively served” means that the collection lines exist and that the property either is connected or has all regulatory approvals necessary to be connected.

The WSA WWTP is a localized system for the conveyance, treatment, and disposal of the municipalities' wastewater within its service area. The WWTP treats domestic waste as well as industrial waste. Treated wastewater is discharged to the Salem River under NJPDES Permit No. NJ0022250.

B. MAJOR TRANSMISSION PIPING AND PUMPING STATIONS

The Woodstown Sewerage Authority (WSA) owns and operates one wastewater treatment facility, a series of pump stations, and force mains used to convey wastewater flow to the WWTP. The sanitary sewer collection system in Woodstown is owned and maintained by the Authority. There is approximately 18.1 miles of sanitary sewer main with pipes ranging in size from 6 inches to 12 inches in diameter within the sewer service area. The Authority currently owns and operates seven (7) pump stations. All flows are conveyed to the WSA WWTP for treatment. Map No.2 depicts the areas actively served by existing wastewater facilities, and the tables in Chapter 7 (VII) provide detailed information on each facility. “Map No.2 shows the major interceptors, trunk lines and pumping stations within the various sewer service areas for public wastewater treatment facilities.

C. EXISTING ON-SITE, NON-INDUSTRIAL WASTEWATER FACILITIES

These facilities serve single developments, sites or other properties under single ownership, but do not treat industrial flows. These facilities typically provide wastewater treatment for apartment complexes, commercial properties and businesses where regional sewerage is not available. Table 2.C.1 lists all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing on-site, non-industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit.

Municipal Map Designation	Facility Name	NJPDES # & Discharge Type	Discharge Type (Groundwater or Surface Water)	Facility Table Number
51	Woodstown WWTP	NJ0022250 Municipal Multi-Municipality	DSW-A	51

D. EXISTING INDUSTRIAL WASTEWATER FACILITIES

Some industrial land uses have independent wastewater treatment facilities that treat and discharge manufacturing process waste or sanitary sewage, rather than other types of effluent such as non-contact cooling water. They may be discharged to ground water or to surface water. The Wastewater Facilities Tables provided in Chapter 7 (VII) list all existing industrial treatment facilities that discharge 2,000 gallons per day or more of domestic wastewater and are regulated under a NJPDES permit. However, the Borough of Woodstown does not contain any industrial wastewater treatment facilities.

E. GENERAL WASTEWATER MANAGEMENT AREAS FOR SEPTIC SYSTEMS

Generally the remaining areas of the Municipality, not otherwise designated as service areas for treatment facilities requiring a NJPDES permit, are included within a general wastewater management area for septic systems and other small treatment works that treat less than 2,000 gallons per day of wastewater and discharge to ground water. However, the proposed SSA for the Borough of Woodstown includes the entire municipality minus environmentally constrained areas. Consequently, general wastewater management areas for septic systems have not been designated and do not apply to this municipality.

F. EXISTING WASTEWATER FLOWS

The existing wastewater flows conveyed to the WSA WWTP were calculated based on flows metered by WSA. The present average annual wastewater discharged for 2010 is 0.346MGD. The present average flow includes residential, commercial and industrial flows. The following table 2.F.1 summarizes the permitted wastewater treatment plant capacity and associated average daily flows for 2010.

TREATMENT FACILITY	NJPDES Permit #	Permitted Capacity (MGD)	Average Daily Flow 2010 (MGD)	Build-Out Projection (MGD)
Woodstown WWTP	NJ0022250	0.53	0.346	0.152

Included within the above existing wastewater flows are connections located within the Townships of Pilesgrove and Mannington. The flows from these connections are identified within the specific municipal chapter or facilities tables provided within the appendix of this report. Monthly wastewater flow data for 2010 is identified in Table 2.F.2 below.

Table 2.F.2: Existing Wastewater Flows 2010				
Month	Monthly Avg. (mgd)		Estimated Monthly Avg. (mgd)	
			Woodstown Borough	Contributing Municipalities
January	0.359		0.359	0.000
February	0.439		0.439	0.000
March	0.506		0.506	0.000
April	0.396		0.396	0.000
May	0.321		0.321	0.000
June	0.310		0.310	0.000
July	0.298		0.298	0.000
August	0.292		0.292	0.000
September	0.303		0.303	0.000
October	0.319		0.319	0.000
November	0.310		0.310	0.000
December	0.307		0.307	0.000
Annual Average	(mgd)	0.346	0.346	0.000
	(mgm)	10.539	10.539	0.000
	(mgy)	126.469	126.469	0.000

The monthly flows indicated above are inclusive of contributory flows from connections located within Pilesgrove Township and Mannington Township. The specific flows from these adjacent municipalities are provided within those individual municipal chapters respectively.

G. EXISTING WASTEWATER TREATMENT

The WSA WWTP currently operates under NJPDES permit NJ0022250. The plant was designed for an average flow of 0.53 MGD, which is the present permitted capacity. A maximum plant capacity analysis was performed by the WSA Engineer Remington, Vernick & Walberg (RV&W) in April of 2005. This study identified the existing and maximum capacities of facility components.

H. EXISTING PUBLIC WATER SUPPLY INFRASTRUCTURE

The Borough of Woodstown is presently serviced from five (5) ground water wells located throughout the Borough. Three of these wells (#2, #3, #5) withdraw water from the Potomac Raritan Magothy Aquifer (PRM). The other two wells (#4, #6) withdraw from the Mount Laurel-Wenonah Aquifer (MLW). In addition, the Borough of Woodstown constructed a Water Treatment Plant adjacent to Well #4 on West Millbrooke Avenue to treat for iron.

Generally, sanitary sewer service is available where potable water service is currently in place. Map No.1 depicts the areas actively served by existing public water supply facilities. As with sewer service, “actively served” means that the distribution lines exist and that the property either is connected or has all regulatory approvals necessary to be connected with no further review.

The Borough of Woodstown water supply system serves the Borough of Woodstown, and designated areas within Pilesgrove and Mannington located in Salem County, New Jersey.

The following Table 2.H.1 summarizes each public community water supply facility currently serving the municipality. The franchise areas are depicted on Map No.1.

Well Permit Number	Well Designation	Pump Capacity (gpm)	Aquifer
5000000038	2	425	PRM
3000001441	3	600	PRM
3000009510	4	200	MLW
3000013120	5	550	PRM
3000019108	6	200	MLW

Information presented within this municipal chapter was obtained from the most current water allocation permit, previous WMP documents provided by the County, online DEP sources and the Borough of Woodstown.

The three (3) wells located within the Potomac-Raritan-Mogathy Aquifer range in depth from 675 feet to 712 feet below the ground surface. As a result of the this depth, the wells located within the Potomac-Raritan-Mogothy Aquifers are below sea level and the sodium levels are considered high (175-315 mg/L). The chlorides (135-240 mg/L) and total dissolved solids (565-860 mg/L) are also considered to be at high levels.

In an effort to reduce the total withdrawal from the Potomac-Raritan-Mogothy Aquifer, the Borough of Woodstown has drilled Well #4 within the Mount Laurel-Wenonah Aquifer. Well #4 is located along East Millbrooke Avenue near the Mary Shoemaker School. Well #4 was drilled to a depth of 160 feet with a rated capacity of 400 gallons per minute. The potable water obtained from Well#4 is low in sodium (2-3 mg/L), chlorides (5 mg/L) and total dissolved solids (300 mg/L).

The Borough of Woodstown constructed a Water Treatment Plant adjacent to Well #4 on West Millbrooke Avenue to treat the effluent for iron. The Water Treatment Plant removes iron by means of continuous regeneration potassium permanganate. The effluent is not treated for hardness at the Water Treatment Plant.

The Borough of Woodstown drilled Well #5 adjacent to Well #4. Well #5 was drilled within the Potomac-Raritan-Mogothy Aquifer to a depth of 675 feet and a rated pumping capacity of 500 gpm. Well #5 has the same effluent characteristics as Well #2 and Well #3, all drilled within the Potomac-Raritan-Mogothy Aquifer. The effluent is high in sodium, chlorides, and total dissolved solids while having low hardness, iron and manganese levels. The effluent from Well #5 is mixed with the effluent from Well #4 at a ratio of 2.3:1 in the Water Treatment Plant to bring the total hardness within acceptable levels.

The Borough of Woodstown drilled Well #6 within the Mount Laurel-Wenonah Aquifer. Well #6 is approximately 650 feet from Well #4 and Well #5 and is piped to the existing Water Treatment Plant located on East Millbrooke Avenue.

I. EXISTING PUBLIC WATER SUPPLY ALLOCATION AND DAILY DEMANDS

The Borough of Woodstown currently has an average daily usage of approximately 0.379 million-gallons/day based upon the 2010 calendar year. The peak annual and monthly water demand over a period of 5 years between 2006 through 2010, occurred in 2008.

The following Table 2.I.1 summarizes current water allocation diversion limits permitted for the public community water system.

Table 2.I.1: Water Allocation and Demand 2010				
Water Company	Permit # / Program Interest ID	Water Allocation (mgm) / (mg)	Average Demand (mgm) / (mg)	Build-Out Projection (mgm) / (mg)
Woodstown Water Dept	5167 / WAP070001	19.00 / 174.10	11.54 / 138.448	5.055 / 59.523

The following Table 2.I.2 summarizes historical daily, monthly and annual water demands currently supplied by the public community water system. The districts and franchise areas are depicted on Map No.1.

Year	Annual Demand Total (mgy)	Average Daily Demand (mgd)	Average Monthly Demand (mgm)	Peak Monthly Demand (mgm) / (Month)	
2006	132.374	0.363	11.031	14.257	August
2007	141.088	0.387	11.757	15.076	July
2008	141.631	0.388	11.803	15.432	July
2009	130.790	0.358	10.899	13.775	July
2010	138.448	0.379	11.537	14.054	August

III. ENVIRONMENTAL AND OTHER LAND FEATURES

A full description of the mapping of environmental features for the County can be found in Chapter I of this report. This section includes a summary of the environmental features and public open space for the municipality that were taken into account when preparing the mapping. These features are significant to wastewater management planning for three reasons: they may influence the delineation of sewer service areas, they may reduce the potential future wastewater generation due to existing regulatory programs, or they may be subject to federal grant limitations that prohibit the extension of sewer service into these areas. Some of this mapping has been used in the development of a map of environmentally sensitive areas where the extension of sewer service areas is restricted (see **Delineation of Sewer Service Areas**, below).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the Department of Environmental Protection for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

The following environmental features have been identified within the County map set:

- A.** Surface Waters and Classifications—Refer to Map No.5A of County map set
- B.** Riparian Zones -- Refer to Map No.5C of County map set
- C.** Flood Prone Areas – Refer to Map No.5A of County map set
- D.** Freshwater Wetlands -- Refer to Map No.5B of County map set
- E.** Coastal Wetlands –Refer to Maps 5A and 5B of County map set
- F.** Public Open Space and Recreation Areas –Refer to Map No.5B of County map set
- G.** Preserved Agricultural Areas and Other Conservation Easements on Private Lands – Refer to Map No.5C of County map set
- H.** Suitable Habitat for Threatened and Endangered Species – Refer to Maps 5B and 5C
- I.** Natural Heritage Priority Sites –Refer to Map No.5C of County map set

IV. DELINATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION

The results of the environmental analyses, summarized in Section III above, provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. This WMP chapter provides the most current planning efforts within the municipalities WMP planning area.

The WQMP rules NJAC 7:15-5.22 require coordination with and solicitation of comments or consent from certain agencies, entities and plans, and consistency with other plans. These requirements are addressed in the Chapter 1, Salem County Summary within this document.

This chapter provides the method used to delineate future sewer service areas based on the mapping of significant environmentally sensitive areas, and consistency with other regional plans.

A. ENVIRONMENTALLY SENSITIVE AREAS MAP

Under the Water Quality Management Planning Rules, large contiguous environmentally sensitive areas, generally defined as 25 acres or greater in size should be excluded from sewer service areas except under certain circumstances such as providing service to development that has already secured prior approvals or center based development approved by the Department of Environmental Protection through the Plan Endorsement process. Maps 5A, 5B and 5C, of the County map set, reflect the final results for the mapping of environmentally sensitive areas, based on the information described above and the WQMP rules. These maps were created using the following process:

1. Identify areas (to the extent that GIS interpretations are available) where pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) provide for restriction of sewer service to environmentally sensitive areas, and then delete areas (if any) where a map revision or grant waiver has been approved by USEPA. Note: pre-existing grant conditions and requirements (from Federal and State grants or loans for sewerage facilities) which provide for restriction of sewer service to environmentally sensitive areas are unaffected by adoption of this WMP and compliance is required.
2. Merge the GIS layers for wetlands, Category One riparian zones, Natural Heritage Priority Sites, and Threatened and Endangered Species habitats, and any others used by the County areas into a single composite GIS coverage.
3. Correct the composite areas by eliminating areas designated as urban in the most recent land use land cover layer (2002) to address land use/land cover modifications that have occurred since the environmental feature layers were prepared.

4. Identify and delete any composite areas less than 25 acres in size from the map of environmentally constrained areas. The resulting map shows the final environmentally sensitive areas, which is used to eliminate the potential for sewer service areas except where sewer service already exists, or exceptions are allowed for infill development or approved endorsed plans. It is noted for public information purposes that the excluded areas will be protected through other NJDEP regulatory programs such as the Flood Hazard Area Control Act and Freshwater Wetlands Act rules, and may be protected by municipal ordinances as well.

B. SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS

The WQMP rules allow for inclusion of environmentally sensitive areas under limited conditions. The following modifications were considered for the WMP:

1. Where a development has secured approval under the Municipal Land Use Law and possesses a valid wastewater approval, the site may be included in the sewer service area if consistent with that valid wastewater approval. This information was gathered in consultation with municipalities.
2. Where a project has an approved site-specific water quality management plan and wastewater management plan amendment from the Department the project may be included in the wastewater management plan consistent with that approved site specific amendment for a period of six years from the date the amendment was adopted. The general locations of these developments are indicated on Map No.3, if applicable, and are keyed to a list of qualifying developments in each municipal chapter.
3. Where environmentally sensitive areas are bordered on either side by areas with existing sewer service, and where the infill development would generate 2,000 gpd or less of sewage based on existing zoning and where the area to be included does not include habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.
4. Where sewer service is necessary to support for center based development under an “endorsed plan” (through the State Planning Commission relative to the State Development and Redevelopment Plan) and would not remove habitat critical to endangered or threatened species. Where such modifications have been made, they are noted in the individual municipal chapters.
5. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species. Where necessary to create a linear boundary that related to recognizable geographic features and would not remove habitat critical to the recovery potential or the survival of a local population of an endangered or threatened species.

C. EXCEPTIONS TO THE USE OF GEOGRAPHIC OR POLITICAL BOUNDARIES

The existing Sewer Service Area boundary was derived from existing sanitary sewer infrastructure currently constructed or approved. These boundaries hold tightly to geographical features and political boundaries within the municipality. No exceptions were made for the delineations used in this WMP.

D. ENVIRONMENTALLY SENSITIVE AREAS – DATA SOURCES

The information described above with regard to the mapping of proposed sewer service areas and Environmentally Sensitive Areas was obtained from various sources. Table 4.D.1 below highlights the information and sources used to delineate environmentally constrained areas.

Table 4.D.1 Information Sources for Environmentally Constrained Areas		
Category	Source	Source Location
Wetlands	NJDEP	www.state.nj.us/dep/gis
Floodplains	FEMA	www.msc.fema.gov/webmap/wcs
Stream Corridors	NJDEP	www.state.nj.us/dep/gis
Threatened & Endangered Species	NJDEP	www.njfishandwildlife.com
Parks, Preserves, & Open Space	Green Acres Recreation Program & NJDEP	www.state.nj.us/dep/gis
Surface Water Quality Standards	NJDEP	www.state.nj.us/dep/gis
National Heritage Priority Sites	NJDEP	www.state.nj.us/dep/gis
Zoning	Municipality	Current Ordinance

V. FUTURE WASTEWATER DEMAND AND FACILITIES

Proposed future sanitary sewer flows conveyed to the Salem City WWTP projected under build-out conditions were evaluated based on two sets of data; sanitary flows projected within the existing sewer service area and proposed flows for the future sewer service area. Future flows within the existing sewer service area utilize a “parcel based” method for calculating the flows of infill development. Whereas, future sanitary flows within the expanded sewer service area utilize a “zoning based” method for calculating the build-out. The build-out data is then converted to a projected future wastewater flow by applying the planning flow criteria from N.J.A.C. 7:14A based on the type of development projected.

All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on the available developable land and current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

For example, single-family residential development is assumed to consist of houses having three or more bedrooms per house, and each projected new house is multiplied by 300 gallons per day to predict the future wastewater generated. For non-residential land uses the anticipated floor area is multiplied by 0.1 gallon per day to predict future wastewater generation. A more detailed explanation of build-out flow calculations and criteria used is provided in the tables below.

The build out in the non-sewer service area was calculated by applying the zoning over all undeveloped land except polygons too small to support additional development. The number of residential units and non-residential floor area were then multiplied by the wastewater planning flow estimates in either N.J.A.C. 7:14A or 7:9A as appropriate.

The build out method used for the wastewater demand was also used to predict future water supply demand, except that the flow multiplier used to predict future water supply demand is slightly higher than that used for wastewater demand. The results of the analysis are presented within this chapter and in the facilities tables found in the appendices at the end of this document.

A. CONFORMANCE AND NONCONFORMANCE WITH ZONING AND PRIOR LAND USE APPROVALS

Where the WMP build out deviates from either current zoning or prior land use approvals, such deviation and the reasons for the deviation are explained in this chapter

B. MUNICIPAL ZONING AND COMPOSITE ZONING

The municipal zoning information provided below is specific to this chapter. Because municipal zoning ordinances are not uniform in their nomenclature or definitions, a composite zoning map has not been developed. Table 5.B.1 below identifies the zoning specific to this chapter and was been utilized for the associated build-out analyses.

“SSA Developable Area” includes both undeveloped and underdeveloped parcels within the proposed sewer service area. “Undeveloped” parcels are those where no development exists and the land has not been restricted from development through dedicated open space or agricultural preservation programs. “Underdeveloped” parcels are those where some level of development exists, but at a density less than allowed by zoning and where deed restrictions do not prevent further development.

Zone Name	Zone Description	Municipal Area (ac)	SSA Developable Area (ac)
C1	COMMERCIAL	14.6	0.71
C2	COMMERCIAL	2.8	0.50
C3	COMMERCIAL (PRINCIPAL USE, SHOPPING CENTER)	31.8	9.65
CONS	CONSERVATION	133.3	0.34
CR	COMMERCIAL	112.5	0.35
IR	INDUSTRIAL	14.4	12.39
LC	LIGHT COMMERCIAL	21.4	0.64
LI	LIGHT INDUSTRIAL	67.2	11.13
R1	RESIDENTIAL	15.5	0.00
R2	RESIDENTIAL	57.1	2.86
R3	RESIDENTIAL (SINGLE FAMILY, DUPLEX / TWIN)	88.8	3.05
R4	RESIDENTIAL	196.9	0.00
R5	RESIDENTIAL	100.6	21.60
R6	RESIDENTIAL (SINGLE FAMILY, MULTI-FAMILY, CLUSTER)	176.7	25.65
R7	RESIDENTIAL	98.0	0.00
SI	SUPPLY INDUSTRIAL	13.5	0.00

C. CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY

Using the municipal information provided above regarding existing wastewater and water supply facilities, sewer service area delineation, environmentally sensitive areas, and municipal zoning to project build-out or 20 year growth projections for the listed urban municipalities, an analysis of wastewater and water supply demands was performed to determine whether existing infrastructure capacity or zoning is a constraining factor.

There are two methods used for projecting future wastewater management needs: a 20-year projection for urban municipalities or a build out based on existing zoning for non-urban municipalities. An urban municipality is defined as those municipalities where less than 10 percent of the total land area of the municipality is “available land for development” after subtracting out permanently preserved open space.

D. MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES

The Borough of Woodstown does not meet the definition of an urban municipality as defined above. Consequently, future wastewater build out projections are based on existing zoning identified below.

E. MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES

Development of vacant land will be the predominant factor in determining future wastewater treatment needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide wastewater treatment while protecting surface and ground water quality for the entire projected build out allowable by zoning. There are two separate methods employed for calculating future wastewater generation at build out, based on the wastewater service area designation.

1. Future Wastewater from Non-Urban Municipalities' Sewer Service Areas

In designated sewer service areas the following features have been removed prior to the application of zoning to the undeveloped land area because they are unlikely to generate wastewater in the future: wetlands, riparian zones, permanently preserved farmland, permanently preserved open space, steep slopes, floodplains, and cemeteries. The existing zoning is then applied to the remaining developable land area within the sewer service area(s) to project a build out condition for use in estimating the future wastewater management needs of each sewer service area. Build out data for each municipality has been provided on a compact disk (cd) for reference.

The Borough of Woodstown's existing sewer service area extends to the municipal boundary and serves portions of Pilesgrove Township and Mannington Township as defined on Map No.3. Consequently, infill development has been identified by utilizing a parcel based build-out approach as defined below. The zoning based analysis was not required for this municipality.

2. Existing Sewer Service Area Build-Out Analysis

The build-out of the existing sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a "parcel based" build out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Residential flows were projected assuming 300gpd / dwelling unit. Commercial and industrial flows were projected assuming 0.1 GPD/ sq.ft. of building area.

Table 5.E.2.1 summarizes the build-out flow projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 5.E.2.1: FWSA Overall Sewer Service Area Build-Out Projections				
Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
C1	0.71	15,385	0	1,538
C2	0.50	1	850	850
C3	9.65	16	850	12,800
CONS	0.34	0	300	0
CR	0.35	1	800	300
IR	12.39	111	800	33,300
LC	0.64	4	800	3,200
LI	11.13	3	2,614	7,842
R1	0.00	0	300	0
R2	2.86	17	225	3,825
R3	3.05	24	225	5,400
R4	0.00	0	300	0
R5	21.60	79	300	23,700
R6	25.65	92	300	27,600
R7	0.00	0.00	300	0
S1	0.00	0.00	300	0
Pilesgrove School				5,000
Mannington Previously Allocated Flow				27,000
		TOTAL	(gpd)	152,355
			(mgd)	0.152

The notes referenced below are indicated in the above table.

Notes:

- a. The Developable Acres represents the identified acreage per zone within the FWSA.
- b. The POTENTIAL UNITS represent the number of remaining units that may be constructed within each zone within the sewer service area.
- c. Average Daily Flow has been calculated based on current NJDEP regulations.
- d. The TOTAL ADF represents the remaining potential build-out within the existing sewer service area.
- e. Conservation Zone CONS, Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings.
- f. Residential Zones, R1, R4, R5, R6 & R7, Average Daily Flow Based on 300 GPD established for 3 or more bedroom dwellings.
- g. Residential Zones, R2 & R3, Average Daily Flow Based on 225 GPD established for 1-2 bedroom dwellings.
- h. Commercial Zone LC, ADF Based on 0.1 gal/SF established for a Floor Area of 8,000sf.
- i. Commercial Zone C1, Average Daily Flow Based on 0.1 gal/SF established for a 2:1 Floor Area Ratio Applied to Lot Acreage.
- j. Commercial Zone C2, ADF Based on 0.1 gal/SF established for a Floor Area of 8,500sf
- k. Commercial Zone C3, ADF Based on 0.1 gal/SF established for a Floor Area of 8,500sf for parcels less than 5 acres; 7500sf for greater than 5 acres
- l. Industrial Zones LI, Average Daily Flow Based on 0.1 gal/SF established for Offices and Industry (20% coverage of 3 Acres or 26,136 SF respectively)
- m. Table Information has been adjusted to reflect previously approved developments. Information provided by Woodstown.
- n. A reduction of available lot area has been indicated to account for Right-of-Way, Open Space and Basin requirements of potential development.
- o. Individual parcels with less than the minimum lot size for each zone have not been assessed an average daily flow value.

3. Future Sewer Service Area Buildout Analysis

Generally, the future sewer service area build out is prepared utilizing a “zoning based” build out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

All proposed flows for the Borough of Woodstown, included as part of this WMP submission, are identified within section 5.E.2 above.

F. FUTURE WASTEWATER OUTSIDE OF SEWER SERVICE AREAS

Generally, the default wastewater management alternative to support development in areas that are not designated as sewer service area is discharge to groundwater less than 2,000 gallons per day. A nitrate dilution analysis for septic systems is typically performed, in similar fashion to that conducted for sewer service areas, except that environmentally sensitive areas are not removed prior to performing the build out analysis. The intent of this analysis is to assess the available dilution on a HUC 11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the regulatory nitrate target.

The Borough of Woodstown’s existing sewer service area extends to the municipal boundary. Consequently, the nitrate dilution analysis necessary for assessing the future wastewater outside of a sewer service area is not applicable.

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS

This section of the wastewater management plan analyzes whether there is sufficient wastewater treatment capacity to meet the needs of the Municipality based on the projections described above. For sewer service areas this requires a comparison of the projected future demand to the existing capacity of the sewage treatment plant.

A. ADEQUACY OF SEWAGE TREATMENT PLANT CAPACITY

Table 6.A.1 provides a comparison of existing wastewater treatment capacity with existing and future flow demands within the municipality. Current treatment capacity was taken from the most current NJPDES permit, and average daily flows for the WWTP were taken from the NJDEP website database for NJPDES facilities. The final column determines whether existing capacity is sufficient to accommodate the projected flows. Details of the projections are included within the appendices and municipal chapters, which also address any needs for new or expanded treatment facility discharges.

Table 6.A.1: Wastewater Treatment Plant Capacity					
Treatment Works	Permit #	Current Treatment Capacity (mgd)	Average Daily Flows 2010 (mgd)	FWSA Build-Out Projection (mgd)	Remaining Treatment Capacity (mgd)
Woodstown WWTP	NJ0022250	0.53	0.346	0.152	0.032

The total treatment capacity for the sanitary sewer system that serves the municipality (0.53 MGD) is greater than the projected flows necessary to support existing demands and proposed development within the sewer service area (0.498 MGD). The calculations were based on the proposed build-out projections and average daily flow values utilized within the regulations for each type of development. Based on the analysis presented above, sufficient wastewater treatment capacity exists to accommodate the currently proposed FWSA.

B. ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES

This section is not applicable to this municipality, as sufficient capacity currently exists to address the future wastewater management needs projected by the plan.

C. ANTIDEGRADATION ANALYSIS FOR NEW AND EXPANDED DOMESTIC TREATMENT WORKS

This section is not applicable to this municipality as new or expanded wastewater facilities are not being proposed at this time.

D. DISCHARGES TO GROUND WATER

This Section is not applicable as the Borough of Woodstown’s existing sewer service area extends to the municipal boundary and a nitrate dilution analysis has not been provided, as indicated above.

E. ADEQUACY OF DILUTION TO MEET FUTURE NON-SEWER SERVICE AREA DEMAND

Generally, a wastewater estimation tool, provided by the Department is used to compare existing zoning to the available nitrate dilution within each HUC11 in an effort to determine whether adequate dilution is available to meet future non-sewer service area demands. However, as indicated above, the Borough of Woodstown’s existing sewer service area extends to the municipal boundary and this analysis is not applicable for this municipality.

VII. FUTURE WATER SUPPLY AVAILABILITY

The purpose of the Depletive/Consumptive Water Use Analysis is to determine if there is sufficient water supply to serve the proposed development of the municipality. The analysis should compare the build-out water supply need with the existing permitted water allocation. To complete the objective of this analysis, water allocation and drinking water demand within the existing sewer service area were compared. A build-out projection of the proposed sewer service area was then prepared to determine the additional water demands that may result. These demands were also compared to the water allocation to verify whether sufficient water supply exists to serve the proposed development.

A. SUFFICIENCY OF WATER SUPPLY

The Borough of Woodstown’s current water allocation and existing average water demands are identified in Section 2 of this municipal chapter. Development of vacant land was the predominant factor in determining future water supply needs. Further, because external market and economic forces, such as interest rates, are a dominant factor in determining the rate of construction, this analysis assesses the ability to provide potable water while protecting surface and ground water quality for the entire projected build-out allowable by zoning.

Proposed daily demands required to support development within the future sewer service area utilized the same method of analysis as was performed for the sanitary sewer analysis. Future demands are generally evaluated and projected based on two sets of data; water demands projected within the existing sewer service area and proposed water demands for the expanded sewer service area. Future water demands within the existing sewer service area utilize a “parcel based” method for calculating the demand of infill development. Whereas, future water demands within the expanded sewer service area utilize a “zoning based” method for calculating the demand.

Water demands were evaluated based on current zoning of identified developable land. All projected flows were separated into residential, commercial, and industrial components. Total projected build-out flow for residential, commercial and industrial development was determined based on current zoning ordinances for the municipality within areas proposed as the future sewer service area. Environmental constraints with required buffers were also considered and indicated within the Mapping section of this report.

Proposed daily demands were evaluated and projected based on two sets of data. This included identified developable land within the existing sewer service area or infill development as well as proposed future development within the expanded sewer service area. The summaries for each of these sets of data are provided below.

1. Existing Sewer Service Area: Water Build Out Analysis

The build-out of the sewer service area consisted of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas. The projections are based on the potential for development of existing infill lots within areas zoned for each use and the most current land use regulations for the municipality. Generally, infill development of the existing sewer service area was prepared utilizing a “parcel based” build-out approach.

The total number of potential units within each residential, commercial and industrial district was then multiplied by the maximum percent building coverage specified in the zoning ordinances to reach a maximum building area at build-out. Generally, residential flows were projected assuming 320gpd / dwelling unit. Commercial flows were projected assuming 0.125 GPD/sq.ft. of building area.

Table 7.A.1.1 summarizes the build-out water demand projections for the existing sewer service area. In addition, the table reflects a breakdown of the acreage of land available for development (i.e., either undeveloped or underdeveloped, and not constrained due to environmentally sensitive areas) within each general zone of the municipality, based on the build-out analysis.

Table 7.A.1.1: FWSA Water Supply Build-Out Projections				
Zone	Developable Acres	Potential Units	Average Daily Flow (GPD)	Total ADF (GPD)
	<i>See Note (a)</i>	<i>See Note (b)</i>	<i>See Note (c)</i>	<i>See Note (d)</i>
C1	0.71	15,385	0	1,923
C2	0.50	1	1,063	1,063
C3	9.65	16	1,063	14,504
CONS	0.34	0	320	0
CR	0.35	1	1,000	320
IR	12.39	111	1,000	35,520
LC	0.64	4	1,000	4,000
LI	11.13	3	3,267	9,801
R1	0.00	0	320	0
R2	2.86	17	225	3,825
R3	3.05	24	225	5,400
R4	0.00	0	320	0
R5	21.60	79	320	25,280
R6	25.65	92	320	29,440
R7	0.00	0.00	320	0
S1	0.00	0.00	320	0
Pilesgrove School				5,000
Previously Allocated Demand				27,000
TOTAL			(gpd)	163,076
			(mgd)	0.163
			(mgm)	5.055
			(mgy)	59,523

The notes referenced below are indicated in the above table.

Notes:

- a. The Developable Acres represents the identified acreage per zone within the FWSA.
- b. The POTENTIAL UNITS represent the number of remaining units that may be constructed within each zone within the sewer service area.
- c. Average Daily Flow has been calculated based on current NJDEP regulations.
- d. The TOTAL ADF represents the remaining potential build-out within the existing sewer service area.
- e. Conservation Zone CONS, Average Daily Flow Based on 320 GPD established for 3 bedroom dwellings.
- f. Residential Zones, R1, R4, R5, R6 & R7, Average Daily Flow Based on 320 GPD established for 3 bedroom dwellings.
- g. Residential Zones, R2 & R3, Average Daily Flow Based on 225 GPD established for 1-2 bedroom dwellings.
- h. Commercial Zone LC, ADF Based on 0.1 gal/SF established for a Floor Area of 8,000sf.
- i. Commercial Zone C1, Average Daily Flow Based on 0.125 gal/SF established for a 2:1 Floor Area Ratio Applied to Lot Acreage.
- j. Commercial Zone C2, ADF Based on 0.125 gal/SF established for a Floor Area of 8,500sf
- k. Commercial Zone C3, ADF Based on 0.125 gal/SF established for a Floor Area of 8,500sf for parcels less than 5 acres; 7500sf for greater than 5 acres
- l. Industrial Zones LI, Average Daily Flow Based on 0.125 gal/SF established for Offices and Industry (20% coverage of 3 Acres or 26,136 SF respectively)

2. Future Sewer Service Area: Water Buildout Analysis

Generally, the future sewer service area build-out is prepared utilizing a “zoning based” build-out approach. The build-out of future sewer service areas typically consists of evaluating residential, commercial and industrial flow projections to the extent of development that could occur according to applicable zoning in developable areas, which are outside of the existing SSA.

The Borough of Woodstown’s existing sewer service area extends to the municipal boundary. All proposed water demands for the Borough, included as part of this WMP submission, are identified within section 7.A.1 above.

3. Analysis of Water Capacity to Meet Supply Needs

This section of the wastewater management plan analyzes whether there is sufficient potable water treatment capacity to meet the needs of the Municipality based on the projections described above. This requires a comparison of the projected future demand to the existing capacity of the water supply system.

Table 7.A.3.1 provides a comparison of existing water allocation with existing and future water demands within the municipality. The final column determines whether existing capacity is sufficient to support projected daily demands.

Water System	Permit #	Current Water Allocation (mgm)/(mgy)	Average Demand 2010 (mgm)/(mgy)	FWSA Build-Out Projection (mgm)/(mgy)	Remaining Water Allocation (mgm)/(mgy)
Woodstown Water Department	WAP070001	19.00 / 174.10	11.54 / 138.448	5.055 / 59.523	2.405 / (-23.871)

The total monthly water allocation for the water system that serves the municipality is greater than the water supply necessary to support existing demands and proposed development within the sewer service area. However, annual allocation would be insufficient to support complete development of the FWSA. The projected calculations were based on the proposed build-out projections and average daily demand values utilized within the regulations for each type of development.

Based on the analysis presented above, the Borough of Woodstown appears to have sufficient monthly allocation to accommodate the FWSA water build out, but the annual diversion may be exceeded if the complete FWSA build-out is realized.

As population increases and development expands, the Borough will need to obtain water supply to support the FWSA in its entirety. Water conservation measures could be enforced during peak water use periods in an effort to reduce the projected annual water demand. However, it should be noted that conservation measures alone would likely not be sufficient as the Borough's probably already realized much of the available reduction as evidenced by low peak per capita use and low unaccounted for water.

In addition to water conservation measures, the Borough may also elect to obtain an additional/alternative water supply source. The Borough will need to review available options and determine the feasibility of each option. Water supply additions/alternatives that could be evaluated consist of interconnection to NJAW, construction of new wells, and desalination.

1. Interconnection with NJAW: The closest potential interconnection with NJAW is approximately 6 miles from Woodstown. A pipeline of this length would be cost prohibitive and could have significant obstacles which may include extending water supply mains through Preserved Farmland, road opening/railroad crossing permits, stream crossings/FW wetlands permits, etc.
2. Construction of New Wells: As stated above, the Department has concerns regarding the water quality and quantity associated with Woodstown's current groundwater diversion sources. Based on a cursory review of available published data from USGS, the Upper PRM aquifer may be a potentially viable supplemental source of supply.
 - a. Woodstown should consider testing the water quality (i.e. for Sodium and Chloride) in the Upper PRM aquifer before committing any substantial resources to installing well(s) in the Upper PRM.
 - b. If the water quality is found acceptable and quantity sufficient, Woodstown could even pursue replacing some or all of the existing Middle PRM wells with Upper PRM well(s).
 - c. It should be noted that additional discussions would have to be engaged between Woodstown and the Bureau of Water Allocation and Well Permitting and the New Jersey Geological and Water Survey before pursuing the installation of any new wells in the area.
3. Desalination: Construction, operation and maintenance costs may be cost prohibitive based on Woodstown's population and demands.

Given the options indicated above and considering the small size and location of the municipality, in order for the Borough to obtain adequate annual allocation to support the water supply demands of the existing and future sewer service area, a significant investment could be required on the part of Woodstown.

VIII. MAPPING REQUIREMENTS

A. BASIS FOR SERVICE AREA DELINEATIONS

The results of the required environmental analyses, summarized in Section III and the delineation of the sewer service areas identified in section IV above provide justification for the established service area delineations by demonstrating consistency with all applicable NJDEP requirements and criteria. The Salem WMP provides the most current planning efforts within the Sewer Service Area.

The Woodstown proposed Sewer Service Area encompasses the future sewer service area necessary to implement the goals and objectives of the municipality. Those areas have been reduced to account for the buffer requirements regarding wetlands, the habitats of Threatened and Endangered Species and Riparian Corridors.

The proposed Woodstown Sewer Service Area does not contain any areas located within the Pinelands. Areas located within the watershed of a Fresh Water One (FW1) stream, as classified in the Surface Water Quality Standards, and/or that have Class I-A ground water (Ground Water of Special Ecological Significance), as classified in the Ground Water Quality Standards, are identified as "Non-degradation water areas based on the Surface Water Quality Standards at NJ.A.C. 7:9B, and/or the Ground Water Quality Standards at NJ.A.C. 7:9-6." Areas so designated are included on Map No.3. Non-degradation water areas shall be maintained in their natural state (set aside for posterity) and are subject to restrictions.

B. MAPPING CLASSIFICATION

The mapping for this municipal chapter of the WMP was created by using available data from NJDEP, online GIS data sets and has been prepared in accordance with NJDEP WMP guidelines. The maps included within this submission reflect the requirements for preparing a Water Quality Management Plan Amendment. Five (5) maps with specific features have been provided. Supplemental maps have been included to clarify information in an effort to clearly depict the required information. Each map has been provided with a complete and readily understandable legend. All 30" x 42" maps have been developed using New Jersey Department of Environmental Protection Geographic Information System digital data at a scale of 1" = 1 mile'. Additional 11" x 17" maps have been provided within each report for convenience. The maps are classified below:

1. Map #1: WMP Municipal Map/Water Infrastructure

The map depicts the municipal boundary as well as the potable water infrastructure, if applicable. The map also includes Woodstown Borough's municipal boundary, HUC-11, and existing water service infrastructure. There are no areas within the Hackensack Meadowlands District, Pinelands Areas, Pinelands National Reserves, or franchise areas within the Borough of Woodstown. The Woodstown Sewerage Authority regulates all public sewer and water within the WMP planning area.

2. Map #2: Existing Facilities & Service Areas

The map depicts the existing wastewater service area. This map also identifies the present extent of actual sewer infrastructure within the municipal boundary of Salem City, including all sewer department buildings, existing NJPDES facility (WWTP) locations, pump stations, force mains, and gravity sewers. All areas outside the existing sewer service area are served by ISSDS with wastewater planning flows of less than or equal to 2,000 gpd.

3. Map #3: Proposed Facilities & Service Areas

The map illustrates the wastewater service areas, non-degradation areas, pumping stations, major interceptors and trunk lines, which are proposed to exist in the future. The boundaries of future service areas coincide with recognizable geographic or political features (i.e., roads, lot lines, zoning area boundaries, water bodies). The proposed future infrastructure and facilities are also depicted on the map. The existing infrastructure and facilities from Map No.2 are also included in this map.

4. Map #4: Woodstown Borough Zoning Map

The map depicts the current zoning of the Borough of Woodstown. The zoned minimum lot acreage for Commercial, Industrial and Residential areas within the WMP proposed Sewer Service Area indicated in Table 8.B.4.1 below were utilized to determine calculated flows within the future sewer service area.

Zone	Zone Title	Minimum Lot Area	Minimum Lot Width	Minimum Lot Depth	Minimum Front Yard Setback	Minimum side yard setback	Minimum rear yard setback	Maximum Building Height	Maximum Building Coverage	Maximum Impervious Coverage	
CONS	CONSERVATION	5 ACRES	300'	400'	80'	30'	60'	35'	5%	5%	
R1	RESIDENTIAL	5 ACRES	150'	200'	40'	30'	40'	35'	20%	10%	
R2	RESIDENTIAL	6,000 SF	50'	100'	30'	10'	20'	35'	20%	10%	
R3	RESIDENTIAL	SINGLE FAMILY DETACHED	6,000 SF	50'	100'	30'	10'	20'	35'	20%	10%
		TWIN / DUPLEX	7,500 SF	60'	120'	30'	10'	20'	25'		
R4	RESIDENTIAL	6,800 SF	65'	100'	30'	10'	20'	35'	20%	10%	
R5	RESIDENTIAL	8,000 SF	70'	100'	35'	15'	25'	35'	20%	10%	
R6	RESIDENTIAL	SINGLE FAMILY DETACHED	12,000 SF	90'	125'	35'	15'	20'	35'	20%	10%
		MULTIFAMILY	5 ACRES	300'	400'	40'	20'	40'	35'	40%	30%
		CLUSTER	8,000 SF	70'	100'	35'	15'	25'	35'		
R7	RESIDENTIAL	18,000 SF	120'	140'	35'	20'	35'	35'	20%	10%	
LC	LIGHT COMMERCIAL	6,000 SF	50'	100'	30'	10'	20'	35'	20%	10%	
C1	COMMERCIAL	2.0 (FLOOR AREA RATIO)	30'	100'				40'			
C2	COMMERCIAL	25,000 SF	125'	175'	50'	15'	20'	35'	15%	15*	
C3	COMMERCIAL	PRINCIPAL USE	25,000 SF	125'	175'	50'	15'	20'	35'	15%	65%
		SHOPPING CENTER	5 ACRES	400'	400'	150'	15'	40'	35'	25%	55%
SI	SUPPLY INDUSTRIAL	1 ACRE	150'	200'	50'	25'	25'	40'			
LI	LIGHT INDUSTRIAL	3 ACRES	250'	300'	50'	30'	50'	40'			

5. Map No.5A: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including major drainage basin boundaries (U.S.G.S. Hydrologic Unit Code (HUC) 11 Watersheds), CAFRA boundary and flood prone areas (FEMA). Map No.5A shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or farmlands preservation areas. Streams with FW2-NTC1/SE1 and FW2-NT/SE1 ranking are also shown.

6. Map No.5B: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including wetlands, required wetlands buffers, public open space and recreation areas greater than or equal to (10) ten acres. Additional information including major drainage basin boundaries (U.S.G.S. hydrologic unit code (HUC) 11 watersheds), landscape project areas for grasslands, emergent and forested areas with rankings of 3, 4 and 5 are also shown. MapNo.5B shows any New Jersey and Federal Wild and Scenic Rivers, FW 1 Trout Production or FW 2 Trout Production or farmlands preservation areas.

7. Map No.5C: Environmental Features (Refer to County Map Set)

The map depicts environmental features indicated in N.J.A.C. 7:15-5.17 including the natural heritage priority sites for threatened and endangered species. Landscape Project Areas for Forested Wetlands and Bald Eagle Foraging are shown on this map. Map No.5C shows any New Jersey and Federal Wild and Scenic Rivers, FW 1-Trout Production or FW 2 Trout Production or Farmlands Preservation areas. C-1 water bodies are identified on the map as well. Sewer service areas are excluded from the 300ft buffers of C-1 water bodies and on all tributaries within the HUC 11 watershed.

APPENDIX A
NITRATE DILUTION ANALYSES

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I. Introduction

In January 2014, P.L. 2011, c. 203, was amended, supplemented and enacted as P.L. 2013, c. 188 (hereafter P.L. 2013, c.188), modifying the WQM Planning process. P.L. 2013, c.188 shall expire on January 17, 2016, or upon the reauthorization and adoption of WQM Planning rules N.J.A.C 7:15 et. seq.), whichever may come first. Particularly relevant to the review of Wastewater Management Plans (WMP) by the Department, Section 9 provides that upon adoption of the designation of a sewer service area pursuant to the WQM Planning rules, portions of the WMP may be submitted for review and subsequent adoption, in phases in a sequential or other manner deemed timely or expedient by the Department.

This WMP only includes for adoption those nitrate dilution analyses which comply with N.J.A.C. 7:15-5.25(e)iv –v. The analyses in this Appendix do not include an adjustment to the zoning in order to achieve consistency between zoning and the allowable number of additional equivalent dwelling units at build-out in the undeveloped and underdeveloped areas, therefore, they do not comply with N.J.A.C. 7:15-5.25(e)iv –v, and are not included in the WMP for adoption. However, as the analyses were required to be completed, they have been included in this Appendix to inform future planning efforts.

This document (Appendix “A”) describes the nitrate dilution analyses methods and results for Alloway Township, Carneys Point Township, Elmer Borough, Elsinboro Township, Lower Alloways Creek Township, Mannington Township, Oldmans Township, Pilesgrove Township, Pittsgrove Township, Quinton Township and Upper Pittsgrove Township.

II. Nitrate Dilution Analysis Methods and Summary of Results

In areas outside of sewer service areas, the wastewater management alternative is on-site discharge to groundwater of 2,000 gallons per day or less, commonly referred to as septic systems. The assessment of water quality impacts from development on septic systems relies on nitrate concentration. In this analysis, nitrate acts as a conservative surrogate for any of a number of constituents that could be discharged from a septic system (e.g. cleaners, solvents, pharmaceuticals, etc.). Nitrate was chosen because it is highly soluble in water, and because it is a stable compound that by itself could render water unsuitable for human consumption. The capacity to support septic systems without violating groundwater quality standards is determined by the amount of dilution available.

The Water Quality Management Planning Rules advocate a watershed approach to assessing the adequacy of available dilution to meet future development on septic systems. Using this approach, available dilution, (essentially groundwater recharge), is calculated within a HUC 11 watershed and translated into a finite amount of wastewater that can be discharged, which in turn can be translated into a finite number of housing units that can be supported while maintaining a target concentration of nitrate in groundwater. Zoning is then applied to the available land in that same watershed, outside of any sewer service area, to calculate the number of units that could be developed on septic systems.

The results of above two analyses are then compared and if the number of units based on zoning does not exceed the maximum units that can be supported, adequate capacity has been demonstrated. If the number of units allowed by zoning exceeds that which can be supported in a particular watershed, then some adjustment to zoning within that watershed may be warranted.

The nitrate dilution analysis for septic systems was performed Countywide in similar fashion to that conducted for sewer service areas except that environmentally sensitive areas are not removed prior to performing the build-out analysis. This is due to the fact that while certain areas may be unbuildable, such as riparian zones or steep slopes, they still contribute to the overall available dilution of nitrate in groundwater. These areas were also not removed when analyzing the available dilution on a HUC11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the 2 mg/L nitrate target. Thus while some areas may contribute less overall groundwater recharge, due to factors such as soils or topography, these limitations have already been taken into consideration when calculating the maximum average density allowable. The intent of this analysis is to assess the available dilution on a HUC 11 basis used to establish the maximum number of units that can be built in a watershed and continue to meet the regulatory nitrate target.

This analysis used NJDEP's nitrate-nitrogen target of 2 mg/L, with the assumption that all ammonium and other nitrogen compounds are converted to nitrate within the property, and that the nitrate concentrations dilute evenly across the HUC11. These assumptions are implicit in the nitrate dilution model developed by NJDEP.

The wastewater summary projections presented for areas outside the SSA were prepared on behalf of the County of Salem by Fralinger Engineering in accordance with the Wastewater Estimation tool provided by the Department.

The goal of this HUC11-scale planning exercise to estimate the number of residential and commercial units within each HUC 11 on a municipal basis. The number of units that could be built under the existing zoning is compared to the allowable number of residential and commercial units in an effort to ensure that the current nitrate dilution standards can be satisfied. This method is intended to be a guide for estimating the impact of nitrate from septic tanks on HUC11-scale ground-water quality. This analysis scale is at a regional watershed level. Other, more specific, methods may be required to further detail impacts to the zoning of each municipality.

The Wastewater Estimation model builder was provided to assist with the preparation of a countywide Wastewater Management Plan consistent with the Water Quality Management Planning rule (N.J.A.C. 7:15). The application of this tool is specific to the estimation of new Wastewater Flows within Sewer Service Areas and to compare existing zoning to HUC 11 Nitrate Dilution Septic Densities. In addition, it compares new development potential, based on local zoning, to regional septic density standards for those areas outside of sewer service area. The nitrate dilution standards of the Water Quality Management Planning rule result in a "septic density" for each watershed in the State. This septic density identifies the maximum comparable residential zoning density that meets the groundwater quality goal.

The Wastewater Estimation model builder uses results from a separate nitrate dilution model designed by New Jersey Geological Survey to estimate septic densities. This separate model is titled: *A Recharge-Based HUC 11-Scale Nitrate-Carrying-Capacity Planning Tool for New Jersey, v1.0 (MS Excel Workbook)*. The method presented here combines a model of nitrate dilution (based on Trela and Douglas, 1978) with one of ground-water recharge on a HUC11 basis (based on Charles and others, 2003). To further develop this tool, The County provided additional customization to the application. The information depicted within this application was provided by the Department as a resource in the development of a GIS Model Builder Application tool for Counties/Municipalities. The information depicts regional overlays, which are not site specific.

The condition of any area appearing suitable for an intended use must be assessed by a comprehensive, due diligence investigation of several factors, including but not limited to a Natural Resource Inventory, physical on-site conditions, local, State and Federal requirements, approvals, status of any outstanding violation, the past uses and possible residual contamination of a site. NJDEP Land Use/ Land Cover and aerial photographs were utilized as the base layers.

The method/data generated by the Wastewater Estimation model builder has specific limitations within the application, as identified by the Department. As a result of these limitations, the current output of this GIS tool can only be qualified as an initial screen of current field conditions per County/ Municipality. Any other representation of generated results from this tool is not an accurate depiction of development potential and will be deemed to be a misrepresentation. Further customization of the application was performed at the municipal level, by the County, as identified above. However, more specific, methods will be required to further detail impacts to the zoning of each municipality.

The Wastewater Estimation model builder was utilized to compare existing zoning to the available nitrate dilution within each HUC11. The HUC11 analysis was performed for each municipality independently. The available land use within each HUC was proportioned based upon the total number of acres located within the municipal boundary. Consequently, distributing the total number of allowable units among municipalities, within a given HUC11, was not necessary as the land area used for the analysis had already been proportioned. When determining the number of potential units, based on zoning, permanently preserved open space was removed from the potential buildout. Conversely, the number of allowable units, based on available dilution capacity within each HUC, utilized permanently preserved open space areas.

Table 1 summarizes the results of the nitrate dilution capacity analysis. The table reflects the (build-out) number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC 11, outside the sewer service area, within the municipality. In addition, the allowable (capacity) number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater has been identified. For the purposes of this analysis it is inconsequential if one municipality's zoning exceeds its allocation provided that the HUC 11 does not exceed the total sustainable development.

Table 1. HUC-11 Dilution Analysis Summary- Potential Development and Available Capacity						
Municipality	HUC11	Total Area (Acres)	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
Alloway Township						
	02040206040	1,092.43	360.50	143.74	0.00	0.00
	02040206060	9,255.94	5,401.33	1,267.94	97,495.92	4,088.03
	02040206070	214.11	107.05	31.96	0.00	0.00
	02040206080	4,004.60	3,529.16	572.09	0.00	0.00
Carneys Point Township						
	02040206120	114.3	59.8	9.8	113,378.5	2,264.0
	02040206130	1,300.9	901.6	180.7	2,198,304.0	93,202.3
Elmer Borough						
	02040206150	131.65	287.78	19.06	50,868.55	5,118.03
Elsinboro Township						
	2040206040	1,148.22	556.17	151.08	4,671,444.88	141,107.39
	2040206060	623.13	360.62	85.36	15.9	0.5
Lower Alloways Creek Township						
	02040204910	1.21	0.12	0.00	0.00	0.00
	02040206040	23.78	15.86	3.13	0.00	0.00
	02040206060	3,470.69	2,148.30	475.44	828,118.27	34,723.25
	02040206070	2,918.53	1,813.34	435.60	0.00	0.00
Mannington Township						
	02040206030	2,861.32	944.09	397.41	0.00	0.00
	02040206040	12,053.26	4,796.68	1,585.96	2,392,898.01	72,280.76
Oldmans Township						
	02040202160	2,920.44	1,682.78	411.33	6,048,348.84	254,224.91
	02040206020	443.35	239.53	38.22	2,300,936.17	60,715.20
	02040206030	1,784.46	930.03	247.84	279,359.97	8,907.25
Penns Grove Borough	The Borough is designated as an urban municipality. Analysis was not prepared for inclusion within report.					
Pennsville Township	This Township already has an adopted WMP. Analysis was not prepared for inclusion within report.					
Pilesgrove Township						
	02040202160	3,563.9	2,655.6	502.0	0.0	0.0
	02040206030	11,499.4	5,796.1	1,597.1	1,177,674.2	100,132.1
	02040206040	30.5	23.8	4.0	0.0	0.0
	02040206060	876.6	466.2	120.1	0.0	0.0
Pittsgrove Township						
	2040206040	2,797.0	526.9	129.2	468,037.9	6,701.2
	2040206060	262.3	0.0	0.0	0.0	0.0
	2040206070	10,819.2	2,344.5	569.7	1,578,725.5	178,037.3
	02040206150	15,360.9	2,401.2	711.2	1,596,739.5	139,688.7

Table 1. HUC-11 Dilution Analysis Summary- Potential Development and Available Capacity (continued)						
Municipality	HUC11	Total Area (Acres)	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
Quinton Township						
	2040206040	764.93	147.20	54.37	3,370,339.54	185,101.31
	2040206060	4,771.13	1,589.33	641.30	931,492.98	49,119.51
	2040206070	3,565.76	1,175.27	526.24	313,308.43	23,855.96
Salem City	Refer to municipal chapter regarding HUC11 Analysis.					
Upper Pittsgrove Township						
	02040202160	1,571.20	605.00	221.30	0.00	0.00
	02040206030	3,690.68	1,194.70	512.59	1,774,481.27	120,878.53
	02040206060	2,508.69	850.96	343.66	0.00	0.00
	02040206080	266.92	88.08	38.13	0.00	0.00
	02040206120	1,887.69	996.67	286.01	283,592.09	19,728.42
	02040206150	7,574.17	2,898.86	1,097.71	4,900,520.24	333,105.59
Woodstown Borough	Refer to municipal chapter regarding HUC11 Analysis.					

The information used to generate the results of the HUC-11 analysis presented above for areas outside the SSA were prepared on behalf of the County of Salem by Fralinger Engineering in accordance with the Wastewater Estimation tool provided by the Department. The summary table has been prepared to reflect the resultant values for each municipality. HUC-11 areas within each municipality have been identified and each appropriate zoning criteria for each municipality has been applied. The number of units allowed by zoning exceeds that which can be supported in a particular watershed.

The Municipalities are currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The municipalities will need to apply more specific methods of analysis prior to making adjustments to the current zoning.

The comparison of analyses shows that a build-out based on zoning would result in much more development than can actually be sustained to achieve adequate nitrate dilution. Therefore, the build-out based on the nitrate dilution analysis should be used in future planning.

Areas designated “Septic Area (planning flows of 2,000 gpd or less)” have not demonstrated that the zoning meets the nitrate planning standard of 2 mg/l on a HUC 11 basis. In areas where zoning is not in compliance with the nitrate planning standard, residential development or subdivisions with a total of less than six (6) dwelling units are allowed, but residential developments of six (6) or more units must undergo a nitrate dilution analysis to ensure that the individual or other subsurface sewage disposal systems can meet the two (2mg/l) nitrate planning standard on-site. The 2mg/l standard is intended to be applicable on an HUC11 watershed basis

III. Results by Municipality

A. Alloway Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Areas Buildout

Table 2 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 2: ALLOWAY TOWNSHIP HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206040	RR	1,092.43	360.50	0.00
TOTALS		1,092.43	360.50	0.00
02040206060	AR	2,239.11	2,239.11	0.00
	C	7.46	0.00	97,495.92
	HR	148.64	148.64	0.00
	LR	4,356.65	2,178.32	0.00
	MR	4.26	10.32	0.00
	RR	2,499.82	824.94	0.00
TOTALS		9,255.94	5,401.33	97,495.92
02040206070	LR	214.11	107.05	0.00
TOTALS		214.11	107.05	0.00
02040206080	A	3,053.72	3,053.72	0.00
	LR	950.88	475.44	0.00
TOTALS		4,004.60	3,529.16	0.00

2. Adequacy of dilution to meet future non-sewer service area demand

Table 3 below summarizes the allowable number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 3: ALLOWAY TOWNSHIP HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206040	RR	1,092.43	143.74	0.00
TOTALS		1,092.43	143.74	0.00
02040206060	AR	2,239.11	306.73	0.00
	C	7.46	1.02	4,088.03
	HR	148.64	20.36	0.00
	LR	4,356.65	596.80	0.00
	MR	4.26	0.58	0.00
	RR	2,499.82	342.44	0.00
TOTALS		9,255.94	1,267.94	4,088.03
02040206070	LR	214.11	31.96	0.00
TOTALS		214.11	31.96	0.00
02040206080	A	3,053.72	436.25	0.00
	LR	950.88	135.84	0.00
TOTALS		4,004.60	572.09	0.00

The following Table 4 summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

TABLE-4: Alloway Township HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
02040206040					
TOTALS	1,092.43	360.50	143.74	0.00	0.00
02040206060					
TOTALS	9,255.94	5,401.33	1,267.94	97,495.92	4,088.03
02040206070					
TOTALS	214.11	107.05	31.96	0.00	0.00
02040206080					
TOTALS	4,004.60	3,529.16	572.09	0.00	0.00

The number of units allowed by zoning exceeds that which can be supported in a particular watershed, meaning that a build-out based on zoning would result in much more development than can actually be sustained to achieve adequate nitrate dilution. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning.

B. Carneys Point Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Areas Buildout

Table 5 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 5: CARNEYS POINT TOWNSHIP HUC-11 BUILDOUT (BASED ON EXISTING ZONING)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206120				
	AG	30.23	30.23	0.00
	GC	0.03	0.00	359.63
	GI-R	6.33	0.00	110315.70
	LC	0.19	0.00	2505.93
	LI	0.02	0.00	197.21
	LR	9.93	28.82	0.00
	MHR	0.13	0.80	0.00
	OS	67.41	0.00	0.00
TOTALS		114.3	59.8	113,378.5
02040206130				
	AG	741.65	741.65	0.00
	GC	164.06	0.00	2143886.32
	IC	1.37	0.00	23847.25
	LI	2.34	0.00	30570.45
	LR	0.42	1.22	0.00
	OS	73.97	0.00	0.00
	RR-1	0.13	0.26	0.00
	RR-2	316.98	158.49	0.00
TOTALS		1,300.9	901.6	2,198,304.0
02040206140				
	GC	0.00	0.00	0.00
TOTALS		0.0	0.0	0.0

2. Adequacy of dilution to meet future non-sewer service area demand

Table 6 below summarizes the allowable number of residential units and commercial square footage that could be developed by Carneys Point outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 6: CARNEYS POINT TOWNSHIP HUC-11 BUILDOUT/CAPACITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206120				
	AG	30.23	2.61	0.00
	GC	0.03	0.00	9.49
	GI-R	6.33	0.55	2183.19
	LC	0.19	0.02	66.12
	LI	0.02	0.00	5.20
	LR	9.93	0.86	0.00
	MHR	0.13	0.01	0.00
	OS	67.41	5.81	0.00
TOTALS		114.3	9.8	2,264.0
02040206130				
	AG	741.65	103.01	0.00
	GC	164.06	22.79	91142.33
	IC	1.37	0.19	760.36
	LI	2.34	0.32	1299.63
	LR	0.42	0.06	0.00
	OS	73.97	10.27	0.00
	RR-1	0.13	0.02	0.00
	RR-2	316.98	44.03	0.00
TOTALS		1,300.9	180.7	93,202.3
02040206140				
	GC	0.00	0.00	0.00
TOTALS		0.0	0.0	0.0

The following **Table 7** summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

Table 7: Carneys Point Township HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
02040206120					
TOTALS	114.3	59.8	9.8	113,378.5	2,264.0
02040206130					
TOTALS	1,300.9	901.6	180.7	2,198,304.0	93,202.3
02040206140					
TOTALS	0.0	0.0	0.0	0.0	0.0

The number of units allowed by zoning exceeds that which can be supported in a particular watershed, meaning that a build-out based on zoning would result in much more development than can actually be sustained to achieve adequate nitrate dilution. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Carneys Point Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

C. Elmer Borough Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Areas Buildout

Table 8 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 8: ELMER BOROUGH HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206150	CONS	13.91	13.91	0.00
	GB	0.52	0.00	4,568.83
	HB	1.79	0.00	7,807.57
	LI	4.20	0.00	18,311.77
	LM	47.07	102.52	0.00
	LR-1	4.69	6.81	0.00
	LR-2	19.69	28.60	0.00
	MR	37.45	135.94	0.00
	RP	2.32	0.00	20,180.38
TOTALS		131.65	287.78	50,868.55

2. Adequacy of Dilution to Meet Future Non-Sewer Service Area Demand

Table 9 below summarizes the allowable number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 9: ELMER BOROUGH HUC-11 Build-Out Capacity/ Density				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206150	CONS	13.91	2.01	0.00
	GB	0.52	0.08	304.02
	HB	1.79	0.26	1,039.06
	LI	4.20	0.61	2,432.12
	LM	47.07	6.81	0.00
	LR-1	4.69	0.68	0.00
	LR-2	19.69	2.85	0.00
	MR	37.45	5.42	0.00
	RP	2.32	0.34	1,342.83
TOTALS		131.65	19.06	5,118.03

The following **Table 10** summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

Table 10: Elmer Borough HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Build-Out (Units)	Residential Capacity (Units)	Commercial Build-Out (SF)	Commercial Capacity (SF)
02040206150					
TOTALS	131.65	287.78	19.06	50,868.55	5,118.03

The number of units allowed by zoning exceeds that which can be supported in a particular watershed, meaning that a build-out based on zoning would result in much more development than can actually be sustained to achieve adequate nitrate dilution. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Elmer Borough are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

D. Elsinboro Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Area Buildout

Table 11 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 11: ELSINBORO TOWNSHIP HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206040	C	268.10	0.00	4,671,444.88
	CONS	27.12	5.42	0.00
	LR	6.86	11.95	0.00
	MR	25.75	62.32	0.00
	RR-A	820.38	476.48	0.00
TOTALS		1,148.22	556.17	4,671,444.88
02040206060	C	0.00	0.00	15.90
	CONS	14.30	2.86	0.00
	LR	3.57	6.23	0.00
	RR-A	605.26	351.54	0.00
	TOTALS		623.13	360.62

2. Adequacy of Dilution To Meet Future Non-Sewer Service Area Demand

Table 12 below summarizes the allowable number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 12: ELSINBORO TOWNSHIP HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206040	C	268.10	35.28	141,107.39
	CONS	27.12	3.57	0.00
	LR	6.86	0.90	0.00
	MR	25.75	3.39	0.00
	RR-A	820.38	107.95	0.00
	TOTALS		1,148.22	151.08
02040206060	C	0.00	0.00	0.50
	CONS	14.30	1.96	0.00
	LR	3.57	0.49	0.00
	RR-A	605.26	82.91	0.00
	TOTALS		623.13	85.36

The following Table 13 summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

Table-13: Elsinboro HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Build-Out (Units)	Residential Capacity (Units)	Commercial Build-Out (SF)	Commercial Capacity (SF)
2040206040					
TOTALS	1,148.22	556.17	151.08	4,671,444.88	141,107.39
2040206060					
TOTALS	623.13	360.62	85.36	15.9	0.5

The number of units allowed by zoning exceeds that which can be supported in a particular watershed. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Elsinboro Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

E. Lower Alloways Creek Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Area Buildout

Table 14 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 14: LOWER ALLOWAYS CREEK TOWNSHIP HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040204910	W	1.21	0.12	0.00
TOTALS		1.21	0.12	0.00
02040206040	AR	23.78	15.86	0.00
TOTALS		23.78	15.86	0.00
02040206060	AR	2,870.80	1,914.82	0.00
	I	63.37	0.00	828,118.27
	V	35.79	183.40	0.00
	W	500.74	50.07	0.00
TOTALS		3,470.69	2,148.30	828,118.27
02040206070	AR	2,573.41	1,716.47	0.00
	C-P	199.50	7.98	0.00
	V	14.79	75.81	0.00
	W	130.83	13.08	0.00
TOTALS		2,918.53	1,813.34	0.00

2. Adequacy of dilution to meet future non-sewer service area demand

Table 15 below summarizes the allowable number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 15: LOWER ALLOWAYS CREEK TOWNSHIP HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040204910				
	W	1.21	0.00	0.00
TOTALS		1.21	0.00	0.00
02040206040				
	AR	23.78	3.13	0.00
TOTALS		23.78	3.13	0.00
02040206060				
	AR	2,870.80	393.26	0.00
	I	63.37	8.68	34,723.25
	V	35.79	4.90	0.00
	W	500.74	68.59	0.00
TOTALS		3,470.69	475.44	34,723.25
02040206070				
	AR	2,573.41	384.09	0.00
	C-P	199.50	29.78	0.00
	V	14.79	2.21	0.00
	W	130.83	19.53	0.00
TOTALS		2,918.53	435.60	0.00

The following **Table 16** summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

TABLE-16: Lower Alloways Creek HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
02040204910					
TOTALS	1.21	0.12	0.00	0.00	0.00
02040206040					
TOTALS	23.78	15.86	3.13	0.00	0.00
02040206060					
TOTALS	3,470.69	2,148.30	475.44	828,118.27	34,723.25
02040206070					
TOTALS	2,918.53	1,813.34	435.60	0.00	0.00

The number of units allowed by zoning exceeds that which can be supported in a particular watershed. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Lower Alloways Creek Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

F. Mannington Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Area Buildout

Table 17 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 17: MANNINGTON TOWNSHIP HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206030	A	2,666.41	879.92	0.00
	CONS	1.12	0.22	0.00
	CR	0.02	0.01	0.00
	RR	193.77	63.94	0.00
	TOTAL	2,861.32	944.09	0.00
02040206040	A	9,485.75	3,130.30	0.00
	CONS	78.12	15.62	0.00
	CR	1,042.46	344.01	0.00
	GC	26.23	0.00	456,984.11
	HR	67.84	147.76	0.00
	I	69.19	0.00	1,205,624.96
	LC	41.91	0.00	730,288.94
	MR	530.45	924.26	0.00
	RR	711.31	234.73	0.00
	TOTAL	12,053.26	4,796.68	2,392,898.01

2. Adequacy of dilution to meet future non-sewer service area demand

Table 18 below summarizes the allowable number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 18: MANNINGTON TOWNSHIP HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040206030	A	2,666.41	370.33	0.00
	CONS	1.12	0.16	0.00
	CR	0.02	0.00	0.00
	RR	193.77	26.91	0.00
	TOTAL	2,861.32	397.41	0.00
02040206040	A	9,485.75	1,248.12	0.00
	CONS	78.12	10.28	0.00
	CR	1,042.46	137.17	0.00
	GC	26.23	3.45	13,803.83
	HR	67.84	8.93	0.00
	I	69.19	9.10	36,417.55
	LC	41.91	5.51	22,059.38
	MR	530.45	69.80	0.00
	RR	711.31	93.59	0.00
	TOTAL	12,053.26	1,585.96	72,280.76

The following **Table 19** summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

TABLE-19: Mannington Township HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
02040206030					
TOTALS	2,861.32	944.09	397.41	0.00	0.00
02040206040					
TOTALS	12,053.26	4,796.68	1,585.96	2,392,898.01	72,280.76

The number of units allowed by zoning exceeds that which can be supported in a particular watershed. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Mannington Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

G. Oldmans Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Area Buildout

Table 20 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 20: OLDMANS TOWNSHIP HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040202160	AR	1,649.48	824.74	0.00
	C	18.08	0.00	196,850.33
	CI	397.25	0.00	5,191,286.01
	I	13.52	0.00	176,630.23
	IPRA	21.40	0.00	465,991.03
	R	806.31	806.31	0.00
	VC	1.01	0.00	17,591.24
	VR	11.88	51.73	0.00
TOTALS		2,918.92	1,682.78	6,048,348.84
02040206020	AR	55.48	27.74	0.00
	CI	122.28	0.00	1,597,920.59
	I	53.80	0.00	703,015.58
	R	211.79	211.79	0.00
TOTALS		443.35	239.53	2,300,936.17
02040206030	AR	1,756.51	878.25	0.00
	R	0.03	0.03	0.00
	VC	16.03	0.00	279,359.97
	VR	11.88	51.75	0.00
TOTALS		1,784.46	930.03	279,359.97

The wastewater summary projections presented above for areas outside the SSA were prepared on behalf of the County of Salem by Fralinger Engineering in accordance with the Wastewater Estimation tool provided by the Department.

The Wastewater Estimation model builder was provided to assist with the preparation of a countywide Wastewater Management Plan consistent with the Water Quality Management Planning rule (N.J.A.C. 7:15). The application of this tool is specific to the estimation of new Wastewater Flows within Sewer Service Areas and to compare existing zoning to HUC 11 Nitrate Dilution Septic Densities. In addition, it compares new development potential, based on local zoning, to regional septic density standards for those areas outside of sewer service area. The nitrate dilution standards of the Water Quality Management Planning rule result in a "septic density" for each watershed in the State. This septic density identifies the maximum comparable residential zoning density that meets the groundwater quality goal.

2. Adequacy of dilution to meet future non-sewer service area demand

Table 21 below summarizes the allowable number of residential units and commercial square footage that could be developed by Carneys Point outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 21: OLMANS TOWNSHIP HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040202160	AR	1,651.01	232.54	0.00
	C	18.08	2.55	10,183.80
	CI	397.25	55.95	223,803.81
	I	13.52	1.90	7,614.78
	IPRA	21.40	3.01	12,053.73
	R	806.31	113.56	0.00
	VC	1.01	0.14	568.79
	VR	11.88	1.67	0.00
TOTALS		2,920.44	411.33	254,224.91
02040206020	AR	55.48	4.78	0.00
	CI	122.28	10.54	42,164.61
	I	53.80	4.64	18,550.59
	R	211.79	18.26	0.00
TOTALS		443.35	38.22	60,715.20
02040206030	AR	1,756.51	243.96	0.00
	R	0.03	0.00	0.00
	VC	16.03	2.23	8,907.25
	VR	11.88	1.65	0.00
TOTALS		1,784.46	247.84	8,907.25

The following **Table 22** summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

Table-22: Oldmans Township HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
02040202160					
TOTALS	2,920.44	1,682.78	411.33	6,048,348.84	254,224.91
02040206020					
TOTALS	443.35	239.53	38.22	2,300,936.17	60,715.20
02040206030					
TOTALS	1,784.46	930.03	247.84	279,359.97	8,907.25

The number of units allowed by zoning exceeds that which can be supported in a particular watershed. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Oldmans Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

H. Pilesgrove Township Nitrate Dilution Analysis

A build out analysis for the non sewer service area was prepared for Pilesgrove Township by Richard A. Alaimo Association of Engineers in November 2010. The build out in the non-sewer service area was calculated by applying the zoning, as defined within the November 2010 report, over all undeveloped land. The analysis also determined the build-out based on nitrate dilution modeling for the Township's target limit of 5.2 mg/l and for the NJDEP's limit of 2.0 mg/l. The methodology based on the NJDEP nitrate dilution limit allows for substantially less future dwelling units than is permitted by current zoning. The results of the analysis are presented in Appendix B. The methodology of preparing the build-out analysis is further defined within the Richard A. Alaimo Association of Engineers report.

I. Pittsgrove Township Nitrate Dilution Analysis

A build out analysis for the non sewer service area was prepared for Pittsgrove Township by Clarke Caton Hinz in August 2009. The build out in the non-sewer service area was calculated by applying the zoning, as defined within the August 2009 report, over all undeveloped land. The number of residential units and non-residential floor area were then multiplied by the wastewater planning flow estimates in either N.J.A.C. 7:14A or 7:9A as appropriate. The results of the analysis are presented in Appendix C. The methodology of preparing the build-out analysis is further defined within the Clarke Caton Hinz report.

During the WMP review process, Salem County and the Department was approached by Atlantic City Electric to include approximately 200 acres of land in the FWSA for the “Pepco Development”. The addition of this area to the FWSA would essentially change the nitrate dilution analysis. At this time, the nitrate dilution analyses that are not in compliance are not being included in the WMP, but are included for reference in this Appendix. It is not necessary at this time to update the nitrate dilution analyses, therefore it is not included.

J. Quinton Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Area Buildout

Table 23 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 23: QUINTON TOWNSHIP HUC-11 BUILDOUT				
(Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
2040206040	LI/O	351.69	0.00	3,370,339.54
	PBR	411.39	137.13	0.00
	R-2	1.85	10.07	0.00
	TOTALS	764.93	147.20	3,370,339.54
2040206060	LI/O	68.86	0.00	659,898.74
	M	20.78	0.00	271,594.24
	PBR	4,675.77	1,558.59	0.00
	R-1	2.00	5.81	0.00
	VR	3.72	24.93	0.00
	TOTALS	4,771.13	1,589.33	931,492.98
2040206070	HC	39.96	0.00	313,308.43
	PBR	3,525.80	1,175.27	0.00
	TOTALS	3,565.76	1,175.27	313,308.43

2. Adequacy of Dilution To Meet Future Non-Sewer Service Area Demand

Table 24 below summarizes the allowable number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 24: QUINTON TOWNSHIP HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
2040206040	LI/O	351.69	0.00	185,101.31
	PBR	411.39	54.13	0.00
	R-2	1.85	0.24	0.00
	TOTALS	764.93	54.37	185,101.31
2040206060	LI/O	68.86	0.00	37,731.48
	M	20.78	0.00	11,388.03
	PBR	4,675.77	640.52	0.00
	R-1	2.00	0.27	0.00
	VR	3.72	0.51	0.00
	TOTALS	4,771.13	641.30	49,119.51
2040206070	HC	39.96	0.00	23,855.96
	PBR	3,525.80	526.24	0.00
	TOTALS	3,565.76	526.24	23,855.96

The following **Table 25** summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

Table 25: Quinton Township HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Build-out (Units)	Residential Capacity (Units)	Commercial Build-out (SF)	Commercial Capacity (SF)
2040206040					
TOTALS	764.93	147.20	54.37	3,370,339.54	185,101.31
2040206060					
TOTALS	4,771.13	1,589.33	641.30	931,492.98	49,119.51
2040206070					
TOTALS	3,565.76	1,175.27	526.24	313,308.43	23,855.96

The number of units allowed by zoning exceeds that which can be supported in a particular watershed. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Quinton Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

K. Upper Pittsgrove Township Nitrate Dilution Analysis

1. Future Wastewater Outside of Sewer Service Area Buildout

Table 26 summarizes the number of residential units and commercial square footage that could potentially generate wastewater per zone within each HUC11, outside the sewer service area, within the municipality.

Table 26: UPPER PITTSGROVE TOWNSHIP HUC-11 BUILDOUT (Based on Existing Zoning)				
HUC11	Zoning	Total Acres	Residential nits)	Commercial (SF)
02040202160	A	1,062.37	350.58	0.00
	LR/A	508.82	254.41	0.00
TOTALS		1,571.20	605.00	0.00
02040206030	A	3,429.80	1,131.83	0.00
	B	55.60	0.00	363,262.34
	HB	143.88	0.00	1,253,495.36
	P	18.10	0.00	157,723.57
	VR	43.30	62.87	0.00
TOTALS		3,690.68	1,194.70	1,774,481.27
02040206060	A	2,488.11	821.08	0.00
	VR	20.58	29.88	0.00
TOTALS		2,508.69	850.96	0.00
02040206080	A	266.92	88.08	0.00
	TOTALS	266.92	88.08	0.00
02040206120	HB	32.55	0.00	283,592.09
	LR	1,432.27	716.14	0.00
	LR/A	350.29	175.15	0.00
	VR	72.58	105.38	0.00
TOTALS		1,887.69	996.67	283,592.09
02040206150	A	4,682.80	1,545.32	0.00
	B	48.42	0.00	316,371.59
	HB	358.23	0.00	3,120,933.71
	LR	903.95	451.98	0.00
	LR/A	1,207.81	603.91	0.00
	P	121.86	0.00	1,061,673.29
	VB	46.09	0.00	401,541.63
	VR	205.00	297.65	0.00
TOTALS		7,574.17	2,898.86	4,900,520.24

2. Adequacy of dilution to meet future non-sewer service area demand

Table 27 below summarizes the allowable number of residential units and commercial square footage that could be developed by the municipality outside the wastewater service area, while maintaining a target concentration of nitrate in groundwater.

Table 27: UPPER PITTSBORO TOWNSHIP HUC-11 BUILDOUT CAPACITY / DENSITY				
HUC11	Zoning	Total Acres	Residential (Units)	Commercial (SF)
02040202160	A	1,062.37	149.63	0.00
	LR/A	508.82	71.67	0.00
	TOTALS	1,571.20	221.30	0.00
02040206030	A	3,429.80	476.36	0.00
	B	55.60	7.72	30,886.50
	HB	143.88	19.98	79,934.15
	P	18.10	2.51	10,057.87
	VR	43.30	6.01	0.00
	TOTALS	3,690.68	512.59	120,878.53
02040206060	A	2,488.11	340.84	0.00
	VR	20.58	2.82	0.00
	TOTALS	2,508.69	343.66	0.00
02040206080	A	266.92	38.13	0.00
	TOTALS	266.92	38.13	0.00
02040206120	HB	32.55	4.93	19,728.42
	LR	1,432.27	217.01	0.00
	LR/A	350.29	53.07	0.00
	VR	72.58	11.00	0.00
	TOTALS	1,887.69	286.01	19,728.42
02040206150	A	4,682.80	678.67	0.00
	B	48.42	7.02	28,069.15
	HB	358.23	51.92	207,671.82
	LR	903.95	131.01	0.00
	LR/A	1,207.81	175.05	0.00
	P	121.86	17.66	70,645.41
	VB	46.09	6.68	26,719.21
	VR	205.00	29.71	0.00
	TOTALS	7,574.17	1,097.71	333,105.59

The following **Table 28** summarizes the results of the nitrate dilution capacity analysis. The table reflects the differences between the potential number of residential units and commercial square footage that could be projected by the municipality outside the wastewater service area and number of allowable units necessary to maintain a target concentration of nitrate in groundwater.

TABLE-28: Upper Pittsgrove Township HUC-11 Dilution Analysis Summary- Potential Development and Available Dilution					
HUC11	Total Acres	Residential Buildout (Units)	Residential Capacity (Units)	Commercial Buildout (SF)	Commercial Capacity (SF)
02040202160					
TOTALS	1,571.20	605.00	221.30	0.00	0.00
02040206030					
TOTALS	3,690.68	1,194.70	512.59	1,774,481.27	120,878.53
02040206060					
TOTALS	2,508.69	850.96	343.66	0.00	0.00
02040206080					
TOTALS	266.92	88.08	38.13	0.00	0.00
02040206120					
TOTALS	1,887.69	996.67	286.01	283,592.09	19,728.42
02040206150					
TOTALS	7,574.17	2,898.86	1,097.71	4,900,520.24	333,105.59

The number of units allowed by zoning exceeds that which can be supported in a particular watershed. The Municipality is currently reviewing the results of the dilution analysis in an effort to determine what zoning adjustments may be appropriate to meet both the regulatory requirements and the development objectives of the municipality. The method/data generated by the Wastewater Estimation model builder has specific limitations within this application, as identified above. Consequently, this initial step does not provide sufficient data or an accurate depiction of development potential for the municipality. The Municipality will need to apply more specific methods of analysis prior to making adjustments to the current zoning. In addition, the current septic densities for the HUC-11's in Upper Pittsgrove Township are also expected to be much lower than required to achieve adequate nitrate dilution, when compared to the results of the nitrate dilution analysis.

*Pilesgrove Township
Wastewater Management Plan*

Lower Delaware Water Quality Management Plan

Maurice, Salem, and Cohansey Watershed Management Area 17

Lower Delaware Watershed Management Area 18

*Wastewater Management Planning Agency:
Pilesgrove Township
Salem County, New Jersey*

August 2, 2010

Revised and Endorsed November 9, 2010

*Prepared by:
Richard A. Alaimo Association of Engineers
200 High Street
Mount Holly, New Jersey 08060
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Our File No. C-725-036

*Pilesgrove Township
Wastewater Management Plan
August 2, 2010*

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*Pilesgrove Township
Wastewater Management Plan Summary Table
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The significant actions that are proposed in this WMP are summarized below.

Compliance with NJDEP Regulations

The primary purpose of this WMP is to develop a Wastewater Management Plan for the Township of Pilesgrove in accordance with NJDEP regulations. The draft WMP was issued in August of 2007 and this revision was endorsed on November 9, 2010 for inclusion in the County WMP.

Changes in the WMP Planning Area

The WMP Planning Area is the Township of Pilesgrove, Salem County, New Jersey. A small portion of the Planning Area was previously included within the WMP of the Woodstown Sewerage Authority (WSA). Pilesgrove Township is interested in pursuing an inter-local services agreement with the WSA for the provision of wastewater collection and treatment services for limited areas of the Township in order to effectively implement a residential clustering or transfer of development rights land use approach.

Pilesgrove Township is not supportive of the regional wastewater treatment system due to concerns that a regional system may spur additional land development.

Sewer Service Area Changes

► **Future Sewer Service Area (Sharptown Village)** The WMP proposes to establish a sewer service area within and around the village of Sharptown in accordance with the Kings Road LLC Settlement Agreement only if this Project remains a component of the Township Housing Plan. The Township is submitting a petition to the Superior Court to have this defunct project removed from the Housing Plan.

► **Future Sewer Service Area (Woodstown Extension)** The WMP proposes to define potential sewer service areas around Woodstown Borough contingent upon the provision of water and sewer. Habitat suitability determinations would be needed for areas within the potential Future Sewer Service Area that are shown as containing ranked critical habitats on the Landscape Project. These areas would only be included within the Approved SSA to serve pre-existing development or if site-specific investigations indicate that the wetlands or critical habitats are a less substantive environmental constraint.

Environmental Analyses and Assessments

Point Source Pollutant Loading Analysis. The WMP does not propose any change in the existing surface water discharge permit rate or location within the Township or by treatment facilities serving the Township. All Individual Subsurface Disposal Systems (ISSDS) would need to comply with the results of a nitrate dilution model.

Non-point Source Pollution. Pilesgrove Township has adopted a Stormwater Management Plan and Ordinance in compliance with the Stormwater Management Regulations (N.J.A.C 7:8) that will effectively address non-point source pollution.

Riparian Corridors. The WMP proposes to establish stream corridor buffers or to require that projects within stream corridor buffers be designed to avoid, minimize or mitigate any impacts to the stream value.

Consumptive Water Use Analysis. The Kings Road project was to have relied on two existing wells that are screened within the Potomac-Raritan-Magothy (PRM) formation. Since the total usage would not have exceeded 100,000 gpd, a water allocation would not have been required. The existing wells on that site were not in a critical water supply area and were previously used for an alternate purpose. Therefore, the reuse of the Richmans' wells would not represent a new groundwater withdrawal.

Woodstown Borough currently operates its own water supply and distribution system. The Borough has adequate supply sources but has a salt water intrusion problem. The Borough intends to construct a water filtration plant to allow the blending of water from different aquifers.

The potential developer of the Planned Light Industrial development has previously provided a "will serve" letter from New Jersey American Water Company (NJAW), which has a diversity of supply sources.

Endangered Species. The proposed treatment plants and plant improvement projects will not encroach on any ranked critical habitats. The Future SSA for any of the areas will not include critical habitats of listed species. It is recommended that the Landscape Project be refined with regard to grassland bird species and that habitat suitability determinations be required for any ranked areas shown on the affirmed Landscape Project mapping prior to inclusion in future sewer service areas or the issuance of WMP consistency determinations in unsewered areas.

Environmental Constraints. An environmental inventory and constraints analysis has been conducted to justify the limits of the Future Sewer Service Area and to support the projected wastewater flow calculation.

Nitrate Dilution. A nitrate dilution build-out analysis has been conducted based on the Township's existing target limit of 5.2 mg/l that was previously cited as the background target by the New Jersey Geological Survey and the proposed target of 2.0 mg/l. The difference between the existing zoning and the nitrate dilution buildout analysis is substantial. The Township is proposing a target of 5.2 mg/l for each development project as well as a mechanism to achieve the NJDEP target of 2.0 mg/l for each sub-watershed when preserved lands are considered.

New or Expanded Treatment Facilities

The WMP proposes that an inter-local services agreement be established between the WSA and Pilesgrove Township that would provide for the expansion of the Woodstown WWTP to serve the proposed Town Center Extension. The proposed plant improvements would provide for an increase in the permitted processing capacity within the parameters of the surface water permit discharge and will include the construction of a new clarifier.

The proposed Kings Road project would have entailed the construction of a new wastewater treatment plant to serve the planned residential development as well as serve the adjacent Sharptown area but this proposal is now defunct.

Abandonment of Treatment Facilities

It is recommended that the Waddington-Richmans' treatment plant in Sharptown be abandoned unless the owner submits redevelopment plans to the Township Planning Board prior to April 1, 2011 or the area is determined to be in need of redevelopment by the Pilesgrove Township Committee prior to that date.

It is further recommended that engineering reports be submitted for any facilities discharging more than 2,000 gpd to septic systems to demonstrate that the facilities are designed for the peak wastewater flow and that the facilities are being properly maintained.

*Pilesgrove Township
Wastewater Management Plan
August 2, 2010*

I. INTRODUCTION

The purpose of this document is to provide a comprehensive Wastewater Management Plan (the “WMP”) for the Township of Pilesgrove, Salem County, New Jersey. The WMP will be submitted to the Salem County Planning Department for inclusion in the County WMP that is currently being prepared. Pilesgrove Township supports the inclusion of the policies in this WMP in the County WMP in their entirety except when modifications or deletions are approved by the Township.

2.1 DESCRIPTION OF THE PLANNING AREA

2.1.1. Geographic Description

The Planning Area covered by this WMP is the entire Township of Pilesgrove which encompasses about 35.1 square miles as shown on Map 1: Planning Area Map.

The Woodstown Sewerage Authority (the “WSA”) currently provides limited sewer service within Pilesgrove Township. The portion of the Township that has been included within the WSA WMP encompasses about 0.16 square miles. The total WSA Planning Area is 1.77 square miles.

This WMP proposes that the Township of Pilesgrove and the WSA enter into an interlocal services agreement that clarifies planning and service responsibilities within the Township of Pilesgrove in the vicinity of the Borough of Woodstown.

2.1.2 Planning Area Population

2.1.2.1 Existing Population

Table 1 contains the historic population trend for Pilesgrove Township based on census data and other official population estimates. According to the U.S. Census, Pilesgrove Township had a total population of 3,923 persons in the year 2000. The most recent population estimate is that of the New Jersey Department of Labor which estimated the population to be 4,548 persons as of July 1, 2008. This population estimate represents a 16% increase over an eight-year period or an average annual population increase of 2¼ percent.

*Table 1
Pilesgrove Township
Historic Population Trend (1950-2008)*

Year	Population	% Change
1950	1,942	
1960	2,519	29.7%
1970	2,706	7.4%
1980	2,810	3.8%
1990	3,250	15.7%
2000	3,923	20.7%
2008	4,548	15.9%

Source: US Census: 1950-2000; New Jersey Data Center: 2008 Estimate.

The Township believes that there were substantive errors in the 2000 Census with regard to the assignment of the group quarters population to the Township. Pilesgrove Township was reported to have 368 persons in group quarters, which should have been attributed to adjacent municipalities. Consequently, the Township believes that the correct population count in the year 2000 should have been 3,555 persons. Based on recent development activity, the current population has been estimated to be 4,198 persons.

2.1.2.2 Projected Population

The South Jersey Transportation Planning Organization (SJTPO) is the Metropolitan Planning Organization (MPO) for the southern tier of New Jersey. As shown in *Table 2*, the SJTPO population projection for Pilesgrove Township anticipates an increase of 435 persons or 10% from 2010 to 2020 and 866 persons or 19.5% from 2010 to 2030. The population in 2030 is projected by the SJTPO to be 5,316 persons.

*Table 2
Pilesgrove Township
SJTPO Population Projection*

Year	Population	Pop. Increase	Percent increase
2000	3,955		
2005	4,410	487	12.4%
2010	4,450	40	0.9%
2015	4,687	237	5.3%
2020	4,885	198	4.2%
2025	5,096	211	4.3%
2030	5,316	220	4.3%
2035	5,529	213	4.0%

Source: SJTPO;

Table 3 is the Pilesgrove Township population projection from the recently adopted 2010 Housing Plan Update extrapolated to 2030. Based on recent development trends, the Township projects a growth rate of 1,047 persons or 23.7% over the next ten years and 2,263 persons or 60.3% over the next twenty years which is a growth rate that is significantly greater than the MPO projection. The projected population of 7,079 persons in 2030 is 33% higher than the MPO projection even though the MPO projection is based on the higher starting population estimate for 2000.

2.1.3 Regulatory Jurisdiction

The Township Planning Area is located in Delaware River Drainage Basin and the Lower Delaware Water Quality Management Planning Area. The Township is located in Watershed Management Area No. 17, which includes the Salem River watershed and Watershed Management Area No. 18 which contains the Oldmans Creek watershed.

The Township Planning Area is not located within the Coastal Zone or within the jurisdiction of the Pinelands Commission.

*Table 3
Pilesgrove Township
Population Projection*

Year	Beginning Population	New Units	Population Increase	Ending Population	Annual % Increase
2000	3,555	17	55	3,610	
2001	3,610	15	49	3,659	1.4%
2002	3,659	21	67	3,726	1.8%
2003	3,726	20	64	3,790	1.7%
2004	3,790	28	81	3,872	2.1%
2005	3,872	75	218	4,090	5.6 %
2006	4,090	22	64	4,154	1.6%
2007	4,154	9	26	4,180	0.6%
2008	4,180	6	17	4,198	0.4%
2009	4,198	1	3	4,201	0.1%
2010	4,201	74	215	4,416	5.1%
2011	4,416	4	12	4,428	0.3%
2012	4,428	11	32	4,460	0.7%
2013	4,460	32	93	4,553	2.1%
2014	4,553	32	93	4,646	2.0%
2015	4,646	40	116	4,762	2.5%
2016	4,762	53	154	4,916	3.2%
2017	4,916	44	128	5,044	2.6%
2018	5,044	45	131	5,175	2.6%
2019	5,175	49	143	5,318	2.8%
2020	5,318	50	146	5,463	2.7%
2021	5,463	51	148	5,612	2.7%
2022	5,612	52	151	5,763	2.7%
2023	5,763	53	154	5,917	2.7%
2024	5,917	54	157	56,075	2.7%
2025	6,075	55	160	6,235	2.6%
2026	6,235	56	163	6,398	2.6%
2027	6,398	57	166	6,563	2.6%
2028	6,563	58	169	6,732	2.6%
2029	6,732	59	172	6,904	2.6%
2030	6,904	60	175	7,079	2.5%
2031	7,079				

Source: Alaimo Group: 2010 Housing Plan Update;

2.2 WOODSTOWN SEWERAGE AUTHORITY (WSA) SEWER SERVICE AREA

Currently, the Woodstown Sewerage Authority (WSA) is the only municipal authority providing wastewater conveyance and treatment services in Pilesgrove Township. The WSA owns and operates a treatment plant in the Borough of Woodstown that primarily serves land development within the Borough. The WSA has agreed on a case-by-case basis to extend its service into Pilesgrove Township. The existing WSA Sewer Service Area includes the developed portion of the Borough of Woodstown; selected areas adjacent to Woodstown in Pilesgrove Township; and the County farm complex about 2.0 miles south of Woodstown located in Mannington and Pilesgrove Townships.

2.2.1 Approved Sewer Service Areas

The general extent of the WSA Wastewater Management Planning Area is shown in Map 1: Planning Area Map and is described below. The existing WSA planning area is the same as the previously approved sewer service area in Pilesgrove since the WSA has only included areas in which it intends to provide service.

Woodstown Borough

While all of Woodstown Borough is within the planning area, portions of the Borough are not developable due to environmental constraints or public policy. Furthermore, the Wastewater Management Planning Regulations (NJAC 7:15) require that critical habitats and environmentally constrained lands be excluded from the Future Sewer Service Area. Therefore, the County WMP will need to clearly define the Future Sewer Service Area within the Borough that complies with the updated regulations. Map 2 indicates the properties that are actively served in Woodstown. About 50% of the land area is currently served by the WSA. Woodstown Borough had an estimated population of 3,333 persons in July 2006. It is believed that virtually all of this population was served by the WSA.

Pilesgrove Township

The previously approved sewer service area in the Township of Pilesgrove is the limited area served by the Woodstown Sewerage Authority (the "WSA") around Woodstown that encompasses approximately 110 acres. The previously approved sewer service area in Pilesgrove includes the following:

- The WSA has historically served an area of the Township that is immediately adjacent to the Borough and is a continuation of the residential land use pattern of the Borough along Grandview Avenue, West Grant Street, and Lee Street. A total of 44 single-family homes are served in this area.
- The WSA serves the Friends Home at Woodstown, which is a continuing care facility that extends into Pilesgrove Township. The residential units in Pilesgrove Township include 47 independent living attached residences and 20 apartments for a total of 67 units.
- The WSA serves a few isolated users along US Route #40 include five units east of the Borough and a few parcels west of the Borough and one unit along Old Salem Road. The total number of isolated EDUs is estimated to be 16.
- The WSA provides limited service to a commercial shopping center known as the Pilesgrove Town Center. The WSA has agreed to accept a maximum of 6,000 gpd from pre-treatment facilities located at the commercial center.

The WSA has made the following additional wastewater allocations for uses in Pilesgrove Township:

- The WSA has agreed under the terms of a court settlement agreement to provide service to the Bailey Corner affordable housing project. The project will entail a total of 76 EDUs including 74 affordable units, one manager's unit and one community building. The project site has an existing wastewater allocation of 26 units. The increase in the current allocation to the project site is estimated to be 12,220 gpd.
- The WSA has previously agreed to provide service to Block 36; Lot 17 in the Township of Pilesgrove for a new middle school. This project was previously pursued by the Board of Education but the referendum was not approved. The service allocation in a prior amendment to the WSA WMP was to be limited to 8,000 gpd.
- The WSA has previously certified the pre-existing EDUs for the commercial redevelopment area within the Bailey Corner Redevelopment Area.

County Complex

Salem County has a complex of buildings and facilities located along Route 45 at the Mannington-Pilesgrove Township boundary including various county offices, the Salem County Vocational School, and the County Jail. The sewage generated by this County complex is directed to the WSA treatment plant via a dedicated force main. The force main was sized specifically for the needs of the County and may not accept additional wastewater generators.

Salem County purchased 100,000 gpd of reserve capacity from the WSA in 1991 at a cost of \$785,000. It has been reported that the complex currently generates about 35,000 gpd of wastewater, primarily from the jail. A recent evaluation of County facilities did not indicate any need to expand the county complex other than minor improvements to existing facilities. While double bunking could increase the capacity of the County jail, the facility is believed to be more than adequate for the foreseeable needs of the County.

2.2.2. Existing Sewer Service Area

Map 2: Existing Wastewater Facilities and Service Area Map indicates the general extent of the Existing Sewer Service Area. *Map 2* indicates the extent of the land development in Pilesgrove Township that is currently served by the WSA collection and conveyance system. This area has been clearly distinguished from the Approved Sewer Service Area. The WSA Existing Service Area encompasses about a 1.0 square mile area of which 0.12 square miles are in Pilesgrove Township.

2.2.3 Sewer Service Area Population

Pilesgrove Township

Table 4 indicates that the existing population being served by the WSA in Pilesgrove Township is approximately 264 persons or only 6.3% of the Township population.

Table 4
Pilesgrove Township
Sewer Service Area Population (2007)

Year	Units	PPH	Population
Single Family	49	2.91	143
Friends Home	67	1.80	121
Total Service Area Population	116	2.27	264
Current Township Population			4,187
Percent Served			6.3%

Source: Service Area Units: Woodstown Sewerage Authority WMP (Killam Associates)

Table 5 indicates the anticipated sewer service area population at the end of 2010 when the affordable housing project is fully occupied. This project is expected to increase the sewer service area population to 448 persons or 9.6% of the total Township population.

Table 5
Pilesgrove Township
Sewer Service Area Population Projection (2011)

Year	Units	PPH	Population
Single Family	49	2.91	143
Friends Home	67	1.80	121
Bailey Corner Affordable Housing	75	2.50	188
Total Service Area Population	191	2.36	452
Township Population Estimate			4,585
Percent Served			9.8%

Source: Alaimo Group

Table 6 indicates the future WSA sewer service area population in twenty years (2030) assuming that the Town Center Extension is fully implemented. As shown in Table 6, it is projected that the number of units served by a wastewater conveyance and treatment system in the Township would increase to 809 units which would represent a service area population of about 2,091 persons or almost 30% of the entire Township. It is projected that over 60% of the new growth in the Township would be within the Future Sewer Service Area. It should be noted that Table 6 indicates a slight difference in the 2030 population projection compared to the trend projection due to proposed changes in development patterns that would occur as a result of the proposed wastewater management and related land use planning policies.

Table 6
Pilesgrove Township
Sewer Service Area Population Projection (2030)

Year	Units	PPH	Population
Single Family	465	2.9	1,349
Multi-Family	57	2.5	143
Friends Home	67	1.8	121
Bailey Corner Affordable Housing	75	2.5	188
Grandview Park Age Restricted	145	2.0	290
Service Area Totals	809	2.58	2,091
Unsewered Totals	1,745	2.91	5,078
Township Totals	2,554	2.81	7,169
Percent Served			29.2%

Source: Alaimo Group; Projection based on implementation of Town Center Extension proposal;

2.3 DESCRIPTION OF THE WASTEWATER MANAGEMENT FACILITIES WITHIN PLANNING AREA

2.3.1 Existing Discharge Permits

A review has been conducted of the NJPDES permit data that is available from the NJDEP. The Discharge to Surface Water (DSW) and Discharge to Groundwater (DGW) permits that involve treatment facilities that are within or impact the Township Planning Area are listed below in *Table 7*.

*Table 7
Pilesgrove Township
Surface/Ground Water Discharge Permits*

<i>DSW permits</i>			
Owner	Location	Facility Type	Discharge
Woodstown Sewerage Authority	West Avenue, Woodstown Borough	Publicly Owned Wastewater Treatment Plant	Surface Discharge
Waddington-Richman Inc.	849 Route 40, Pilesgrove Township	Wastewater Treatment Plant	Surface Discharge via marsh
Coastal Service Station	US Route 40	Surface Discharge Private Treatment	Surface Discharge
<i>DGW permits</i>			
Waddington-Richman Inc.	849 Route 40, Pilesgrove Township	Wastewater Treatment Plant	Groundwater Discharge
Four Seasons Campground	158 Woodstown-Daretown Road	Onsite treatment >2000 gpd	Groundwater General Permit

This review determined that there are no publicly owned treatment plants (POTW) in the Township Planning Area. The WSA WWTP is a POTW that serves a limited portion of the Planning Area. In accordance with NJDEP requirements, Treatment Facilities Tables have been prepared for each identified treatment facility.

All existing, new, or expanded industrial pretreatment facilities requiring Significant Indirect User (SIU) permits and/or Treatment Works Approvals, and which are located within the specified sewer service area, are deemed to be consistent.

2.3.2 WSA Wastewater Treatment Plant

The WSA owns and operates the Woodstown Wastewater Treatment Plant (WWTP) located at West Avenue in the Borough of Woodstown which is the only designated publicly owned treatment works (POTW) currently providing service to the Pilesgrove Township Planning Area (see *Map 2*). The WSA WWTP has a design capacity of 0.530 million gallon per day (“mgd”). *Table 8* provides a summary of the WSA WWTP. The treatment facility is not located within the Township Area but serves a portion of the Township.

2.3.3 Waddington-Richman

The Richman’s ice cream plant property contains an industrial treatment plant that was used to handle the discharge from the defunct ice cream production plant. All of the wastewater generated by the former commercial/industrial operations was directed to an aerated lagoon and a sedimentation/chlorination basin.

Because the ice cream plant has terminated operations, there has only been one discharge event to the surface water in the last five years. Nevertheless, the facility has a surface water discharge permit for the plant

effluent as well as two groundwater discharge permits for the unlined aerated lagoon that acts as an infiltration/percolation lagoon and as a surface impoundment for stormwater runoff.

Table 9 summarizes the existing facility and provides DSW/DGW permit data. Even though the facility has a permitted discharge rate of 13,000 gpd, the current average discharge rate is about 2,000 gpd. The current influent consists of sanitary waste from three restrooms and a kitchen in the existing restaurant as well as stormwater from the property.

The treatment facility was part of the proposed Kings Road LLC land development. The Developer had proposed that the existing treatment facility be utilized as an interim facility during initial development phases. The Settlement Agreement required the Developer to demonstrate that the NJDEP had approved the facility for domestic wastewater and the specific limits of this interim use. Once the interim time frame had expired, the Developer would have been obligated to direct wastewater to a new treatment facility, to remove the plant facilities, and to restore the site to pre-existing conditions.

2.3.4 Existing Cycle-let Facility

The only other treatment facility within the Planning Area is a pre-treatment facility operated by the Town Center shopping center to substantially reduce the effluent discharge to the WSA conveyance system. *Table 10* summarizes this facility. The WSA has limited the discharge to 6,000 gpd but there have reportedly been frequent excursions to this discharge limit.

2.3.5 Four Seasons Campground

Pilesgrove Township contains a major seasonal campground along its eastern border. According to the County Health Department, the site contains the systems summarized in *Table 11*. Township records indicate that the campground is permitted to handle a maximum of 584 camping units.

The County Health Department Inspector (A. Hopman) has indicated that he is not aware of any problems with these systems. Annual inspections have not indicated any seepage or uplifting. There was a problem with a line break from the laundry house a few years ago that was repaired.

The County Health Department also indicated that the problems associated with fecal coliform levels in the lake may be attributable to wildlife and human activities in the lake area and are not associated with the subsurface disposal systems. The lake was reportedly drained a few years ago and a discharge pipe was detected but it was determined that it was used for groundwater discharge rather than any type of effluent discharge.

The primary concern with the Four Seasons campground with respect to this WMP is that the seasonal discharge is well in excess of 2,000 gpd and for that reason the system needs to be included in the WMP as an exception to the 2,000 gpd limit.

In this regard, it is recommended that the Township require the owner of the facility to provide an engineering report of current conditions and a discussion of future wastewater improvements. The report should also clearly state the management policies with regard to use of the facility since it has been licensed as a seasonal campground but shows evidence of long-term and continuing tenancy. The report should also address how the reported fecal coliform issues in the swimming lake have been or are being addressed.

Table 8
Pilesgrove Township Wastewater Management Plan
Existing Wastewater Treatment Facility Summary
Woodstown Sewerage Authority Wastewater Treatment Plant

Owner of Facility:	Woodstown Sewerage Authority (WSA)
Operator of Facility:	Woodstown Sewerage Authority (WSA)
Discharge Permit Type	DSW
Treatment Plant Location:	West Avenue, Woodstown, New Jersey, (Intersection of U.S. Route 40/45 at Salem River)
Discharge/Operating Permit Number:	NJ 0022250
Location of Discharge:	Latitude - 39° 38' 58" North; Longitude - 77° 19' 18" West
Name of Receiving Surface Water:	Salem River
Classification of the Receiving Waters:	FW2-NT/SE1
Present Permitted Flow:	0.530 MGD
Present Design Capacity:	0.530 MGD
Population Served	3,600 (2006 Estimate)
Actual wastewater Flow:	0.327 MGD (based on 2004 DMRs)
Projected Wastewater Flow (2027)	0.700 MGD (after expansion)
Treatment Plant Process:	The WSA plant is a secondary treatment plant that utilizes trickling filters and settling tanks to remove pollutants from the wastewater. The treated discharge is sent to sand filtration units and UV disinfection systems for final treatment prior to being discharged into the Salem River.

Table 9
Pilesgrove Township Wastewater Management Plan
Existing Wastewater Treatment Facility Summary
Waddington-Richman Wastewater Treatment Plant

Owner of Facility:	Waddington-Richman Inc.
Operator of Facility:	Greene Environmental Services
Discharge Permit Type	DSW; DGW
Treatment Plant Location:	Kings Highway, Pilesgrove Township, New Jersey, NE of U.S. Route 40/Kings Highway Intersection (adjacent to wetlands near Salem River)
Discharge/Operating Permit Number:	NJPDES- DSW: NJ 0004308 NJPDES- DGW: NJ 0100218 Infiltration/percolation lagoon NJPDES- DGW: NJ 0100218 Surface impoundment
Location of Discharge:	Latitude - 39° 39' 34.1" North; Longitude - 75° 21' 31.6" West
Name of Receiving Surface Water:	via marsh to Salem River
Classification of the Receiving Waters:	FW2-NT/SE1
Present Permitted Flow:	0.013 MGD
Present Design Capacity:	0.02 MGD
Population Served	Unspecified; Serves three restrooms and kitchen as well as stormwater from property
Actual wastewater Flow:	Intermittent; One surface water discharge event in last 5 years
Projected Wastewater Flow (2025)	Unspecified; Future of site is unknown; Kings Road LLC is seeking to use the facility as interim disposal facility for up to 46 EDUs or 0.13 MGD
Treatment Plant Process:	All wastewater and stormwater is processed through an influent chamber; transfer pump; aerated lagoon; sedimentation/chlorination basin; discharge pump; Wastewater is generally discharged to the groundwater via unlined aerated lagoon; Maintenance procedures for sedimentation/chlorination basin are established as requirements for a surface impoundment

Table 10
Pilesgrove Township Wastewater Management Plan
Existing Wastewater Treatment Facility Summary
Acme Shopping Center Pre-Treatment Plant

Owner of Facility:	Woodstown Associates
Operator of Facility:	Greene Environmental Services
Discharge Permit Type	Discharge to sewer system
Treatment Plant Location:	U.S. Route 40; --feet west of Route 45 intersection
Discharge/Operating Permit Number:	N/A
Location of Discharge:	WSA conveyance system
Name of Receiving Ground Water:	N/A
Classification of the Receiving Waters:	N/A
Present Permitted Flow:	0.06 MGD
Present Design Capacity:	0.06 MGD
Population Served	Serves Town Center shopping center (10.0 acres)
Actual wastewater Flow:	6,000 gpd (excursions reported)
Projected Wastewater Flow (2025)	6,000 gpd
Treatment Plant Process:	Cycle-Let recycling system is used to substantially reduce the effluent discharge; The WSA has allowed a maximum discharge of 6,000 gpd to the conveyance system

*Table 11
Pilesgrove Township Wastewater Management Plan
Four Seasons Campground
Community Subsurface Disposal Systems*

1. Existing/Proposed Facility	Existing Facility
2. NJPDES Discharge Permit Number	NJG0136221 PI #50538
3. Discharge Permit Type	DGW Category T1
4. Name of Receiving Ground Water	Groundwater Discharge
5. Classification of the Receiving Waters	GW-2
6. Owner of Facility:	Four Seasons Campground Inc.
7. Operator of Facility:	Four Seasons Campground Inc.
8. Co-permittee of Facility	N/A
9. Location of Facility	158 Woodstown-Daretown Road, Pilesgrove, NJ Block 81; Lot 23
10. Location of Discharge	Various onsite locations
11. Present Permitted Flow:	No value
12. Population Served	Campground; 584 potential units
13. Existing/projected wastewater Flow:	No changes proposed
14. Treatment Plant Process:	<p><u>System 1</u>: 3,500 gallon septic tank with 6,000 square foot leach field serving bathhouses;</p> <p><u>System 2</u>: 1,000 gallon septic tank with 6 disposal trenches and 284 square foot leach field serving main house;</p> <p><u>System 3</u>: 1,000 gallon septic tank with 1,620 square foot common disposal field serving 40 campground sites;</p> <p><u>System 4</u>: 1,500 gallon septic tank; 1,500 gallon pump station; 8,000 square foot disposal field; 4 beds with 2 d-boxes; pump station pumps sewage to disposal field;</p> <p><u>System 5</u>: 1,500 gallon septic tank with 1,620 square foot disposal field serving laundry house</p>

2.4 PROPOSED CHANGES: SMART GROWTH AREAS

Pilesgrove Township does not currently have a wastewater collection or treatment system under its control. The only existing wastewater collection and treatment services in the Township are those that are being provided by the Woodstown Sewerage Authority (the WSA). Historically, the WSA has sought to limit sewer service in the Township to ensure that the Borough's future wastewater needs will be adequately served.

2.4.1 Center-Based Development

One of the planning objectives of Pilesgrove is to provide for growth in the Township that is Center-based and to do so in a way that reduces the potential for sprawl. This WMP has been structured to support the Township's Plan Endorsement petition that seeks to change the planning area designations of the State Development and Redevelopment Plan to foster this controlled growth. Pilesgrove Township is pursuing a center-based planning policy through the Plan Endorsement process that will conform to the State Plan. The specific proposals are as follows:

- Development of an Agricultural/Industrial node along the Township's western boundary;
- Establishment of a village center in the Sharptown area;
- Extension of an existing rural town center (Woodstown Borough);

All of these center and node designations are contingent upon the availability of planned infrastructure. The specific nature of each proposal is described below.

2.4.2 Planned Light Industrial (PLI) District

Pilesgrove Township has historically zoned an area in the southwestern corner of the Township for Limited Manufacturing (LM). For a variety of reasons, this zoning did not result in any industrial development. This zoning was reviewed in 2002 as part of a Master Plan Re-examination Report and it was determined that the area had potential for major industrial development but only if it was developed under a General Development Plan (GDP). The GDP approach would ensure that the development was implemented in a comprehensive manner, would provide the protection needed for staged development, and would justify the installation of planned infrastructure.

After the Land Use Plan was amended in February of 2005, this area was re-zoned as Planned Light Industrial (PLI) development. However, the PLI zoning district can only be developed after approval of a General Development Plan (GDP) by the Township Planning Board. A GDP ordinance has been adopted that establishes the GDP submission and review standards.

The Township Land Use Plan envisions that the Planned Light Industrial (PLI) zone would be developed as an agricultural/industrial agriculture node in accordance with the State Plan policies. A Plan Endorsement petition to establish such as node is being pursued concurrent with the preparation of this WMP. The advantages of the PLI district are as follows:

1. Integrated Plan. The potential advantages of the PLI district are that it will be developed under a General Development Plan (GDP) arrangement as an integrated complex;
2. Size. The district is capable of supporting major planned industrial development adjacent to the Salem County smart growth corridor. The district is approximately 430 acres and is capable of supporting approximately 3.6 million square feet of industrial development.

3. Access. The PLI district has excellent highway access. It is located immediately south of U.S. Route 40 ½ mile east of where the dualized road transitions into a two-lane road. It would be anticipated that the roadway would be improved to the site limit.
4. Regional Location. The PLI district is located in an area of excellent regional access. It is six miles east of the Delaware Memorial Bridge; five miles northeast of Exit 1 of the New Jersey Turnpike; 3½ miles southeast of Exit 4 on Interstate 295; ½ mile east of the State Route 48/40 intersection and 14 miles southeast of Commodore Barry bridge.
5. The site has limited environmental constraints relative to other proposed industrial development areas along the corridor. The site is entirely cleared due to its current use as a sod farm. The topography is flat to gently sloping. The wetlands within the area tend to be concentrated along the Salem river corridor that would be well buffered and protected.
6. The district has the potential to serve regional agricultural and transportation interests since it is located on the western fringe of the major agricultural districts in Salem County. It is also located within five miles of a proposed port facility in Carneys Point Township and within 15 miles of the Salem port facility.
7. The potential to be a unique complex that will blend the industrial development into the environment through the use of open space, landscaping, and “green” technologies.

2.4.2.1 Wastewater Disposal

The disposal of the wastewater from the Planned Light Industrial district would require the construction of an onsite treatment plant to treat the wastewater and to satisfy current standards for subsurface disposal as a beneficial reuse. The treatment plant would be constructed in modules to enable incremental treatment plant expansion as the demand increases. The area needed for the treatment plant would be between two and ten acres. The treated effluent would be disposed of using a subsurface drip system under the beneficial reuse guidelines. The actual area required for the disposal field would be dependent upon the soil characteristics and the actual amount of effluent generated. The prospective developer’s engineer has estimated that the disposal area would be in the 10 to 60 acre range. The project site contains soils, which have the potential for surface infiltration suitable for beneficial reuse applications.

*Table 12
Planned Light Industrial (PLI) Wastewater Projection*

Category	Square Footage	Employees	Flow rate	Projected Flow
Sanitary Wastewater	3,641,000	3,641	25 gpd/employee	91,025 gpd
Process Wastewater	3,641,000	3,641	0.25 gpd/ SF	910,250 gpd
Total Wastewater	3,641,000	275 gpd/employee	3.63 gpd/SF	1,001,275 gpd

Notes: 1. Projected employees based on 1 employee per 1,000 square feet.
2. Process wastewater based on wastewater needs of food processing industry.

2.4.2.2 Project Development

A GDP application previously submitted to the Township Planning Board for review is not being pursued. Consequently, the Township is recommending that the PLI District not be included in the Future Sewer Service Area of Wastewater Management Plan at this time. Any future inclusion would require a site specific amendment to the WMP.

2.4.3 Sharptown Village Center

The existing settlement area known as Sharptown is located at the intersection of U.S. Route 40 and Kings Highway (C.R. #620). The existing development is primarily located to the south of Route 40 in a compact development pattern. The crossroads settlement area consists of about 80 residential units, a church, a restaurant, and several small commercial establishments. All of the existing land development in the Sharptown settlement area relies on individual wells and individual subsurface septic systems. Lot sizes range from 10,000 to 30,000 square feet and average less than 20,000 square feet.

The only existing water and sewer infrastructure within the settlement area are the facilities that were developed to serve the former Richman's ice cream plant. Although the industrial and commercial components of the Richmans' facility have now closed, the Site retains a permitted industrial treatment plant permit and two potable wells. These facilities were developed solely to serve the process and domestic wastewater from Richman's restaurant and ice cream plant and not any offsite uses.

2.4.3.1 Kings Road LLC Project

In October of 2002, a land development entity known as Kings Road LLC filed a Mount Laurel lawsuit seeking a builders' remedy. The litigation known as *Kings Road LLC v. Pilesgrove Township* culminated in a 2007 Settlement Agreement. In general, the proposed development under the Settlement Agreement would have entailed a maximum of 96 single-family dwelling units and approximately 35,000 square feet of neighborhood commercial development and would have been served by public water and sewer facilities constructed by the developer.

Project Site

The Kings Road LLC project site included Block 29, Lots 12 & 17 and Block 25, Lots 10 & 11 on the Pilesgrove Township tax assessment map and encompassed about 120.8± acres. These land parcels are no longer controlled by the Developer. The land to the west of Kings highway has been sold and the option agreement for the Richmans' property has expired. Nevertheless, the Settlement Agreement remains in force until 2013 and the reference to the Kings Road project site herein refers to the parcels listed above.

Water Supply.

The Kings Road project site included two existing potable wells that are screened in the PRM aquifer. These wells have a reported yield of at least 285 gpm. Under the Settlement, the Developer was obligated to maintain two wells on the project site tapping into the same formation and having the same yield; comply with all relevant regulations pertaining to water supply; and provide a 100,000 gallon water supply standpipe.

Wastewater

The Kings Road project site included the existing Richmans' treatment plant, which was designed to accept process wastewater from the former ice cream plant as well as sanitary waste from employees and patrons of the restaurant. The Developer was obligated to permit, design, construct, and start-up a new wastewater treatment plant that would have been capable of serving the project site and adjacent residences on the north side of US Route 40 as well as the capability to serve the existing settlement area and minor in-fill or new development within the proposed Sharptown village center.

Table 13 is a wastewater flow projection for the proposed wastewater treatment facility that would have been constructed within the Kings Road project site. *Table 14* presents the capital cost estimate of constructing the two-train wastewater treatment plant prepared by the Developer.

The first train would have had a capacity of 35,000 gpd and would have served the Kings Road project. Most of the basic costs of the treatment plant including the site improvements, the treatment building and concrete tanks, the power supply, and the effluent discharge system would have been constructed by the Developer. Under the Settlement Agreement, the Developer would have been obligated to provide the capital construction cost for the basic treatment plant that was estimated to be slightly over \$1 million.

The Township would have had the option of constructing the second train in the future to serve the existing crossroads settlement. This treatment plant option would have offered the opportunity for a more environmentally sound method of wastewater disposal than the existing septic systems. If the extension of sewers into the village was determined to be economically feasible, the Township could have installed the treatment equipment in the second train. *Table 14* indicates that the cost of installing the equipment, the offsite pump station, and the conveyance force main for the optional second train would have been \$530,000.

Interim Facility

The Settlement Agreement provided for limited, short-term use of the existing Richman's wastewater treatment plant prior to start-up of the new treatment plant. The terms of this limited use were as follows:

- The Developer would have been obligated to secure NJDEP approval of the interim arrangement designed to serve at least forty six (46) residential units;
- The Developer would utilize the interim facility to serve a maximum of 46 equivalent dwelling units for a period of no more than two years after the C.O. was issued;
- The building permit for the 47th dwelling unit would not have been issued until the new Sewer Facilities were receiving wastewater flow from all constructed units within the project;
- No surface water discharge during the interim period would have been permitted.

Treatment Facility Closure

The Settlement Agreement provided for the termination, removal, and proper closure of the existing Richman's treatment plant after the interim use had ended and the restoration of the site to a natural condition. The specific provisions of the Settlement Agreement in this respect are as follows:

- The Developer would have been obligated to remove the Richman's facility within 180 days of the start-up of the new Sewer facilities and to fully restore the site to a natural condition in accordance with all applicable statutes and regulations of the NJDEP;
- The building permit for the 70th dwelling unit would not have been issued until the Richman's facility had been shut down and removed. If the Richman's facility had not been closed and removed at that time, the Township would have had the right to remove the Richman's facility and to restore the site by drawing on the performance guarantee established for that purpose.

Township Obligations

Under the Settlement Agreement, the Township was obligated to amend its Land Use and Housing Plan elements and its Land Development Ordinance to create a Planned Residential Development (PRD-1) zoning district; prepare a Township-wide wastewater management plan that provides for the Kings Road project to be within a sewer service area; support the Developer in securing the necessary permits; and grant a franchise to the developer for the water and sewer systems.

The Township did amend its master plan elements and its land development ordinance in accordance with the Settlement Agreement and is bound to retain that zoning for a six-year period. **The Township also prepared a draft WMP in conformance with the Agreement to support the inclusion of the Kings Road project site within the Future Sewer Service Area. The Township is petitioning the Court remove this project from its adopted Housing Plan. If the Court approves this action, the Kings Road Project Site should not be included in the Future Sewer Service Area.**

Franchise

The Settlement Agreement stipulated that Pilesgrove Township was to grant Kings Road LLC a franchise for the water and sewer systems. While the timing of this designation was not specified, the Township would have granted a franchise to allow the Developer to serve as the water and sewer purveyor for the Kings Road property plus adjacent lots on the north side of US Route 40 by ordinance after the endorsement of this WMP by the Township Committee. Since the Developer no longer controls the Kings Road project site, the granting of a franchise to the Developer is a moot issue.

Ownership/Management

The Settlement Agreement provided for the new treatment plant to be permitted, constructed, and operated by the Developer or a qualified substitute owner. The capital cost of developing the plant would not have been passed on in any user rates. The Township would have had the option, but not the obligation, to acquire the plant at any time for \$1.

Kings Road User Fees

The Developer had prepared a pro forma for the sewer system to indicate the estimated sewer rate structure. Based on preliminary information, the Developer's engineer had projected an annual sewer rate of \$840.00 per year (see *Table 15*). This figure does not include the capital cost of developing the collection and treatment system, which under the Settlement Agreement could not be passed on to the users. While an interim rate would have been established prior to the formal BPU petition, the Developer indicated that it would bear the actual deficiencies in operating revenue until final tariff was approved by the BPU.

The developer has estimated that prospective homeowners in the Kings Road development will have a family income of about \$130,000 per year. Based on this estimate, the annual sewer rate will be 0.65% of annual income, which is well within NJDEP guidelines.

The Kings Road developer also projected operating costs in the event that existing Sharptown residences were included in the system. Based on an additional 65 users, the operating cost per unit would be reduced significantly to about \$618 per equivalent dwelling unit on an annual basis. This figure does not include the capital cost of constructing the collection and treatment system for Sharptown. Nonetheless, it is evident that the addition of Sharptown has the potential to lower the average annual operating costs by defraying the basic operating costs over a larger base.

The Developer provided a pro forma for the water system and projected an annual water bill of \$707.24 or 0.54% of the estimated annual household income. The combined water and sewer rate estimates would have been \$1,551.24 or 1.19% of the estimated household income.

Effluent Discharge

The Developer had proposed to discharge the treated effluent into the Navesink and Hornerstown formation after ultra-violet disinfection. These formations function as leaking confining units (aquicludes) for the Wenonah Formation and the Mount Laurel aquifer.

2.4.3.2 Proposed Sharptown Village Center

Based on the fact that the Kings Road Developer no longer controls the project site and is no longer pursuing the land development project described in the Settlement Agreement, the Township intends to pursue the designation of a more limited Sharptown Village Center during the Plan Endorsement process. The limits of the proposed Village Center are to include the existing settlement area, and the former Waddington/Richman land holdings on both sides of King's Highway. The objective of the Village Center designation is to recognize the importance of the crossroads settlement, and to support limited development and redevelopment in this Village Center. The maximum number of residential units in the proposed Village Center would be 150 dwelling units.

With regard to wastewater treatment, the Township would support the use of innovative or community systems that would improve the environmental quality of the treatment systems in the designated Village. This objective could be achieved in a number of ways. **However, the Sharptown Village center is not proposed to be included in the Future Sewer Service Area of the County WMP until the means of wastewater treatment are clearly defined. At that time, an amendment to the WMP could be pursued, if necessary.**

2.4.4 Woodstown Town Center Extension

The WMP proposes that the WSA infrastructure be expanded to serve growth in the immediate vicinity of the Borough under a non-contiguous clustering or development rights transfer provision. This approach will support the economic growth of the Woodstown Town Center, encourage compact development, protect environmental resources, and preserve farmland in the Center environs. The Town Center Extension is further described in the Township's self-assessment report.

A Woodstown Town Center extension has been proposed in which compact development would be encouraged by an overlay zoning district provided that the developer acquires the necessary development rights from other parts of the Township. By acquiring these rights and preserving the lands in the environs of the Town Center, the Developer will enhance the town center approach to growth management. However, the wastewater collection and treatment services in the receiving area must be capable of meeting the center-based growth potential before there is an expressed need. The key policies of the WMP are as follows:

- Planned Infrastructure would be extended to serve portions of Pilesgrove Township where compact development is to be encouraged;
- The WSA WWTP would be expanded under an inter-local services agreement with Pilesgrove Township. The cost of the capital expansion would be covered by connection fees for land development within the overlay zone without exceeding the stream's assimilative capacity;
- The available capacity in the Township would be primarily allocated to residential development based on a transfer or clustering of development rights;

The anticipated smart growth implementation process would be as follows:

- The Town Center extension concept would be approved by the Office of Smart Growth (OSG) during the Plan Endorsement process,
- The County WMP would define the long-term service needs of the region based on this controlled growth scenario;
- The County WMP would define the phased sewer service area expansion;

- An inter-local agreement would be entered into between the Borough and Township that would define the bulk services purchase arrangement;
- The overlay zoning providing for the transfer of development rights would be adopted;
- Facility improvement plans would be implemented by the service provider based on the inter-local services agreement and Township developer agreements.

2.4.4.1 Outline of Inter-local Services Agreement

The key terms of an inter-local services agreement would be as follows:

1. The excess reserve capacity that was purchased by Salem County in 1991 would be re-acquired by the WSA. This capacity is needed to serve the development and redevelopment within Woodstown and could be considered a stranded public investment. The reserve capacity would be re-acquired at a price comparable to its prior sale on an incremental basis. It is anticipated that if the reserve capacity were re-procured, Woodstown would be capable of satisfying its development needs for the foreseeable future with the existing WTP.
2. Once the Office of Smart Growth approves the Woodstown Town Center Extension, Pilesgrove Township would enter into an agreement with the WSA for the expansion of the Woodstown treatment plant. The permit design flow capacity is anticipated to be at least 700,000 gpd, which would enable future growth in Pilesgrove and Woodstown that contributes to the town center extension. The terms of the agreement would provide for the WSA to recoup the capital upgrade cost either through connection fees or other means. The capital upgrade cost would also include any capital improvements to the existing facility to enable it to operate without increasing the discharge loading on the stream. If an increased loading is necessary, it would need to be demonstrated that the discharge parameters are within the assimilative capability of the stream. Pilesgrove Township would have the ability to transfer the capital costs to developers through the issuance of sewer permits.
3. The differential costs of operating the treatment plant at a higher treatment efficiency would be offset by the increased cost-efficiency of spreading fixed operating costs over a larger number of users. If that were not the case, the Agreement would need to address the differential operating costs of an upgraded facility.
4. The agreement would stipulate that the increased allocation afforded to Pilesgrove Township would be used for the purpose of allowing clustering at higher density than would otherwise be possible with the understanding that the necessary development rights would be acquired from the Town Center Environs within specified farmland preservation areas.

2.4.4.2 Woodstown Buildout

Woodstown's professional planner, Leah Furey, P.P. has prepared a build-out analysis of the Borough based on current zoning. The results of the analysis are duplicated in *Table 16*. As the Table indicates, it is projected that the current zoning would enable a maximum of 341 new units to be developed in the Borough generating 101,250 gpd of wastewater. In addition, the current zoning would enable a maximum of 160,544 square feet of commercial development generating 22,554 gpd and 38,600 square feet of industrial development generating 2,920 gpd. Woodstown also has three redevelopment areas that could generate an additional 124,700 square feet of commercial development with a projected wastewater flow of 33,420 gpd. It is estimated that the current allocation to the redevelopment areas accounts for about 3,400 gpd for a net potential increase of 30,000 gpd.

2.4.4.3 Pilesgrove Trend/Alternate Projection

Tables 17-19 provide a projection of future growth based on current trends in the Township. For this projection, it is assumed that recent residential growth patterns will continue and that the only facilities that would be sewered would be the projects listed in the adopted Housing Plan 2010 Update that was the basis of the Judgment of Compliance and Repose including the Bailey Corner affordable housing project, the proposed Grandview Park age-restricted project and a possible future municipally sponsored affordable housing project. The result of these assumptions is that only 236 additional units would be sewered over the next twenty years. Individual Subsurface Disposal Systems (ISSDS) would serve all of the remaining residential units.

Currently, only 116 units or 8% of all the dwelling units in Pilesgrove Township are served by a centralized sewer conveyance and treatment system. The result of the trend projection is that a total of 352 units or about 14% of the 2,434 projected units in the Township would be sewered in 2030. In other words, the number of ISSDS would increase by 760 units over the next twenty years. The population relying on septic systems is projected to be about 6,060 persons in 2030. *Table 20* provides a trend population projection based on the assumptions in the adopted housing plan update through 2018 and a trend extrapolation of growth to 2030. Based on these assumptions, the Township would have a population of 6,892 persons at the end of 2030.

Table 21 is a complete buildout projection for the area in Pilesgrove being considered for inclusion in the Woodstown Town Center extension. The key emphasis is on residential development since the intention is to require developers to acquire development rights that may be clustered within the smart growth area in exchange for preserved lands in the environs around the town center extension. As *Table 14* indicates, it is projected that about 1,000 units could be developed around Woodstown at a density comparable to that in the Borough. At least one age restricted development is also assumed. The projected wastewater flow rate is estimated to be about 246,000 gpd for the residential development areas.

Table 21 also projects that commercial and light industrial development areas to the east of Woodstown have the potential to generate about 960,000 square feet of non-residential development. It is anticipated that this development will be handled by ISSDS or by community septic systems or package treatment plants rather than interconnection to the WSA at this time.

Tables 22-24 provide a detailed projection of future residential growth based on the proposed Woodstown Town Center extension. The key conclusions of the projections are as follows:

- The implementation of the Town Center extension would be extended over a long period of time. While the initial phase within the extension area is projected to be occupied in 2015, substantive development from this approach is projected to be in about 10 years.
- It is assumed that 20-30 new dwelling units per year after 2018 would rely on ISSDS and the remainder would be sewered;
- The cluster alternative would result in more development during the study period due to the compact nature of development and the fact that the concept may be more attractive to builders than the conventional approach. The increased number of units is estimated to be 120 units over the trend projection to 2030. While the number of units may be slightly increased, the alternative would result in the preservation of about 3,000 acres of additional land.
- Based on these assumptions, it is projected that 60% of the new units constructed in the Township over the next twenty years would be sewered and that the remaining 417 units would be on ISSDS;

- The Town Center extension concept is dependent upon the availability of sewerage for the 693 units in the Woodstown area or 543 units more than that under the trend projection;
- *Table 25* is a long-term population projection for the Township based on the non-contiguous clustering or TDR alternative. The projected population at the end of 2030 is 7,152 persons or a 70% increase over the current population.

2.4.4.4 Wastewater Allocation

Table 26 provides a breakdown of the projected wastewater allocation between Woodstown Borough, Pilesgrove Township, and the County of Salem. The key components of this allocation are as follows:

- The existing flow is estimated to be about 365,000 gpd based on recent discharge monitoring reports (DMRs);
- The committed and reserved flow is estimated to be 465,500 gpd when approved projects including the Bailey Corner affordable housing and commercial redevelopment project and the excess reserve capacity assigned to Salem County are considered;
- The remaining capacity at the existing WWTP would be committed to the Woodstown water filtration plant, further development within the Borough limits, and the proposed Grandview Park project in Pilesgrove;
- In order to maximize the capacity available to the Borough for land development and to maximize the use of the public investment in the WSA WWTP, *Table 26* indicates that 65,000 gpd of reserve capacity would be re-procured from the County;
- The expansion of the WSA WWTP would make about 145,000 gpd available for land development within and around the Town Center; *Table 26* indicates that a maximum of 41,000 gpd would be available to Woodstown Borough to complete the build out of the Borough and that the remaining 101,070 gpd would be available for land development near the Borough under the Town Center Extension.
- While *Table 26* indicates the need for over 220,000 gpd to handle residential and related development for the long-term future, the projected wastewater allocation would be adequate for the town center extension phasing until about 2016.

2.4.4.5 Woodstown rates

The minimum sewer rate per EDU in Woodstown is \$533 per year. The actual charge is calculated using a basic charge of \$425 per year plus 60% of the annual water bill. For the average homeowner, the annual sewer rate is about \$750 per year.

Table 13
Pilesgrove Wastewater Management Plan
Sharptown Village Wastewater Flow

Train #1 (Kings Road)			
<i>Residential</i>	Units	GPD/Unit	Projected Flow
North Route 40	8	300	2,400
Kings Road PRD	96	300	28,800
<i>Commercial</i>	SF	GPD/SF	Projected Flow
Kings Road Commercial	38,000	0.1	3,800
Total Projected Wastewater			35,000
Train #2 (Future Sharptown)			
<i>Residential</i>	Units	GPD/Unit	Projected Flow
South Route 40	72	300	21,600
Future Residential	24	300	7,200
<i>Commercial</i>	SF	GPD/SF	Projected Flow
Future Commercial	62,000	0.1	6,200
Total Projected Wastewater			35,000

Note: The second train will only be utilized if determined to be in the interest of the Township.

Table 14

Proposed Kings Road/Sharptown Treatment Plant
Capital Cost Estimate

Line Item	Kings Road LLC First Train(35,000 gpd)				Sharptown/Kings Road LLC. Two Trains (70,000 gpd)			
	Unit	Quantity	Unit Price	Line Cost	Quantity	Unit Price	Line cost	
Wastewater treatment components	LS	1	\$294,511.00	\$294,511.00	1	\$294,511.00	\$294,511.00	
Concrete Tanks	LS	1	93,000.00	\$93,000.00	N/A	N/A	N/A	
Equipment installation	LS	1	85,000.00	\$85,000.00	1	85,000.00	\$85,000.00	
Chain Link Fencing	LF	400	30.00	\$12,000.00	N/A	N/A	N/A	
Auxilliary Power	LS	1	32,200.00	\$32,200.00	N/A	N/A	N/A	
Electric Service/Panel box/controls	LS	1	25,000.00	\$25,000.00	N/A	N/A	N/A	
Building	SF	3,608	30.00	108,240.00	N/A	N/A	N/A	
Site Restoration	LS	1	15,000.00	\$15,000.00	N/A	N/A	N/A	
Fine screening equipment	LS	1	70,000.00	\$70,000.00	N/A	N/A	N/A	
Boring under route 40	LF	N/A	N/A	N/A	100	400.00	\$40,000.00	
Force main	LF	N/A	N/A	N/A	1,800	25.00	45,000.00	
Aquifer Recharge	LS	1	285,000.00	\$285,000.00	N/A	N/A	N/A	
Offsite Pump Station		N/A	N/A	N/A	1.00	50,000.00	\$65,000.00	
Developer Capital Cost Subtotal				\$1,019,951.00				
Township Capital Cost Subtotal							\$529,511.00	
EDUS				115			115	
Capital Cost/EDU				\$8,869.14			\$4,604.44	

Source: Kings Road LLC (Train #1); Alaimo Group (Train #2)

Table 15
Proposed Kings Road/Sharptown Treatment Plant
Annual Operating Cost Estimate

Scenario	Kings Road Start-up	Kings Road Start-up	Kings Road Residential	Kings Road Final	Sharptown Residential
Equivalent Units	20	45	75	115	180
GPD	6,000	13,600	22,500	34,500	54,000
<i>Line Item</i>					
Electric	\$2,400.00	\$5,200.00	\$8,600.00	\$13,800.00	\$21,291.43
Insurance	10,000.00	10,400.00	10,816.00	11,248.64	12,000.00
Vehicle insurance	1,800.00	1,872.00	1,946.88	2,024.78	1,800.00
Telephone Answering Service	500.00	520.00	540.80	562.43	500.00
Telephone-Dedicated Fax	300.00				300.00
Telephone Fax	500.00	520.00	540.80	562.43	500.00
Office Telephone	600.00	624.00	648.96	674.92	600.00
Heat,electricity (building, pump station)	2,000.00	2,080.00	2,163.20	2,249.73	2,000.00
Licensed operator	2,500.00	2,600.00	2,500.00	2,600.00	2,704.00
Field Personnel	5,000.00	5,200.00	15,000.00	15,600.00	15,600.00
Office Accounts Clerk	5,000.00	5,200.00	10,000.00	10,400.00	10,400.00
Office Manager	5,000.00	5,200.00	10,000.00	10,400.00	10,400.00
Postage, Monthly billing, etc.	600.00	700.00	800.00	832.00	1,500.00
Office Supplies	400.00	416.00	432.64	449.95	750.00
Computer	500.00	520.00	540.80	562.43	750.00
Vehicle expenses	2,500.00	2,600.00	2,500.00	2,600.00	2,500.00
Vehicle registration	160.00	166.40	125.00	130.00	125.00
Laboratory tests	3,500.00	3,640.00	3,785.00	3,937.02	3,500.00
NJDEP Annual fees	600.00	600.00	600.00	624.00	600.00
NJ-BPU Assessment	500.00	500.00	500.00	500.00	0.00
Accounting (including BPU Report)	750.00	780.00	811.20	843.65	1,000.00
Professional fees	3,500.00	3,500.00	3,500.00	3,640.00	5,000.00
Property taxes	1,500.00	1,560.00	1,622.40	1,687.30	0.00
Other taxes -Payroll etc.	2,250.00	2,340.00	5,250.00	5,460.00	5,678.40
Gross Receipts & Franchise taxes	1,230.60	5,537.70	9,967.86	14,151.90	0.00
Small tools & small parts	350.00	364.00	378.56	393.70	750.00
Maintenance & repairs	5,000.00	5,200.00	5,408.00	5,624.32	5,000.00
Miscellaneous	750.00	780.00	811.20	843.86	1,000.00
Sludge removal & disposal	2,000.00	2,080.00	2,163.20	2,249.73	5,000.00
Annual Operating Costs	\$61,690.60	\$70,700.10	\$101,952.50	\$114,652.79	\$111,248.83
O&M Cost per unit	3,084.53	1,571.11	1,359.37	996.98	618.05
Equivalent Dwelling Units	20	45	75	115	180
Annual Charge	840.00	840.00	840.00	840.00	618.00
Estimated Annual Revenue	\$16,800.00	\$37,800.00	\$63,000.00	\$96,600.00	\$111,240.00
Net Income	-\$44,890.60	-\$32,900.10	-\$38,952.50	-\$18,052.79	-\$8.83

**Table 16
Pilesgrove Township Wastewater Management Plan
Woodstown Buildout**

Residential									
Block	Lot	Zone	Acres	Density (Avg.)	Max. Units	Rate/Unit	Projected Flow	Comments	
15	29	R-6	17.2	2.7	47	300	14,100		
15	2	R-6	19.8	2.7	54	300	16,200		
15	3	R-6	8.8	2.7	24	300	7,200		
50	6	R-5	12.0	10.0	120	300	36,000	Proposed agreement	
51	10	R-5	16.5	2.1	34	300	10,200	Reduced buildout; wetlands;	
45	13	R-5	1.2	3.4	4	300	1,200	Remote location; Category one watershed	
46	6	R-5	5.7	2.1	12	300	3,600	Approved	
46	5	R-5	11.3	2.7	30	300	9,000	Remote location; Category one watershed	
40	49		7.0	2.3	16	235	3,750	Affordable Housing Project	
Total Residential						341	101,250		
Commercial									
Block	Lot	Zone	Acres	FAR	Floor Area	Flow Rate	Projected Flow	Comments	
51	12	C-3	3.8	0.23	37,800	0.10	3,780		
51	12	C-3	4.8	0.23	47,800	0.10	4,780		
43	1	C-3	6.2	0.23	62,400	0.20	12,740	Includes restaurant	
40	45	LC	0.5	0.30	5,880	0.10	588		
40	46	C-2	0.5	0.30	6,664	0.10	666		
Total Commercial						160,544	22,554		
Commercial Redevelopment									
24	1,2,3,19,20,21	Area 3	3.4	0.10	14,700	0.19	2,770	Includes restaurant	
18	29,30,31,32,34	Area 2	5.2	0.29	65,000	0.16	10,150	Includes restaurant	
20	14,15,27,28,37	Area 1	4.6	0.22	45,000	0.46	20,500	Includes restaurant; health club	
Deduct existing allocation							-3,420		
Total Redevelopment Areas			13.2		124,700		30,000		
Industrial									
Block	Lot	Zone	Acres	FAR	Floor Area	Flow Rate	Projected Flow	Comments	
14.01	1	LI	3.9	0.23	38,600	0.08	2,920	73 employees	
Total Industrial			3.9		38,600		2,920		
Total Projected Wastewater Flow (2007-2027)							156,724		

Table 17
Pilesgrove Township Trend Projection
Projected Dwelling Units

Property	Year																				Totals					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026		2027	2028	2029	2030	
Bailey Corner	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	
Musumeci Tract																										145
Unspecified Site																										16
Cum Flow	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	236	

Table 18
Pilesgrove Township Trend Projection
Wastewater Flow Projection

Property	Year																				Totals					
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026		2027	2028	2029	2030	
Bailey Corner	0	0	0	12,220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12,220	
Musumeci Tract																										30,450
Unspecified Site																										3,360
New Flow	0	0	0	12,220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46,030	
Cum Flow	34,800	34,800	34,800	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	47,020	80,830	

Table 19
Pilesgrove Township Trend Projection
Sewer/Individual Subsurface Disposal System Projection

Property	Year																				Totals				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026		2027	2028	2029	2030
New WSA SSA Units	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	236
New Kings Road Units	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Sewered Units	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	236
New ISSDS Units	9	6	1	-1	4	11	32	32	40	38	29	30	34	35	36	37	38	39	40	45	57	58	59	60	769
Total New Units	9	6	1	74	4	11	32	32	40	53	44	45	49	50	51	52	53	54	55	56	57	58	59	60	1,005
Cum. Sewered Units	116	116	116	191	191	191	191	191	191	206	221	236	251	266	281	296	311	326	341	352	352	352	352	352	352
Cum. ISSDS Units	1,322	1,328	1,329	1,328	1,332	1,343	1,375	1,407	1,447	1,485	1,514	1,544	1,578	1,613	1,649	1,686	1,724	1,763	1,803	1,848	1,905	1,963	2,022	2,082	
Cum. Total Units	1,438	1,444	1,445	1,519	1,523	1,534	1,566	1,598	1,638	1,691	1,735	1,780	1,829	1,879	1,930	1,982	2,035	2,089	2,144	2,200	2,257	2,315	2,374	2,434	
Percent Sewered	8.1%	8.0%	8.0%	12.6%	12.5%	12.5%	12.2%	12.0%	11.7%	12.2%	12.7%	13.3%	13.7%	14.2%	14.6%	14.9%	15.3%	15.6%	16.0%	16.0%	15.6%	15.2%	14.8%	14.5%	
Percent UnSewered	91.9%	92.0%	92.0%	87.4%	87.5%	87.8%	87.8%	88.0%	88.3%	87.8%	87.3%	86.7%	86.3%	85.8%	85.4%	85.1%	84.7%	84.4%	84.1%	84.0%	84.4%	84.8%	85.2%	85.5%	

Table 20
Pilesgrove Township
Trend Population Projection

<i>Year</i>	<i>Begin</i>	<i>Net New</i>	<i>PPH</i>	<i>Persons</i>	<i>End</i>
2007	4,157	9	2.91	26	4,183
2008	4,183	6	2.91	17	4,201
2009	4,201	1	2.91	3	4,204
2010	4,204	74	2.26	167	4,371
2011	4,371	4	2.91	12	4,382
2012	4,382	11	2.91	32	4,414
2013	4,414	32	2.91	93	4,508
2014	4,508	32	2.91	93	4,601
2015	4,601	40	2.91	116	4,717
2016	4,717	53	2.65	140	4,858
2017	4,858	44	2.60	114	4,972
2018	4,972	45	2.40	108	5,080
2019	5,080	49	2.63	129	5,209
2020	5,209	50	2.64	132	5,341
2021	5,341	51	2.64	135	5,475
2022	5,475	52	2.65	138	5,613
2023	5,613	53	2.65	140	5,754
2024	5,754	54	2.66	144	5,897
2025	5,897	55	2.74	151	6,048
2026	6,048	56	2.91	163	6,211
2027	6,211	57	2.91	166	6,377
2028	6,377	58	2.91	169	6,546
2029	6,546	59	2.91	172	6,717
2030	6,717	60	2.91	175	6,892
Total (2007-2030)		1,005		2,735	

Table 21
Woodstown Town Center Extension
Projected Buildout of Development Area

Residential									
Block	Lot	Property	Gross Area	Net Area	Density	Units	Factor	GPD	Comments
North									
26	4	Musumeci/Township	85.4	38.2	3.8	145	210	30,444	Restricted; SSA
28	2	Route 45 West	4.0	4.0	2.5	10	300	3,000	Rezone; SSA
28	2.07	Route 45 West	6.4	6.4	2.5	16	300	4,800	Rezone; SSA
28	8	Route 45 West	33.2	25.0	2.5	63	300	18,900	Rezone; SSA
13	17	Route 45 East	15.0	10.0	2.5	25	300	7,500	Rezone; SSA
13	13	Route 45 East	27.0	25.0	2.5	63	300	18,900	Rezone; SSA
13	13.01	Route 45 East	30.7	10.0	2.5	25	300	7,500	Rezone; SSA
39	2	Davis Tract	113.4	113.4	2.5	280	300	84,000	Rezone; SSA
Subtotal				232.0	2.7	627		175,044	
West									
63	1	Bailey Street Project	6.8	6.8	11.0	75	161	12,220	Approved SSA
65	6	Bailey Street East	17.5	17.5	6.0	105	220	23,100	Rezone; SSA
65	4	Wawa Tract	28.5	9.5	6.0	57	220	12,540	Rezone; SSA
Subtotal				27.0	8.8	237		35,640	
RESIDENTIAL TOTAL				299.9		864		210,684	
Commercial									
Block	Lot	Property	Gross Area	Net Area	FAR	Square Feet	Factor	GPD	Comments
East									
40	12.07	HC3-Route 40 East	12.8	4.0	0.15	26,136	0.1	2,614	ISSDS
40	12	HC3-Route 40 East	7.0	3.5	0.15	22,869	0.1	2,287	ISSDS
40	12.11	HC3-Route 40 East	26.4	13.2	0.15	86,249	0.1	8,625	ISSDS
40	13	HC3-Route 40 East	55.3	7.5	0.15	49,005	0.1	4,901	ISSDS
38	2.04	HC3-Route 40 East	15.4	7.7	0.15	50,312	0.1	5,031	ISSDS
79	1	HC3-Route 40 East	24.5	5.0	0.15	32,670	0.1	3,267	ISSDS
Subtotal				40.9		267,241		26,724	ISSDS
West									
64	5.01	HC3-Route 40 East	40.8	7.0	0.15	45,738	0.1	4,574	ISSDS
65	1	HC3-Route 40 East	28.5	4.0	0.15	26,136	0.1	2,614	ISSDS
Subtotal				11.0		71,874		7,187	ISSDS
COMMERCIAL TOTAL				51.9		339,115		33,911	
Industrial									
Block	Lot	Property	Gross Area	Net Area	FAR	Square Feet	Factor	GPD	Comments
East									
40	12.07	PLI-Route 40 East	12.8	6.0	0.2	52,272	0.07	3,659	Rezone; ISSDS
40	12	PLI-Route 40 East	7.0	3.5	0.2	30,492	0.07	2,134	Rezone; ISSDS
40	12.11	PLI-Route 40 East	26.4	13.2	0.2	114,998	0.07	8,050	Rezone; ISSDS
40	13	PLI-Route 40 East	55.3	7.5	0.2	65,340	0.07	4,574	Rezone; ISSDS
40	20	PLI-Route 40 East	22.5	13.5	0.2	117,612	0.07	8,233	Rezone; ISSDS
38	2.04	PLI-Route 40 East	15.4	7.7	0.2	67,082	0.07	4,696	Rezone; ISSDS
79	1	PLI-Route 40 East	24.5	10.0	0.2	87,120	0.07	6,098	Rezone; ISSDS
79	2	PLI-Route 40 East	19.4	10.0	0.2	87,120	0.07	6,098	Rezone; ISSDS
INDUSTRIAL TOTAL				71.4		622,037		43,543	Rezone; ISSDS
Institutional									
Block	Lot	Property	Gross Area	Net Area	New Students	Factor	GPD	Comments	
East									
36	17	School-Rt. 40 East	23.8	23.8		250	25	6,250	Sewer
INSTITUTIONAL TOTAL								6,250	

Summary	
Residential	210,684
Institutional	6,250
Total Wastewater Flow	216,934
Commerical	33,911
Light Industrial	43,543
Total ISSDS	77,454

Table 25

Pilesgrove Township

TDR/Non-Contiguous Cluster Population Projection

<i>Year</i>	<i>Begin</i>	<i>Net New</i>	<i>PPH</i>	<i>Persons</i>	<i>End</i>
2007	4,157	9	2.91	26	4,183
2008	4,183	6	2.91	17	4,201
2009	4,201	1	2.91	3	4,204
2010	4,204	74	2.26	167	4,371
2011	4,371	4	2.91	12	4,382
2012	4,382	11	2.91	32	4,414
2013	4,414	32	2.91	93	4,507
2014	4,507	32	2.91	93	4,601
2015	4,601	40	2.83	113	4,714
2016	4,714	53	2.60	138	4,851
2017	4,851	44	2.55	112	4,963
2018	4,963	45	2.37	107	5,070
2019	5,070	59	2.54	150	5,220
2020	5,220	60	2.55	153	5,373
2021	5,373	61	2.55	156	5,528
2022	5,528	62	2.55	158	5,687
2023	5,687	63	2.62	165	5,852
2024	5,852	64	2.62	168	6,019
2025	6,019	65	2.69	175	6,194
2026	6,194	66	2.82	186	6,380
2027	6,380	67	2.82	189	6,569
2028	6,569	68	2.82	192	6,761
2029	6,761	69	2.82	194	6,955
2030	6,955	70	2.82	197	7,152
Total (2007-2030)		1,125		2,995	

Table 26
Woodstown Town Center
Wastewater Management Plans

	Woodstown	Pilesgrove	Salem County	Total
Existing Flow	300,000	30,000	35,000	365,000
Reserved Flow			65,000	
Approved Projects:				
Bailey Corner	3,750	18,300		
Project Freedom	13,500			
Committed Flow	317,250	48,300	100,000	465,550
Town Center Modification				
Projected Flow				
Grandview Park		30,450		
Water filtration	15,000			
Woodstown Buildout	84,000			
County buyback			-65,000	
Projected Flow	416,250	78,750	35,000	530,000
WWTP Expansion				
Town Center Extension				
Woodstown allocation	41,000			
Township allocation		101,070		
Future Flow	457,250	179,820	35,000	672,070

Notes:

1. Existing WSA WWTP has a permitted capacity of 530,000 gpd.
2. Expanded WSA WWTP would have a rated capacity of at least 675,000 gpd.
3. County buyback refers to reprocurement of unused reserve capacity from Salem County;
4. Township allocation prior to plant expansion would be at the discretion of the WSA and Superior Court

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*Pilesgrove Township
Wastewater Management Plan
August 2, 2010*

**III. DISCUSSION OF EXISTING AND FUTURE
DOMESTIC AND INDUSTRIAL TREATMENT FACILITIES**

3.1 WOODSTOWN SEWERAGE AUTHORITY (WSA) TREATMENT FACILITY

The WSA Engineer, Remington, Vernick & Walberg (RV&W), conducted a maximum plant capacity analysis in April 2005. The purpose of the study was to determine the maximum average daily wastewater flow rate that could be accommodated by each of the existing treatment components and consequently by the plant as a whole.

3.1.1 Existing Wastewater Treatment Plant

The Woodstown Sewerage Authority Wastewater Treatment facility is designed for an average daily flow of 530,000 gallons per day (GPD). The plant is designed to withstand an instantaneous peak flow rate of 1.4 MGD. According to the NJDEP, the average daily flow rate in 2005 was about 326,500 GPD and the average flow rate for the peak three months was 368,800 GPD. Therefore, based on the discharge monitoring reports (DMRs), the available remaining capacity was estimated to be 161,200 gpd.

According to RV&W, the current design flows for the major plant components are listed in *Table 27*.

*Table 27
Woodstown WWTP
Existing Treatment Plant Design Flow*

Component	Average Daily Design Flow Rate	Peak Instantaneous Design Flow Rate	Source
Front Loader Bar Screen	0.53 MGD	1.476 MGD	Schreiber O&M Manual
Aerated Grit/Grease Removal Equipment	0.53 MGD	1.476 MGD	Schreiber O&M Manual
Aeration Basins	0.53 MGD	1.400 MGD	Schreiber O&M Manual
Peripheral Drive Clarifiers	0.53 MGD	1.400 MGD	Schreiber O&M Manual
Hydro Clear Rapid Sand Filter	0.53 MGD	1.476 MGD	Zimpro O&M Manual
System UV 3000	0.53 MGD	1.400 MGD	Trojan O&M Manual

The design flow rates were based on the current service area demand, twenty-year demand projections for the existing service area, and the probable level of contaminant loading on the system. These concentration values were used in the initial design of the plant and were used as design criteria for R.V.&W's capacity analysis. The total loading is a function of the concentration and design flow rate.

Currently, the design loading values reflect the design capacity of 0.53 MGD. As the average daily flow rate increase, the contaminant loadings increase proportionately. Critical design waste loadings are shown below in *Table 28*.

*Table 28
Woodstown WWTP
Existing Waste Loadings*

Parameter	Concentration (mg/l)	Loading (lbs./day)
BOD ₅	250	1105
Suspended solids	250	972
Ammonia	25	111
TKN	40	177
Total Phosphorus	10	44

3.1.2 Design of Component Systems

The design capabilities of each component system are described below.

- Front Loader Bar Screen (Schreiber Corporation Inc.). The screening unit consists of an automatically cleaned bar screen with a bypass channel containing a manually cleaned bar screen. The automatic bar screen is 1'-6" wide, with a maximum head loss of 8" through the screen at the peak instantaneous flow rate of 1.40 MGD.
- Aerated Grit/Grease Removal Equipment (Schreiber Corporation, Inc.). The aerated grit chamber forces the flow into a spiral circulation pattern, which scours and washes grit and deposits it into the grit hopper. The sewage then flows through a grease separation zone where the grease is skimmed from the surface of the wastewater with a skimming blade. N.J.A.C. 7:14A-23.16(b) stipulates that "*detention [time] shall be adequate to deposit grit courser than 0.20 millimeters*". The design detention time is five (5) minutes at the peak flow rate of 1.4 MGD.
- Aeration Basins (Schreiber Corporation, Inc.). The aeration system includes two (2) 58' diameter counter current extended aeration tanks with a side water depth of 16'. The existing aeration blowers include four (4) Compact II, Rotary Lobe, and Positive Displacement Blowers. There are two (2) single speed, 15 hp, and two (2) two-speed, 15/10 hp motors. Each motor is capable of delivering 270 ft³/minute. N.J.A.C. 7:14A-23-21(g)2 stipulates that the "*Total required detention period of aeration tanks based upon 125 percent of design flow, shall not be less than six hours*" and N.J.A.C. 7:14A-23.21(j)2 requires "*at least 1.5 cubic feet [of air] per gallon of incoming raw sewage...*". The hydraulic detention times at the design flows of 0.53 MGD and 1.4 MGD are 28.62 and 10.83 hours respectively. The aeration requirement for the current design flow of 0.53 MGD is 552 ft³/min. At their peak, the blowers can contribute as much as 1,080 ft³/min.
- Peripheral Drive Clarifiers (Schreiber Corporation, Inc.). The clarification system consists of two (2) 33' diameter units with 15' side water depths. N.J.A.C. 7:14A-23.21(1)5 indicates that "*Final settling tanks shall provide at least a 3.5 hour detention period based upon design flow without recirculation*" and N.J.A.C. 7:14A-23.21(e)3 states that "*final settling tanks shall have a ... maximum surface settling rate of 800 [gal/ft²/day]*". The hydraulic Detention times at the design flows of 0.53 MGD and 1.4 MGD are 8.35 and 3.16 hours respectively. The surface overflow rates at the design capacity and peak are 393.36 and 1039.07 gal/ft²/day respectively. RV&W has concluded that the hydraulic detention time and surface settling rate associated with the peak instantaneous flow rate of 1.4 MGD are in violation of the state regulations.

- Hydro Clear Rapid Sand Filter (Zimpro Environmental, Inc.). The sand filtration system consists of two (2), three (3) cell units, each having 165 ft² of effective filtering surface area. The Recommended Standards for Wastewater Facilities states that “*filtration rates shall not exceed 5 gpm/sq. ft. based on the design peak hourly flow rate applied to the filter units*”. According to the design engineer, acceptable loading rates for average and peak flows are 2.00 gpm/ft² and 5.00 gpm/ft². The hydraulic loading on the filters at the design flow rates of 0.53 MGD and 1.40 MGD are 1.12 gpm/ft² and 2.95 gpm/ft² respectively.
- System UV3000 (Trojan Technologies, Inc.). The ultraviolet light disinfection system consists of a single concrete channel with two (2) banks of UV lamps. Each bank contains a total of forty (40) 64-inch UV lamps, and the system is capable of disinfecting the instantaneous peak flow rate of 1.4 MGD to a level of 33 enterococci organisms per 100 milliliters of less in accordance with N.J.A.C. 7:9B-1.14(c)iii.(1).

3.1.3 Projected Maximum Capacity

To determine the maximum average daily flow rate of the entire plant, each component was analyzed by RV&H as if operating independently. In reality, the performance of each station hinges in part on the performance of those that precede it.

The components were first analyzed in terms of hydraulic loading. In other words, a maximum wastewater flow rate was generated for each unit. Some of the constraints that limit the flow rate of the plant include: pump size, channel cross-section, pipe diameter, influent contaminant loading, hydraulic detention time, surface settling rate, weir overflow rate, hydraulic loading, channel/pipe velocity, and NJPDES permit requirements for effluent contaminants. In the event that the maximum projected hydraulic flow rate exceeded that which is stipulated by one of the aforementioned constraints; the lesser of the two values was used by RV&W as the acceptable average daily flow rate.

For the purposes of the capacity analysis, each component was re-evaluated by its corresponding manufacturer. *Table 29* contains the original design flow rate; the projected maximum average daily capacity; and the source from which the information was obtained. *Table 30* indicates the projected maximum average daily capacity under conservative design limitations with one-half of the units operating.

Front Loader Bar Screen (Schreiber Corporation, Inc.)

The bar screen’s mechanical systems are designed to handle flows up to 16 MGD depending on the size of the flow channel (Schreiber Corporation, Inc.). Conservatively, the bar screen is equipped to handle the peak flow of 1.40 MGD as an average daily operational capacity.

Aerated Grit/Grease Removal Equipment (Schreiber Corporation, Inc.)

The grit/grease removal system has been estimated to function at a maximum operational capacity of 1.32 MGD for a detention time of five minutes. The minimum detention time of five minutes is recommended by Schreiber to achieve peak performance. The absolute maximum capacity of the grit/grease removal system is 2.20 MGD based on a detention time of three (3) minutes. For a projected required instantaneous peak flow rate of 1.75 MGD, the hydraulic detention time is 3.7 minutes. It is recommended that “*Detention time in the tank should be in the range of 3 to 5 minutes at design peak hourly flows*” (Standards, 1997 Edition, 63.3). Based on the foregoing, it was concluded by RV&W that the grit/grease removal system is adequate for an average daily flow of 0.7 MGD and a corresponding 250% instantaneous peak flow of 1.75 MGD.

Aeration Basins (Schreiber Corporation, Inc.)

N.J.A.C. 7:14A-23.21(g)1. states that “Aeration tanks for the activated sludge process shall be designed in conformance with the following: Multiple units, capable of independent operation, shall be provided for all installations”.

The aeration basin analysis resulted in a maximum design capacity of 1.50 MGD. The maximum recommended flow rate is one-half of the total capacity (0.75 MGD) and assumes the use of one operating basin. The GRO Aeration System can handle the projected design flows of 0.70 MGD and 1.75 MGD with acceptable hydraulic detention time and surface settling rate.

Peripheral Drive Clarifiers (Schreiber Corporation, Inc.)

The clarifiers are estimated to have a maximum capacity of 0.95 MGD. The recommended maximum daily flow for the clarifiers is one-half of the maximum capacity (0.475 MGD). The surface area of the clarifiers was reduced from the value used in initial design. Originally, the design was based on the total area reflecting the overall diameter of the clarification tanks. The physical performance of the system has not reflected the original design dimensions. The RV&W analysis took into account the discrepancy between anticipated and actual performance, and applied a corresponding reduction to the effective surface area of the clarification units.

According to the N.J.A.C. Standards referenced in section I of this report, the clarification units can withstand an instantaneous peak flow of 1.125 MGD when governed by the minimum hydraulic detention time and the maximum surface overflow rate. Therefore, the maximum average daily flow for the existing system is reduced to 0.450 MGD (result of a peaking factor of 2.5 (N.J.A.C. 7:14A-23.10(b))). The projected design flows would result in violations of the standards shown in the previous section for surface settling rate and hydraulic detention time. The clarification system is one that will need to experience upgrades in order to accommodate the committed and projected flows.

Schreiber Corporation performed a Preliminary Basis of Design Expansion Evaluation Report (Schreiber). Parameters of the report include a design average daily flow of 0.70 MGD and an instantaneous peak flow of 1.75 as discussed in the projected capacity analysis. Design waste loading concentrations were held constant, but the overall loading by weight was increased proportionally with the increase in hydraulic flow. The report demonstrates, in full detail, the inadequacies associated with the clarifiers. According to Schreiber, the minimum surface area for the maximum allowable surface settling rate is 2,228 ft². However, the current set of clarification tanks possesses only 1,461 ft². In other words, an upgrade would need to include a minimum of 767 additional ft² of effective settling surface area.

Hydro Clear Rapid Sand Filter (Zimpro Environmental, Inc.)

The sand filtration system has been found to have a maximum daily capacity of 1.40 MGD. The RV&W analysis estimated total influent suspended solids to be at a concentration of 10 mg/L. Under typical flow conditions, the sand filter experiences influent loadings an order of magnitude less than 10 mg/L. The estimated capacity was determined with the assumption that a total of six (6) filter cells would be in use at all times. In the event that one of the filtration units would be inactive for cleaning or maintenance, the maximum daily flow rate with three (3) cells operating is 0.7 MGD.

RV&W indicated that the manufacturer also analyzed the hydraulics associated with an instantaneous peak flow rate of 1.75 MGD. This analysis assumed that at any given time the sand filtration unit could be without the services of one (1) cell from each unit. In other words, peak flow was analyzed for four (4) out of

the six (6) total cells online. It was determined that the sand filtration system could safely handle a peak flow of 1.75 MGD for short durations during the course of a day.

There are recommended constraints that govern the allowable flow in the sand filters. Hydraulic loading for a filtration unit shall not exceed 5.00 gpm/ft² (Standards, 1997 Edition, 112.31). Also, "the filtration rate shall be calculated on the total available filter area with one unit out of service" (Standards, 1997 Edition, 112.32). In this case, the loading on the units with one cell out of service for each is 5.52 gpm/ft². Events, which might cause an instantaneous flow rate of up to 1.75 MGD, are deemed to be rare. The sand filtration units can handle the projected peak flow for short durations with little or no impact on the filter performance.

System UV3000 (Trojan Technologies, Inc.)

The UV disinfection system was designed to operate continuously at the peak flow rate of 1.40 MGD with both of the banks operating. One bank is capable of achieving the required level of disinfection up to 0.70 MGD. The system is designed to handle a peak flow of 1.4 MGD at the design loading rates. Should the loading rates remain consistently lesser than those set forth in the original design it stands to reason that the UV disinfection system could handle peak flows higher than the current peak flow rating. However, at this time an allowable peak flow based on the actual influent contaminants is not known.

Table 29
Woodstown Wastewater Treatment Plant Capacity Analysis
Maximum Capacity

Component	Average Daily Design Flow Rate	Maximum Average Daily Capacity	Source
Front Loader Bar Screen	0.53 MGD	1.400	Schreiber Corporation, Inc.
Aerated Grit/Great Removal Equipment	0.53 MGD	1.320	Schreiber Corporation, Inc.
Aeration Basin	0.53 MGD	1.500	Schreiber Corporation, Inc.
Peripheral Drive Clarifiers	0.53 MGD	0.950	Schreiber Corporation, Inc.
Hydro Clear Rapid Sand Filter	0.53 MGD	1.400	Zimpro Environmental, Inc.
UV Disinfection	0.53 MGD	1.400	Trojan Technologies, Inc.

Table 30
Woodstown Wastewater Treatment Plant Capacity Analysis
One-Half Capability (Conservative Design Limitation)

Component	Average Daily Design Flow Rate	Maximum Average Daily Capacity	Source
Front Loader Bar Screen	0.53 MGD	1.400	Schreiber Corporation, Inc.
Aerated Grit/Great Removal Equipment	0.53 MGD	1.320	Schreiber Corporation, Inc.
Aeration Basin	0.53 MGD	0.750	Schreiber Corporation, Inc.
Peripheral Drive Clarifiers	0.53 MGD	0.450	Schreiber Corporation, Inc.
Hydro Clear Rapid Sand Filter	0.53 MGD	0.700	Zimpro Environmental, Inc.
UV Disinfection	0.53 MGD	0.700	Trojan Technologies, Inc.

3.1.4 Effluent Criteria Discussion

Table 31 presents the required concentration values associated with various plant volumetric flow rates. These concentrations are those that would need to be met in order to comply with the current NJPDES surface water discharge permit. In general, an increase from 0.50 MGD to 0.70 MGD in the average daily flow rate would require a decrease in effluent contaminant concentration of about 30% across the board (a proportionally linear decrease).

Table 31
WSA WWTP
Required Effluent Concentration of Critical Contaminants
NJPDES Permit #NJ0022250

Loadings Average Daily Flow (MGD)	Total Suspended Solids		Nitrogen, Ammonia		BOD	
	Monthly Average Concentration (mg/L)	Weekly Average Concentration (mg/l)	Monthly Average Concentration (mg/l)	Weekly Average Concentration (mg/l)	Monthly Average Concentration (mg/l)	Weekly Average Concentration (mg/l)
0.50	30	45	20	38	16	26
0.52	29	43	19	37	15	25
0.54	28	42	19	35	15	24
0.56	27	40	18	34	14	23
0.58	26	39	17	33	14	22
0.60	25	37	17	32	13	22
0.62	24	36	16	31	13	21
0.64	24	35	16	30	13	20
0.66	23	34	15	29	12	20
0.68	22	33	15	28	12	19
0.70	22	32	14	27	11	19
0.72	21	31	14	26	11	18
0.74	20	30	14	26	11	18
0.76	20	30	13	25	11	17
0.78	19	29	13	24	10	17
0.80	19	28	13	24	10	16

Currently the plant effluent is comfortably meeting the regulations set forth by the original NJPDES permit. However, the limit for Phosphorus effluent concentration (not shown) has been decreased from 1.0 mg/L to 0.1 mg/L. Special consideration will need to be given to the chemical coagulation needed to settle out the Phosphorus. Aluminum Sulfate (Alum) is used to precipitate the Phosphorus and has been doing so to a degree that meets requirements. But according to RV&H, the flash mixers designed to maximize the efficiency of the Alum injected into the wastewater have not been working properly. It stands to reason that effluent phosphorus concentration will decrease to a certain degree upon restoration of the mixing chamber. At this time it is difficult to assess as to what degree the effluent levels will decrease, but according to RV&H, current effluent readings (mean = 0.34 mg/L) suggest that it is within the realm of possibility that the phosphorus concentration can be reduced to a level that would meet the new requirement of 0.1 mg/L on average.

3.1.5 Existing Wastewater Flow

Table 32 shows the wastewater discharge flow rate for the WSA WWTP based on the Discharge Monitoring Reports (DMRs) provided to the NJDEP. In 2004, the average monthly discharge rate was 327,000 GPD and the maximum average for three consecutive months was 369,000 GPD or about 70% of the plant capacity. In 2009, the average monthly discharge rate was 317,000 GPD and the maximum average for three consecutive months was 337,000 GPD or about 64% of the plant capacity.

Table 32
Woodstown Sewerage Authority
Wastewater Discharge Flow Data

Month	2004 MGD	2009 MGD
January	0.320	0.318
February	0.338	0.303
March	0.354	0.299
April	0.415	0.332
May	0.304	0.367
June	0.300	0.312
July	0.303	0.287
August	0.291	0.288
September	0.297	0.309
October	0.344	0.301
November	0.318	0.306
December	0.335	0.386
Annual Average	0.327	0.317
Maximum 3 Month Average	0.369	0.337
Percent capacity	69.6%	63.6%

Source: NJDEP DMRs (2010)

While *Table 32* indicates a decrease in the average flow rate over the last 5 years, the primary factor appears to be the discharge rate during peak periods, which may be indication of infiltration or inflow. DMRs for 2010 indicate a substantive increase in waste flow without any corresponding land development which may be indicative of an infiltration issue.

3.2 EXISTING WADDINGTON-RICHMAN INC. TREATMENT PLANT

The Kings Road LLC project site contains an existing treatment facility known as the Waddington-Richman (W-R) treatment plant. The W-R treatment plant was originally designed as an industrial treatment plant for an ice cream production facility and a related restaurant. Since ice cream production ceased in 2003, a significantly lesser volume of wastewater has been processed at the facility in recent years.

The wastewater that has been directed to the treatment facility consists of intermittent sanitary and kitchen wastewater as well as some stormwater from the former industrial property. **However, the facility is currently vacant.** The most recent surface water discharge permit indicates that only one surface water discharge event has occurred in the last five years. Therefore, all wastewater is currently discharged to groundwater from the unlined aerated lagoon, which functions as an infiltration percolation lagoon.

All wastewater and stormwater is processed through an influent chamber; transfer pump; aerated lagoon; sedimentation/chlorination basin; and discharge pump. Maintenance procedures for sedimentation/chlorination basin are established as requirements for a surface impoundment. Any residuals from the facility are managed off-site at an approved residual management operation.

The recently renewed DSW permit states that the Department changed the classification from a Category 6 industrial treatment plant to a Category 1 domestic treatment works. In accordance with the Settlement Agreement, the Developer would need to verify the current classification of the system by the NJDEP.

3.3 KINGS ROAD LLC TREATMENT PLANT

The proposed Kings Road LLC project would have been served by a new wastewater treatment plant located on the developer's property. The proposed treatment plant was to have utilized the ZeeWeed MBR process which is a proprietary technology that consists of a suspended biological reactor integrated with ultra filtration membrane system based on the ZeeWeed hollow fiber membrane. The ultra filtration system basically replaces the solids separation function of secondary clarifiers and sand filters in a conventional activated sludge system. The membranes are submerged in the bioreactor in direct contact with the mixed liquor. A suction duty pump is used to create a vacuum on the header connecting the membranes to draw the treated water through the membranes and into the pump. The pump then discharges the treated water.

This proposed project is currently defunct since the Developer has sold a portion of the property and allowed the option to expire on the remainder of the tract. The project reference remains in this Township WMP in conformance with the Settlement Agreement until that Agreement is voided by the Court. **It is recommended that this project be included in the County WMP only if the Developer demonstrates site control on or before April 1, 2011 and the Project remains in the Township Housing Plan.**

3.4 CONVEYANCE FACILITIES

3.4.1 Existing Conveyance Facilities

Map 2 indicates the existing conveyance system within Pilesgrove Township around the Woodstown Borough boundary. There are no pump stations in Pilesgrove Township. All of the current wastewater flow from the development fringe around Woodstown is via gravity.

The WSA conveyance system primarily relies on gravity sewers since the plant is located in an area of lower elevation near the Salem River. The only primary pump stations in the WSA system are one behind the municipal building on West Avenue that serves the western part of the Borough and a pump station directly adjacent to the plant on the north side of the Salem River. The County also uses a pump station to convey its wastewater flow from the County facilities on State Route #45. Any other pump or lift stations are needed for specific developments to reach an elevation within the main gravity conveyance system.

3.4.2 Proposed Conveyance Facilities

Sharptown

The wastewater from the Kings Road project would have been directed to an onsite pump station on the east side of Kings Highway. The wastewater would then be pumped to the interim treatment plant location, and when that facility is closed, to the permanent treatment plant location. The Developer would also have provided connection locations for the existing adjacent residences and businesses.

In the event that the Township decided to provide sewer facilities to treat wastewater from the existing crossroads settlement on the south side of Route #40, a gravity conveyance system would have been constructed leading to a pump station at a down-gradient location. The influent would then be conveyed via force main to the treatment plant location.

Woodstown

Map 3 indicates the proposed Future Sewer Service Area in Pilesgrove under the Woodstown Town Center extension. It is believed that all of the areas to the north of Woodstown and to the southwest of Woodstown can be served by extensions to gravity sewers. Any project specific lift stations would be designed to discharge into the gravity system at an existing manhole.

County

The County complex has an onsite pump station that is connected to the WSA WWTP by a dedicated force main. The force main was sized and designed so that no other facilities would interconnect into this conveyance segment.

3.5 ENVIRONMENTAL IMPACTS OF PROPOSED PROJECTS

The proposed treatment plant development and improvement projects described in this WMP would not result in any significant environmental impacts as summarized below:

- Endangered/Threatened Species. The treatment plant sites are not located within or adjacent to defined critical habitats. A site-specific analysis has been conducted for the Kings Road project site and a similar study would need to be conducted for the planned industrial project site.
- Wetlands/Floodplains. There will be no impact on regulated wetlands, floodplains or stream corridors. The WSA WWTP has an existing surface water discharge facility and the two proposed treatment facilities would involve groundwater discharge.
- Important Farmlands. The proposed construction of the treatment plants would not encroach upon any important farmlands.
- Parks. The proposed treatment plant construction, the expansion of the WSA WWTP, and related force mains would not encroach upon any public parks.
- Vegetation. The proposed construction of the treatment plants, the modifications to the existing WSA WWTP, and the related force mains would not result in the removal of significant vegetation.
- Cultural Resources. The treatment plants and the expansion of the WSA WWTP would not have any impact on archaeological features. A Phase I study may be necessary for the Kings Road pump station location to verify that no additional analyses are necessary.
- Future Sewer Service Area. Portions of the proposed Future Sewer Service Areas would only be included in the County WMP if the Landscape Project ranking for grassland birds was refuted either on a *prima facie* basis or as a result of a site specific habitat evaluation. Farmland that has been routinely committed to cropland does not satisfy the habitat suitability criteria for the threatened and endangered grasslands birds.

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*Pilesgrove Township
Wastewater Management Plan
August 2, 2010*

IV. SUMMARY OF ENVIRONMENTAL ASSESSMENTS AND ANALYSES

4.1 POINT SOURCE POLLUTANT LOADING ANALYSIS

4.1.1 Surface Water Discharges

This Wastewater Management Plan ("WMP") does not propose any new surface water discharges or any increase in the surface water discharge parameters in the Planning Area. The WSA WTP currently has a NJPDES permit with an authorized discharge to the Salem River. All plant improvements will be designed to increase the process flow capacity without impacting the assimilative capacity of the stream. All discharge parameters will remain unchanged.

The existing Richman's treatment plant currently represents a small and intermittent surface water discharge. While the plant would have been used for interim purposes by the Kings Road Developer, no surface water discharge would have been permitted. Once the plant's interim use had expired, the plant would have been closed in accordance with NJDEP guidance and the site restored to its pre-existing condition.

It is recommended that the Waddington-Richman treatment facility be closed and not be included on *Map 3* except if the site is included within a Redevelopment Area designation approved by the Pilesgrove Township Committee or the owner of the property presents viable plans for the redevelopment of the commercial site to the Township Planning Board on or before April 1, 2011.

4.1.2 Ground Water Discharges

The two treatment facilities that were proposed for the Township Planning Area both involve groundwater discharge. A modular treatment plant would have been developed to serve the proposed Agricultural/Industrial nodal development and would have discharged to a subsurface effluent disposal system. Preliminary estimates indicated that between 10 and 160 acres of the 475± acre development project would have needed for effluent disposal depending upon the actual discharge rate and onsite soil conditions.

The treatment plant for the Kings Road project would have involved the discharge of treated effluent via groundwater injection wells. The specific effluent discharge criteria and the discharge strata would have been determined by the NJDEP during the discharge permitting process. The use a leach field had been considered but the suitable soils for such a system were limited in extent on the project site.

There are no new or expanded groundwater discharges proposed for the Service Area designated for Wastewater Facilities with planning flows of less than 2,000 gpd which discharge to Ground Water under this WMP Update. **All current discharges in excess of 2,000 gpd would only be permitted to continue under this WMP if an engineering report is submitted, reviewed, and approved by the Township.**

Nitrate Dilution

In the event that new or expanded groundwater discharge facilities are proposed, a Nitrate Dilution model shall be applied to demonstrate the anti-degradation standard for groundwater or the background standard of 5.2 mg/l has been satisfied on a site-specific basis and 2.0 mg/l on a watershed basis. In the event that this standard cannot be met, the applicant would need to adjust the development intensity to conform to the model or would need to use alternative treatment units with denitrification.

4.2 NON-POINT SOURCE POLLUTANT LOADING/HYDROMODIFICATION ANALYSIS

The objective of the non-point source pollutant loading analysis is to prevent any increase in non-point source pollution. Pilesgrove Township has adopted a stormwater management ordinance in accordance with the NJDEP Stormwater Management Regulations that establishes stormwater quality, stormwater quantity, and groundwater recharge performance criteria for all new land development. The adopted ordinance will be the most effective means of controlling non-point source pollution at the municipal level. Certain non-point sources such as agricultural practices along stream corridors cannot be regulated at the municipal level.

4.3 CONSUMPTIVE WATER USE ANALYSIS

The only existing water purveyor in the Township Planning Area is the Woodstown Borough water department. New purveyors in the Planning Area will be proposed to serve the Agricultural/Industrial node and the Kings Road LLC project.

4.3.1 Woodstown Borough Water Supply System

The Woodstown Borough Engineer (Remington, Vernick & Walberg) has provided the information in this section pertaining to the Woodstown water supply system and the proposed facilities to be constructed. The intent of this WMP is to provide water and wastewater treatment to the same areas of the Township.

The existing water supply system consists of four wells in two different aquifers as shown in *Table 33*.

Table 33
Woodstown Borough Water Supply System
Existing Well Data

Source	Rated Capacity	Aquifer
Well #2	425 gpm	Potomac-Raritan-Magothy (PRM) Middle
Well #3	600 gpm	Potomac-Raritan-Magothy (PRM) Middle
Well #4	200 gpm	Mount Laurel-Wenonah (MLW)
Well #5	550 gpm	Potomac-Raritan-Magothy (PRM) Middle

The three PRM wells are between 675 feet and 712 feet deep with static water levels approximately 30 feet or more below sea level. The water quality of the PRM wells is characterized as high in sodium (175-315 mg/l), chlorides (135-240 mg/l), and total dissolved solids (565-860 mg/l). The NJDEP recommended limits for these secondary contaminants are 50 mg/l for sodium, 250 mg/l for chlorides, and 500 mg/l for total dissolved solids. Because the high sodium level may be of concern to individuals on a restricted diet or with health problems, the water department has been required to notify all doctors in the area.

Woodstown Borough drilled Well #4, along East Millbrooke Avenue, in the 1990's within the Mount Laurel-Wenonah aquifer as an alternate source to the PRM aquifer wells. Well #4 was drilled to a depth of 160 feet, with a production of 200 GPM and a specific capacity (GPM/drawdown) of approximately 3.7. Well #4 was low in sodium (2-3 mg/l), chlorides (5 mg/l) and total dissolved solids (300 mg/l) but met or exceeded the NJDEP recommended secondary standards for hardness (215-250 mg/l) and iron (1.75-2.00 mg/l).

A continuous regeneration potassium permanganate water treatment plant was constructed to remove iron from the Well #4 effluent but the hardness of the water was not addressed. Consequently, the water from Well #4 was much "harder" than what the residents of Woodstown were normally accustomed. A hardness level above 150 mg/l is generally considered objectionable to customers. Examples of "hard" water problems include not interacting well with soap, leaving dirt on clothing during washing and scale forming more easily within hot water heaters, causing reduced efficiencies.

The third PRM well (Well #5) was drilled in 1997 to a depth of 715 feet at the Well #4 location. This well has the same general characteristics as Wells #2 and #3. In order to abate the high hardness level in Well #4, the raw water from Well #5 is blended at a ratio of 2.3:1 to provide the water quality detailed below.

Table 34
Woodstown Borough Water Supply System
Finish Water Quality (2002)

Water Quality Parameter	Well #4 & 5 Finish Water 2002 Average
Sodium	206 mg/l
Chloride	174 mg/l
Total dissolved solids (TDS)	660 mg/l
Iron	0.14 mg/l
Hardness	72 mg/l

The blending of the water from Wells #4 and #5 achieved a lower sodium level than what would be expected from Well #5 and a lower hardness level than would be expected from Well #4. However, both the sodium and total dissolved solids levels are still higher than NJDEP recommended upper limits. In addition, constructing Well #5 and blending it with water from Well #4 defeated the original purpose of Well #4 which was to provide an alternate source for Woodstown's reliance on the PRM aquifer and to reduce the sodium levels in the water system to 50 mg/l, the NJDEP recommended upper limit.

4.3.1.1 Water Allocation Permit and Usage.

The limits for the Borough of Woodstown water supply system as set forth in the most recent NJDEP Water Allocation Permit #5167, dated September 2004 are presented in *Table 35* below.

Table 35
Woodstown Borough Water Supply System
Permit Limits

Parameter	PRM (Wells #2, 3 & 5)	Mount Laurel (Well #4)	All Sources
Instantaneous Rate	1,575 gpm	200 gpm	
Monthly Diversion Rate	15.0 mg	8.9 mg	18.1 mg
Yearly Diversion Rate	119.0 mg	55.1 mg	174.1 mg

The actual water usage reported for 2004 is shown below in *Table 36*.

Table 36
Woodstown Borough Water Supply System
Actual Usage

Parameter	PRM (Wells #2, 3 & 5)	Mount Laurel (Well #4)	All Sources
Peak Day	0.5157 mg	0.1775 mg	
Average Day			0.3373 mg
Peak Month	9.455 mg	3.4454 mg	12.1714 mg
Average Month			10.2912 mg
Total	89.6598 mg	33.8343 mg	123.4941 mg

Source: RV&W

For the PRM wells, it is important to note that Well #5 had the greatest usage for 2004 (75.6053 MG), compared to Well #2 (7.8981 MG) and Well #3 (6.1564 MG). This was due to the fact that water from Well #5 was utilized to blend with Well #4 effluent to provide "less hard" water for Woodstown residents.

4.3.1.2 Proposed Water Supply System Modification

Woodstown has recently constructed a new community water supply well in the Mount Laurel-Wenonah Aquifer (Well #6) about 600 feet from the water treatment plant on East Millbrooke Avenue. Water from well #6 is to be pumped to the existing treatment facility and will be modified based on the volume and quality of the water withdrawn from well #6 during testing.

Ultimately, the existing water treatment facility on East Millbrooke Avenue will be modified to accommodate the new water supply. The treatment processes and piping design will be based on an analysis of the well output. Combined with well #4, the new well provides the Borough with 400 GPM of low iron, low hardness, and most importantly, low sodium quality water.

The Borough of Woodstown has sufficient firm capacity but has water quality issues that are being addressed with the Bureau of Safe Drinking Water. The Borough's water allocation permit will need to be modified to reflect projected demands in the Township. The Township and the Borough intend to cooperatively pursue the long-term goal of adequate water supply sources in terms of quantity and quality.

4.3.2 Sharptown Village Center

The Kings Road LLC Developer proposed to utilize two existing wells in the PRM aquifer with an approximate depth of 480 feet. These wells were previously used by the former Richman's ice cream plant (Registration # 10673W). The Developer intended to rely on these wells to provide the water supply for the Kings road project. According to the Developer, the water supplied by the wells would not have required treatment for potable use. The water supply design requirements for the Kings Road project were as follows:

- General. The water supply and distribution system will comply with the Water Supply Management Act, N.J.A.C. 7:19-1; AWWA Specifications; the Safe Drinking Water Act, N.J.A.C. 7:10-1; Residential Site Improvement Standards, N.J.A.C. 5:21-5 and the Safe Drinking Water Works Facilities Approval Technical Manual.
- Well Site. The Developer will own the property within a minimum fifty-foot (50') radius of the well locations. A one (1) acre conservation easement shall be provided to the Township around the well site. Each well site will be fenced with a six foot high (minimum) black vinyl coated galvanized fence and shall have a vehicle access road.
- Well yield. The Developer will develop and maintain two potable water wells to ensure reliable water supply. The two existing or proposed wells will have a total demonstrated yield of 285 gpm certified by a licensed well driller. The well capacity will meet the projected demand with the largest well out of service. The wells will meet wellhead protection standards: located greater than fifty feet (50') from any sanitary sewer, located greater than 100 feet from any sanitary sewer manhole or connection.
- Water Storage Tank. A standpipe water storage tank 100 feet in height will be provided with a minimum of 100,000 gallons of storage capacity. The water storage tank and appropriate appurtenances will be designed to provide adequate pressure and fire flow to the project (in excess of 1,000 gpm for two (2) hours).

The Kings Road Developer proposed to inject treated effluent into the ground in a manner that would have recharged the underlying aquifers without impacting water quality. Therefore, the only consumptive use would have been evaporation associated with surface irrigation. The beneficial reuse of the effluent would have ensure that the project did not consume or deplete water resources.

4.3.3 Agricultural/Industrial Node (PLI District)

The prospective developer of the proposed Agricultural/Industrial node in the Planned Light Industrial zoning district previously indicated that it intended to enter into a contract with New Jersey American Water (NJAW) for the provision of process and potable water. Because the planned industrial development was in the early planning stages, the specific water demand had not been definitively determined but the maximum water demand was expected to be about 1.2 MGD. A Will Serve letter dated June 25, 2007 was provided by NJAW which indicated that NJAW was under agreement to purchase the Penns Grove Water Company and that the provision of water service would be conditioned upon the completion of the acquisition and ownership of the system by NJAW. The NJAW indicated a willingness to connect the proposed Pilesgrove project into its larger system if the project warrants such investment and if planning approvals are obtained from the Office of Smart Growth.

There is a water quality issue with the Penns Grove water company relating to an unregulated contaminant (PFOA). A minimum contaminant level (MCL) is to be set by the NJDEP. It is expected that the Company will be below the MCL established by the NJDEP.

New Jersey American Water Company is the state's largest water utility serving over two million people in 176 communities throughout the state. NJAW has an interconnection with the Tri-County water pipeline, which is a major source of surface water, to supplement groundwater resources. The interconnection is currently limited by regulation to 1.5 MGD but could be increased to 3.0 MGD in the future, if that was deemed necessary to meet local demands. In the event that NJAW interconnects Salem County with its conjunctive use system, it is anticipated that it will continue to operate within its 90% non-consumptive use/10% consumptive use accepted by the Delaware River Basin Commission.

In this particular case, the Planned Light Industrial Development could be a significant water user if it included a food processing facility. However, the proposed onsite discharge of treated effluent would minimize the consumptive use of the project. **However, the prospective Developer of the industrial park has recently decided not to pursue GDP approval. As a result of this decision, the Township is not recommending inclusion of this Project in the Wastewater Management Plan at this time.**

4.3.4 Critical Water Supply Areas

The Woodstown and Kings Road water systems do not draw from wells that are located within the critical water supply areas. However, Woodstown has experienced salt-water intrusion problems that are being addressed by a combination of treatment and blending water from other aquifers. The Kings Road developer has indicated that the proposed wells for that project would not have required treatment.

The proposed water purveyor for the planned light industrial development has a diversity of ground and surface water supply sources that are outside of critical water supply sources including the pipeline from the Delaware River intake. The proposed acquisition of the Penns Grove water company and future interconnections with the NJAW system will advance the diversity of water supply sources in Salem County without impacting critical water supply areas.

4.3.5 Water Conservation Measures

The potential of reusing treated effluent for recharge and irrigation purposes will be analyzed in conjunction with the WSA to contribute toward water conservation efforts. Conservation based outside water use ordinances may also be considered by the local municipalities in the future if it is determined that these provisions are necessary to meet long-term needs. The proposed treatment plants for the PLI district and the Kings Road projects would have used groundwater discharge in accordance with beneficial reuse guidelines.

4.4 ENVIRONMENTAL INVENTORY

An Environmental Inventory was conducted of the Planning Area to compile the information needed for the Environmental Constraints Analysis (ECA). The Environmental Inventory is summarized below with specific references to the inventory maps prepared for the Planning Area.

4.4.1 Surface Water Resources

4.4.1.1 Hydrology.

Map 5-1: Surface Water Resources Map indicates the surface waters, the subwatersheds, and the flood prone areas in the Township Planning Area. The subwatersheds shown on Map 5-1 are the HUC 14 watersheds which refers to the 14 integer hydrologic unit code (HUC) that is used by the NJDEP to define subwatersheds throughout the State. There are a total of eleven (11) subwatersheds in the Planning Area. Various water quality and build-out calculations are conducted for each HUC 14 to analyze and manage water quality issues on a watershed basis.

Pilesgrove Township contains portions of five major drainage basins as described below:

- Salem River. Two-thirds of Pilesgrove Township or 23.1± square miles (as well as all of Woodstown) is within the upper Salem River watershed. The primary stream corridors within the drainage basin are the Salem Creek/River which bisects the Township, Nichomus Run, and Majors Run. The confluence of these three stream corridors is in the Sharptown village area.
- Oldmans Creek. The northern tier of Pilesgrove Township is located within the Oldmans Creek watershed. In general, the limits of this watershed are defined by Lincoln Road, Point Airy Road, and Auburn Road. This drainage basin contains three subwatersheds that are defined by the drainage areas associated with the minor tributaries of Oldmans Creek. A total of 4.12± square miles of the Township is within the Oldmans Creek drainage basin.
- Game Creek. A 1.9± square mile area of the Township drains to Game Creek in Carney's Point via Two Penny Run and converges with the Salem River outside of the Township limits.
- Alloway Creek. The extreme southeastern corner of the Township is within the Alloway Creek watershed. This 1.82± square mile area is drained by the Alloway Creek through Alloway, Quinton, and Lower Alloways Creek Townships to the Delaware Bay.
- Mannington Creek. A very small portion of the Township (40± acres) drains into Mannington Township and is part of the lower Salem River watershed.

4.4.1.2 Surface Water Classification.

All of the surface watercourses in the Planning Area are currently classified as FW2-NT. "FW2" is the general surface classification applied to those fresh waters that are not located wholly within Federal or State parks, forests, fish and wildlife lands, or other special holdings, or those waters not located within the boundaries of the Pinelands Area. "NT" indicates that the waterway has not been designated as a trout production or trout maintenance stream. The NJDEP has recently proposed to designate the following surface waters as Category One waters within the Planning Area:

- Oldmans Creek: 22.4 mile segment between Harrisonville Lake and Kings Highway;
- Nichomus Run: Entire watershed in Woodstown and Pilesgrove;

- Majors Run: Entire watershed in Pilesgrove and Mannington Townships; and,
- Salem River: Segment between Nichomus Run and Majors Run in Sharptown.

The 300-foot restrictive buffer that applies to Category One waters would be a significant development constraint for certain properties in Woodstown and Sharptown. The proposed regulations provide for some exceptions to the buffer requirement in hardship situations.

Currently, all of the surface waters in the Township are classified as SE1 which applies to waterbodies with a salinity concentration greater than 3.5 parts per thousand at mean high tide. The Department has proposed to change this classification to refer to those portions of the Oldmans Creek and Salem River that are downstream of the Category One designations since the designated waters, by definition, support freshwater species that are not present in saline conditions.

4.4.1.3 Flood Prone Areas.

Map 5-1 also indicates the extent of the flood hazard areas in the Township based the NJDEP GIS database. In general, the flood hazard areas in the Township are confined by topography to the areas immediately adjacent to the stream corridor. However, there are flood hazard areas along the Salem River and the Oldmans Creek that are more expansive. In particular, the flood hazard area of the Salem River to the west of Woodstown and in the Sharptown area is quite broad. In addition, *Map 5-1* indicates that some areas of the Township in the southeastern quadrant are considered flood hazard areas that overflow into the surface water corridors. These depressions act as headwater areas for the Salem River tributaries.

4.4.1.4 Surface Water Discharge Locations.

According to the NJDEP database, there are two existing NJPDES surface water discharge permit locations in the Township and one in the Borough that are listed on *Map 5-1*. The Township discharge locations are the Waddington-Richman treatment plant located east of Kings Highway in Sharptown and Coastal Mart, a clean-up project that had a permitted discharge to the Salem River via storm sewer. The only permitted surface water discharge in the Borough is the WSA's WWTP located just east of U.S. Route 40.

4.4.1.5 Ambient Bio-monitoring Network (AMNET)

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 New Jersey. These sites are sampled for benthic macroinvertebrates by 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 New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics. The AMNET monitoring locations in Pilesgrove Township are shown on *Map 5-1* and the impairment score for each location is shown in *Table 37*.

In general, the AMNET monitoring data indicates that the major waterways in the Township are moderately to severely impaired. *Table 37* also indicates changes in the characterizations since 1995. Certain segments have improved while others have been degraded. Majors Run is the only station that has consistently been rated as severely impaired. This tributary of the Salem River is located along the Township's southern boundary near Sharptown.

The AMNET data also includes a qualitative habitat assessment based on an evaluation of the condition of the stream habitat. As shown in *Table 37*, three locations in the Township were determined to have optimal habitat value, four locations were determined to have sub-optimal value, and one location

(Majors Run) was determined to have marginal value. Two sediment toxicity tests were conducted in the Township on Majors Run and Nichomus Run. Neither test demonstrated acute toxicity conditions.

The fact that there are three severely impaired sites within or immediately adjacent to Pilesgrove Township is of concern. These sites include Majors Run, Salem River at Commissioners Pike, (upgradient) and Oldmans Creek at Pointers-Auburn Road (down-gradient). Within Watershed Management Area (WMA) # 17, one quarter of the AMNET monitoring stations were non-impaired, 66% were moderately impaired, and 8% were severely impaired. It should be noted that the percentage of non-impaired sites in WMA 17 was higher and the percentage of severely impaired sites was lower than that any of the other watershed management areas along the Delaware River.

*Table 37
Pilesgrove Township
AMNET Monitoring Stations (1995; 2001)*

Station No.	Location	Impairment Score (1995-96)	Impairment Score (2001)	Habitat Value
AN0687	Oldmans Creek, Harrisonville Lake Road Pilesgrove Township	18; Moderately Impaired	21; Moderately Impaired	186; Optimal habitat
AN0688	Oldmans Creek, Kings Highway Pilesgrove Township	18; Moderately Impaired	12; Moderately Impaired	145; Sub-Optimal
AN0689	Oldmans Creek, Pointers-Auburn Road Oldmans Township	12; Moderately Impaired	6; Severely Impaired	160; Optimal
AN0690	Salem River; Commissioners Pike Upper Pittsgrove Township	9; Moderately Impaired	12; Severely Impaired	163; Optimal
AN0691	Salem River; Memorial Lake Outlet; Woodstown;	6; Severely Impaired	15; Moderately Impaired	147; Sub-Optimal
AN0692	Nichomus Run; Route 45 Pilesgrove Township	6; Severely Impaired	15; Moderately Impaired	138; Sub-Optimal
AN0693	Salem River; Kings Highway Pilesgrove Township	12; Moderately Impaired	12; Moderately Impaired	135; Sub-Optimal
AN0694	Majors Run; Sharptown-Auburn road Pilesgrove Township	6; Severely Impaired	0; Severely Impaired	94; Marginal
AN0695	Two Penny Run; East Quilleytown Road; Carney's Point Township	15; Moderately Impaired	15; Moderately Impaired	126; Sub-Optimal

4.4.1.6 Ambient Surface Water Monitoring (ASWM)

The NJDEP also maintains three Ambient Surface Water Monitoring locations that monitor the conditions of the watercourses in Pilesgrove Township. These monitoring stations are located on the Salem River at Woodstown, on Majors Run at Sharptown, and on Two Penny Run near Dancer's Corner in Carney's Point. The results of the monitoring data indicate that the Salem River at Woodstown and Major's Run at Sharptown are attaining all of the water quality parameters except for fecal coliform and phosphorus. Two Penny Run is reportedly attaining the criteria for dissolved oxygen and ammonia but has been determined to be impaired for fecal coliform and phosphorus. Insufficient data is available at this location to assess the status of various other water quality parameters.

4.4.1.7 Sublist 5 of Integrated List

The NJDEP is required under the Clean Water Act to submit the New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) including the Integrated List (303(d)) on a biennial basis to the EPA. This combined report is a valuable source of water quality information since it presents the extent to which New Jersey 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 total maximum daily load limits (TMDLs) are needed.

Table 38 contains the 2004 Integrated List of locations within or near Pilesgrove Township that have water quality problems and their priority ranking. The highest ranked conditions are the fecal coliform problems at the Four Seasons Campground and along Majors Run and the high mercury levels reported for Memorial Lake based on fish tissue sampling. The medium priority problems are the elevated phosphorus levels in certain segments of Oldmans Creek, Salem River, and Majors Run.

Table 38
Pilesgrove Township
2004 Integrated List (Sublist 5) with Priority Ranking

Station No.	Location	Impairment	Priority	Data source
	Four Seasons Campground, Pilesgrove	Fecal Coliform	High	Salem County HD
AN0688	Oldmans Creek, Kings Highway; Pilesgrove/Woolwich	Benthic Macroinvertebraes	Low	NJDEP AMNET
EWQ0689	Oldmans Creek, Pointers-Auburn Road; Oldmans	Phosphorus	Medium	EWQ
EWQ0689	Oldmans Creek, Pointers-Auburn Road; Oldmans	Total Suspended Solids		EWQ
AN0690	Salem River; Commissioners Pike; Upper Pittsgrove	Benthic Macroinvertebraes	Low	NJDEP AMNET
01482500	Salem River; Memorial Lake; Woodstown	Phosphorus	Medium	NJDEP/USGS Data
01482500	Salem River; Memorial Lake; Woodstown	Mercury	High	Tissue Monitoring
AN0693	Salem River; Kings Highway; Pilesgrove Township	Benthic Macroinvertebraes	Low	NJDEP AMNET
AN0694	Majors Run; Sharptown-Auburn Road; Pilesgrove	Benthic Macroinvertebraes	Low	NJDEP AMNET
01482530	Majors Run; Sharptown-Auburn Road; Pilesgrove	Fecal Coliform	High	NJDEP/USGS Data
01482530	Majors Run; Sharptown-Auburn Road; Pilesgrove	Phosphorus	Medium	NJDEP/USGS Data

4.4.1.8 Proposed Total Maximum Daily Loads (TMDLs)

The NJDEP is required to develop a Total Maximum Daily Load (TMDL) for the specified pollutants for each impaired waterway. These TMDLs will address the elevated phosphorus at Memorial Lake and the elevated fecal coliform levels on Majors Run and the upper reaches of the Salem Creek. It is not clear whether a TMDL will be pursued for the high mercury levels in the fish at Memorial Lake.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for designated uses. The allowable load is allocated to the various sources of the pollutant, such as point wastewater discharges that require an NJPDES permit to discharge, and nonpoint sources including stormwater runoff from agricultural

areas and residential areas. 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-forestation of stream corridors, retrofitting stormwater systems, and other BMPs.

TMDL for Phosphorus

There are two TMDLs that have been proposed by the NJDEP that impact Pilesgrove Township. In April of 2003, the NJDEP proposed a TMDL for phosphorus to address 13 eutrophic lakes in the Lower Delaware region. Two of these lakes are Memorial Lake in Woodstown and Harrisonville Lake along the Pilesgrove Township boundary with South Harrison. Phosphorus is the pollutant of concern for the TMDL since it is the nutrient that is primarily responsible for overfertilization of inland lakes leading to eutrophication. Phosphorus sources are characterized on an annual scale (kg TP/yr) since long-term pollutant loadings are more critical to overall lake water quality than the load at any particular time.

While Memorial Lake is located outside of the Township, about 50% of the Salem River watershed that feeds the lake is within Pilesgrove Township. The 22-acre lake has an average depth of four feet. Because the lake has such a large drainage area (9,300 acres), it has been classified by the NJDEP as a “rapidly flushing system” with a mean detention time of 1.5 days. The NJDEP has indicated that there are no known point sources to Memorial Lake but “agricultural runoff specifically from livestock may be significant”.

Harrisonville Lake is an 18-acre impoundment along Oldmans Creek that is owned by the New Jersey Division of Fish and Wildlife. According to the NJDEP, the lake has developed a severe eutrophication problem over the last 20 years that progressively worsens in the late summer. An analysis of this lake has determined that the lake has a mean depth of 3.1 feet and a hydraulic residence time of 1.9 days. As with Memorial Lake, the lake shed to lake surface ratio is very high (over 300:1). The total amount of unconsolidated sediments was estimated to be over 45,000 cubic yards.

Runoff from land surfaces comprises most of the point and non-point sources of phosphorus into lakes. The NJDEP has estimated the breakdown of the current phosphorus loads by applying export coefficients to land cover information. The breakdown for the relevant lakes is shown in *Table 39*.

Table 39
NJDEP TMDL for Phosphorus
Estimated Land Cover Sources

Land Use Loadings	Memorial Lake			Harrisonville Lake		
	Acres	Kg/Yr	Percent	Acres	Kg/Yr	Percent
Medium density residential	22.8	14.7	0.3	9.8	6.3	0.3
Low density rural residential	485	137	3	567	161	7
Commercial	62.2	50.4	1	8.7	7	0.3
Industrial	73.9	50.9	1	4.3	3	0.1
Mixed urban	185	74.9	2	61.1	24.7	1
Agricultural	6,530	3,970	91	2,780	1,690	77
Forest wetlands water	1,930	78.1	2	2,170	88	4
Barren land	20.7	4.2	0.1	23.2	4.7	0.2
Septic systems					157	8
Internal load					5.2	0.2
Natural loads	21.7	0.6	0.01	18	0.5	0.02
Totals	9,340	4,380	100	5,640	2,210	100

The current average Total Phosphorus influent is 0.175 mg/l to Memorial Lake and 0.168 mg/l to Harrisonville Lake. The target average influent for both lakes is 0.025 mg/l. The current steady state condition

of 0.141 mg/l for Memorial Lake and 0.133 mg/l for Harrisonville Lake must be reduced to a steady state concentration of 0.03 mg/l to avoid exceeding the 0.05 mg/l total phosphorus water quality criterion. The overall TP load reduction for Memorial Lake is 86% and for Harrisonville Lake 85%. The NJDEP intends to achieve these reductions through a variety of means including the implementation of the stormwater management regulations, the development of lake restoration plans, and the development of various non-point source control measures.

TMDL for Fecal Coliform

In April of 2003, the NJDEP also proposed a TMDL for fecal coliform to address 27 streams in the Lower Delaware Water region. The stream segments identified included the Salem River at Woodstown, the Salem River at Courses Landing and Two Penny Run near Dancer's corner. The watersheds for each of these stream segments include a portion of Pilesgrove Township. The TMDL was approved by the EPA on September 29, 2003.

The TMDL indicates that nonpoint and stormwater point sources are the primary contributors to fecal coliform loads in these streams. These sources include "*storm-driven loads transporting fecal coliform from sources such as geese, livestock, and domestic pets to receiving waters as well as failing sewage conveyance and inappropriately located or designed septic systems.*" Publicly owned treatment works (POTWs) are not believed to be a source of fecal coliform since these systems are required to use disinfection to achieve discharge limitations. Treatment plants should only be a significant source of fecal coliform due to substantive equipment malfunctions.

The options available to control nonpoint sources of fecal coliform typically include wildlife (goose) management, pet waste ordinances, agricultural conservation management plans, and septic system maintenance and replacement. Detailed water modeling is needed to determine the effectiveness of these control measures. The NJDEP is proposing to establish wasteload allocations (WLAs) for all NJPDES regulated point sources (including regulated stormwater) and Load Allocations (LAs) for all nonpoint sources that are not regulated by the NJDEP. The proposed TMDL indicates that an 84% reduction will be needed in both the wasteload allocation and load allocations to achieve the fecal coliform water quality criterion.

The key to reducing fecal coliform levels is understanding the potential sources in the Township and matching the implementation of specific strategies to address these sources. Because of the presence of numerous livestock and horse farms within the Salem River watershed, attention will need to be focused on the implementation of conservation, management plans and best management practices. There are several programs to assist the farmer in implementing improved management practices including the Environmental Quality Incentive Program (EQIP), the Conservation Reserve Program (CRP), the State Conservation Cost-Sharing Program, and the Soil & Water Conservation Cost-Sharing Program under the voluntary farmland preservation program.

4.4.2 Groundwater Resources

4.4.2.1. Geology.

Pilesgrove Township is located within the physiographic province known as the Atlantic Coastal Plain. The Township is underlain by two geologic systems (Cretaceous and Tertiary) which are broken down into nine (9) sub-group geologic formations. The geologic formations in New Jersey are oriented in a down dip pattern toward the Atlantic Ocean. *Table 40* describes the lithologic and hydrologic characteristics of these formations. *Map 5-2: Geology and Groundwater Resources* displays the geologic formations that are evident in Pilesgrove Township based on the NJDEP GIS natural resource database.

Table 40
Pilesgrove Township Wastewater Management Plan
Geologic Formations

Geologic Formation	Symbol	Lithology	Hydrologic Characteristics	Maximum Thickness
Cohansey Sand	<i>Tch</i>	Light colored medium to coarse grained sand with occasional laminates of light colored clay	Major aquifer capable of yielding 220 gpm of satisfactory quality	82 feet
Kirkwood Formation	<i>Tkw</i>	Thick beds of dark colored clays with some layers of silt and fine grained quartz sand	Contains minor aquifers in certain areas with a yield of 50 gpm; Aquiclude in most areas;	275 feet
Vincentown Sand	<i>Tvt</i>	Medium grained, slightly clayey sands; Non water bearing zone consists of green clayey glauconitic sand	Major aquifer with potential yield of 270 gpm	160 feet
Hornerstown Sand	<i>Tht</i>	Dark green clayey sand	A leaky aquiclude; no wells tap this formation in Salem County;	
Navesink Marl	<i>Kns</i>	A dark green glauconitic composition of sand, silt and clay;	A leaky aquiclude; no wells tap this formation in Salem County;	52 feet
Mount Laurel/ Wenonah Sand	<i>Kw</i>	Fine to coarse grained glauconitic quartz sand;	Major aquifer with potential yield of 500 gpm;	120 feet
Marsalltown Formation	<i>Kmt</i>	Olive green to black colored sandy clay containing many fossils	A leaky aquiclude; dug wells have low yields (15-75 gpm); water has high iron content and undesirable odor	45 feet
Woodbury Clay	<i>Kwb</i>	Black silty clay	Major aquiclude; no wells tap this formation	90 feet

4.4.2.2 Aquifer Recharge Areas

Map 5-2 indicates the primary aquifer outcrops in Pilesgrove Township. It is important to emphasize that the mapped areas represent outcrop areas or the areas where formations are near the surface and capable of being recharged by surface water. The potential for environmental degradation is greater in recharge areas since there is a more direct connection between surface and ground water discharges and the underlying aquifer.

Pilesgrove Township contains the outcrop areas of three major aquifers. The Mount Laurel/Wenonah Sand outcrops along the Township's western boundary; the Vincentown formation outcrops in a narrow irregular band to the west and northwest of Woodstown; and the Cohansey formation outcrops along the eastern Township boundary. The aquifer outcrops along the Township western and eastern boundaries encompass an expansive area that needs to be carefully managed.

The Township also contains several aquicludes that consist of clay or silt layers that confine the aquifers and prevent recharge. For example, the area to the east of the Mount Laurel aquifer outcrop is a band of confining units that confine and protect the underlying aquifer.

4.4.2.3 Groundwater Resources

The major wells in the Woodstown/Pilesgrove area do not necessarily tap the formations that outcrop in the Township. In fact, most of the major wells in this area including the Woodstown and Richman's wells are screened in the Potomac-Raritan-Magothy (PRM) formation that outcrops along the Delaware River. The PRM is capable of the greatest yields in southern New Jersey but is also a water source that has historically been over-utilized in Camden and Gloucester counties resulting in cone of depressions that cause water levels to drop and salt water to intrude.

From a wastewater management planning standpoint, the key groundwater resource issues are the protection of the water supply capabilities of the underlying aquifers and the protection of the outcrop areas from environmental degradation.

4.4.2.4 Groundwater Water Supply.

The Woodstown water department serves a small portion of the Planning Area. The location of public and non-public community water supply wells in the Planning Area is shown on *Map 5-2*. According to the NJDEP natural resource database, there are no designated well-head protection areas within the Planning Area.

4.4.3 Topography

Map 5-3: USGS Topographic Map is a generalized topographic map for the Planning Area that graphically displays the relative elevations and slopes in the Township and Borough. As the Map depicts, the highest elevations are found in the eastern part of the Township and the lowest elevations are in the extreme southwestern and northwestern corners along the Oldmans Creek and Salem River corridors. The Map illustrates that the central part of the Township, in and around Woodstown, is flat or gently sloping except for the defined stream corridors. The major drainage divides that separate the major drainage basins are also evident.

Map 5-3 also indicates the general slope of the land in the Township by using different colors for each elevation range. Steep slopes are evident where there are different color bands close together and are found along the Oldmans Creek and Salem River corridors in the eastern, southeastern, and extreme northern parts of the Township. In general, the areas with slopes greater than ten percent (10%) within the Planning Area are very limited.

4.4.4 Soils

Map 5-4: Important Farmland Soils indicates the soil types within the Planning Area based on the updated NRCS soil survey data and indicates the most important agricultural soils based on their classification as prime soils, soils of statewide importance, and soils of unique value. As *Map 5-4* indicates, the Township contains extensive areas with prime soils and soils of statewide importance. In addition, the areas with soils of lesser importance particularly in the western part of the Township contain highly productive farms specifically suited to the sandy nature of the soils.

Map 5-4 also identifies hydric soils within the Planning Area. These soils are generally capable of supporting hydrophytic vegetation. The hydric soils in the Planning Area include the soils along the major stream corridors, headwater areas, as well as expansive areas with a substratum of slow permeability to the west of Woodstown Borough. Extensive areas of the Township are rated as having both prime agricultural soils as well as hydric soils due to a substratum of variable permeability.

4.4.5 Critical Habitats of Plant/Animal Communities

The critical habitats throughout the State have been delineated by the NJDEP Landscape Project that divides the landscape into habitat type using land cover data and then ranks each habitat type based on the status of the species present as follows:

- Rank 1:** Habitat of sufficient size for priority wildlife species but no confirmed occurrences of such species;
- Rank 2:** Habitat containing one or more occurrences of at least one non-listed State priority species;
- Rank 3:** Habitat containing one or more occurrences of at least one State threatened species;
- Rank 4:** Habitat containing one or more occurrences of at least one State endangered species;
- Rank 5:** Habitat containing one or more occurrences of at least one Federal endangered/threatened species.

Map 5-5: Critical Habitats Map indicates the critical habitats (ranked 3, 4, or 5 under the Landscape Project) that need to be considered in wastewater management planning decisions for the Planning Area. The key conclusions of the Critical Habitats Map can be summarized as follows:

- Grasslands. The Landscape Project indicates an expansive area of grasslands throughout the Township that contains listed threatened or endangered species, including an area owned by the NJDEP along Kings Highway. In general, the most suitable habitat for grasslands birds is the area used for cattle grazing rather than cropland. The tilled areas within this district may be suitable as foraging areas rather than nesting areas due to the level of disturbance.
- Forests. The Landscape Project indicates the presence of forested areas that contain state or federally listed threatened or endangered species along the Nichomus Run, Salem River, and Majors Run in the vicinity of Sharptown and along a segment of Oldmans Creek.
- Emergent. Emergent wetland areas that contain federally listed threatened or endangered species have also been identified within the Planning Area along the Nichomus Run east of Sharptown and the Salem River west of Sharptown.
- Bald eagles. The Landscape Project also identifies bald eagle foraging areas along the Salem River east of Woodstown, the Camp Crockett area, the extreme northwestern corner of the Township along Oldmans Creek, and in the extreme southwestern corner of the Township along the Salem River.

4.4.5.1. Natural Heritage Priority Sites

Four (4) 'Priority sites' have been designated by the Natural Heritage Program of the NJDEP in the Township. These Sites are considered worthy of public acquisition and converge on the Sharptown area. The 'Sharptown Priority Site' extends from US Route 40 to Auburn Road and from Kings Highway to Sharptown-Auburn road and reportedly contains a diverse population of rare and endangered grassland bird species. The remaining three Priority Sites, known as the 'Salem River Floodplain', 'Majors Run' and 'Nichomus Run' Priority Sites, contain a diversity of rare and endangered plant and wildlife along stream corridors. Since these priority sites have local, regional, and statewide environmental significance, they warrant special protection in Township planning documents.

4.4.5.2. Kings Road LLC Project Site

Due to the presence of Natural Heritage Priority sites in the vicinity of Sharptown, Pilesgrove Township conducted a detailed habitat suitability investigation of the Kings Road LLC property. The report prepared by Herptological Associates determined that the site has extensive biodiversity. The specific conclusions with regard to threatened and endangered species were as follows:

- A botanical survey of the site resulted in the determination that the Salem River floodplain forest contains an extensive population of Greek Valerian, a critically imperiled plant.
- An avian survey of the project site determined that a Cooper's Hawk nest is present in the forested swamp along the Salem River and that two grasshopper sparrows were evident in the upland farm fields.
- A reptilian survey found that the site contained "typical" bog turtle habitat but that no bog turtles were determined to be present.

Based on the foregoing conclusions, the Kings Road LLC project was modified to protect the critical habitats. In particular, the project was reconfigured to provide extensive buffers along the Salem River floodplain; to provide a buffer around the presumed location of a Cooper's Hawk nest; to provide for the removal of the Richman's treatment plant and the restoration of that site; and to provide for extensive open space, a portion of which could be set aside for passive open space for grassland birds and other species.

4.4.6 Open Space and Conservation Areas

Map 5-6: Open Space and Conservation Map indicates the public open space and preserved farmland within the Township Planning Area.

4.4.6.1 Public Open Space

The public open space shown on Map 5-6 includes all lands that have been acquired by local, county and state government regardless of whether these areas have been developed into parks. A total of 769± acres have been acquired for public open space purposes as listed below.

- State Open Space/Parks. The State has acquired lands along the Salem River east of Woodstown, lands to the east of Sharptown, lands along Kings Highway, and lands to the north of US Route #40 about 1 mile east of Woodstown. These State owned lands are managed for resource protection purposes by the Fish and Wildlife Service. The only State park in the Township is a small portion of Harrisonville Lake Park in the extreme northeastern corner of the Township.
- County Open Space/Parks. The only County Park in the Planning Area is Camp Crockett located along Avis Mill Road and encompasses 50.7 acres.
- Local Open Space/Parks. The only municipal park in the Planning Area is Marlton Park which is operated jointly by Pilesgrove Township and Woodstown Borough and encompasses 64.6 acres.

4.4.6.2 Preserved Farmland

Map 5-6 indicates the farmland that has been preserved to date within the Township under municipal, county, and state farmland preservation programs. Approximately 4,000 acres of land have been preserved in the Township at the time of the preparation of this WMP under various farmland preservation programs. Preserved lands are concentrated in the northwestern quadrant and the extreme eastern part of the Township. Several hundred additional acres are being considered for preservation depending upon the availability of funding and are shown as pending applications on Map 5-6.

4.4.7 Environmental Features

4.4.7.1 Environmentally Critical Areas

Map 5-7: Environmental Features Map displays the extent of critical environmental features that are worthy of protection. The specific areas that are included on *Map 5-7* are described below.

- Wetlands. *Map 5-7* indicates the potential freshwater wetlands that have been identified within the Township. The term ‘potential wetlands’ is used since wetlands can only be delineated based on a field investigation by a trained specialist. The potential wetlands shown on the Environmental Features Map are from the GIS Natural Resource Data issued by the NJDEP which indicates the presence of wetlands along the major tributaries in the Township as well as extensive wetlands within headwaters areas in the eastern part of the Township.
- Floodplains. *Map 5-7* indicates the 100-year floodplains within the Township based on mapping conducted by the USGS. The floodplains shown are those areas that extend beyond the potential wetlands areas. The most expansive floodplains are along the Salem River to the west of Woodstown. Generally, the flood prone areas tend to be concentrated within 500 feet of the stream corridor.
- Stream Corridors. The Township contains two primary stream corridors and several minor tributaries previously described in the Environmental Inventory. The NJDEP has requested that a 50’ buffer be maintained along stream corridors. The stream corridor buffer areas are shown on *Map 5-7*. Any proposed encroachment on the stream corridor buffers will require project specific analyses to ensure that the value of the stream corridor is not impacted.
- Threatened and Endangered Species. The Critical Habitats shown on *Map 5-7* are those areas where State or federally listed imperiled species have been identified in the Landscape Project. T&E areas are shown where they extend beyond the limits of the features described above.

4.4.7.2 Other Important Environmental Features

There are other important environmental features that have been shown on the inventory maps but are not shown on *Map 5-7* since they are not considered environmentally critical areas including the following:

- Mount Laurel/Wenonah aquifer recharge area. The acquisition of open space, the preservation of farmland, and the use of groundwater recharge measures will ensure the recharge capabilities of the region. The presence of an important aquifer recharge area support specific land management practices in the outcrop area but does not warrant development exclusion.
- Parks/Preserved Lands. Lands that have already been acquired for public open space or preserved as farmland are an important development constraint. These areas are not shown on *Map 5-7* since the Environmental Features Map is intended to display environmentally critical areas without regard for whether they have been acquired or preserved by public action.
- Agricultural Development Areas. Pilesgrove Township has designated Project Areas for the purpose of targeting local farmland preservation efforts. These areas indicate program eligibility rather than any objective environmental criteria but the limits may impact land conversion patterns. A minor change in the Project Area limits would be required to the north of Woodstown to enable the use of the transfer mechanisms discussed for this area.

4.5 ENVIRONMENTAL CONSTRAINTS ANALYSIS

The NJDEP requires that an Environmental Constraints Analysis (ECA) be conducted to assess the proposed sizing of the treatment facilities and the appropriate location and extent of the proposed Sewer Service area. The ECA is a build-out analysis that takes into account specific environmental constraints to development. *Map 5-8: Environmental Constraints Map* indicates the developed, environmentally constrained, and developable lands within the Planning Area. A build-out analysis based on current zoning is described below.

4.5.1 Developed Lands

For clarity purposes, the developed lands are represented on the Environmental Constraints Map by the underlying parcel mapping without any coloration. The limits and type of existing land development are best shown on *Map 4-1: Existing Land Use Map*. The only portion of the developed lands that were considered developable were the undeveloped portions of residential parcels in excess of 5 acres and designated redevelopment areas. A total of 2,267± acres are considered developed lands of about 10% of the total Township. An additional 596± acres or 2.7% of the Township land area is devoted to public street rights-of-way.

4.5.2 Constrained Lands

The environmentally constrained lands represent lands that are not available for major development due to substantive environmental limitations, natural resource value, or deed restrictions. The environmentally constrained lands include wetlands, floodplains, publicly owned open space, preserved farmland, and the critical habitats that have been ranked as 3, 4 and 5 for forest, forest wetland, and emergent areas.

Lands that have been acquired in fee simple by a public entity as well as parcels in which the development rights have been acquired have been excluded from the developable area. A total of 4,021± acres in the Township or 17.9 % of its land area is not available for land development due to the public acquisition of the land or development rights. An additional 2,512± acres or 11.2% of the Township are considered wetlands based on the NJDEP natural resource database. Therefore, over 6,500 acres or 29.1% of the Township are excluded from future development due to deed or regulatory restrictions.

The grassland critical habitats are shown as an environmental constraint but were not factored into the build out analysis since land development on ISSDS are not precluded in these areas. It should be noted that virtually the entire grassland bird critical habitat coincides with the Agricultural Retention (AR) zoning district. Portions of the AR district are used for cropland that is frequently disturbed and other portions are used for ranchland that is more suited to the preferred habitat conditions for the grassland birds. The Township currently requires threatened and endangered species to be addressed in the environmental impact assessment that is prepared as part of development approval process.

4.5.3 Developable Lands

Developable land is land that is capable of being developed without encroaching on the environmentally constrained lands described above. *Map 5-8* indicates in yellow the lands that are considered developable. In addition, as noted above, lands within the grasslands critical habitat (shown in olive green) were considered developable subject to site-specific investigations due to the low density of existing zoning and the current land disturbances. As shown on *Map 5-8*, the developable lands in the Township are primarily clustered in the northern and southern parts of the Planning Area. The Township's farmland preservation program is becoming an effective limiting factor to land development in the western part of the Township.

4.6 BUILD-OUT ANALYSES

4.6.1 Existing Zoning

Table 41 is a build-out analysis based upon the existing zoning regulations by subwatershed (HUC 14). The analysis defines the total area by zoning district and deducts preserved farmland, public open space, water, and wetlands to calculate the total developable acreage by zoning district. The maximum units per acre were determined for each zoning district based on the assumption that at least 20% of a tract is devoted to roads, stormwater management, and buffer areas. Typically, there is also some loss in lotting efficiency due to the configuration of the tract.

Residential

A build-out analysis was conducted to determine the extent of development that could occur on these developable lands. *Table 41* indicates the breakdown of developable land by zoning district and subwatershed. A total of 12,000± acres in the Township is considered developable within residentially zoned districts. An additional 392± acres are considered developable on existing lots with residential use that are in excess of five acres. For these lots, it is assumed that one acre would be retained for residential use and the remainder could be used for future development. Therefore, the total developable land including the unused portions of large residential tracts is estimated to be 12,393± acres.

Based on the maximum yield of current zoning regulations, it is projected that 5,955 residential units could be built in the Township under complete build-out conditions in addition to the current estimated 1,513 units. Therefore, the total residential build-out under existing zoning regulations would be approximately 7,467 units or 21,500 persons. The current residential zoning equates to an average overall density of just under 0.5 units per acre (5,955 potential units/12,393 developable acres).

Non-Residential

Table 41 also includes the potential buildout in non-residential zoning districts. The developable land that is zoned or allotted for commercial or industrial development in Pilesgrove Township is 665± acres. Based on the permitted building intensity in the zoning regulations, a build out of 5.26 million square feet of commercial or industrial development is projected based on current zoning regulations. This figure takes into account the 3.65 million square feet that could be developed within the Planned Light Industrial (PLI) zoning district under a General Development Plan (GDP). The potential commercial land development also includes 1.7 million square feet within the Neighborhood and Highway Commercial zoning districts.

Sewer Service Area

The residential build-out under the existing zoning regulations includes the 116 units that are currently sewerred and the 75 units of affordable housing within the Bailey Corner redevelopment area for a total of 191 sewerred residential units. The additional units that may be sewerred as part of the Woodstown town center extension would be as a result of the clustering or transferring of existing development rights and would not represent an increase in the build-out. Similarly the inclusion of the existing crossroads settlement area in Sharptown as part of the sewer service area for that proposed village center would represent a minimal increase in the buildout. The village is currently zoned for moderate density development but the potential for in-fill development would be more if planned infrastructure was available.

Kings Road Overlay Zoning

An overlay Planned Residential Zoning (PRD-1) district was adopted in accordance with the Kings Road Settlement Agreement contingent upon the provision of water and sewer infrastructure. The concept plan that was appended to the Settlement Agreement provided for 96 single family detached units. The underlying zoning would provide for approximately 41 single-family detached units with individual onsite disposal systems. Therefore, the effect of the PRD-1 zoning overlay was to increase the build-out over the prior zoning by 45 homes. Since this project appears to be defunct, it has not been included in the analysis.

Woodstown Town Center Overlay Zoning

The second area of overlay zoning would be the proposed Woodstown town center extension primarily on the north side of Woodstown Borough under a non-contiguous clustering arrangement. The basic premise of the non-contiguous clustering provision would be the shift the location of residential units. Therefore, it would not appreciably change the build-out calculation since land developers within the sewer service area would need to acquire development rights from landowners in the preservation area in order to build at the maximum permitted density. It is expected that the establishment of the overlay zones would change the pattern and timing of land development in the Township but not the total build-out. The Township may consider reducing the number of development rights in the agricultural areas to increase the land preservation impact on the Township and to more closely reflect the build-out under the proposed nitrate dilution standards.

Critical Habitats

Most of the Future Sewer Service Area around Woodstown and at the PLI district would be outside of the limits of the grassland bird critical habitat. The Township conducted a habitat suitability analysis for the Kings Road and determined that the conversion of the land would not impact this expansive critical habitat due to the disturbed nature of the existing cropland. As previously indicated, the grassland critical habitats were not factored into the analysis as a substantive environmental constraint. It should be noted that a significant portion of the development rights for the farmland within this critical habitat has been acquired.

Watershed Breakdown

Table 42 indicates the existing and future build out by sub-watershed. The analysis indicates that under current regulations there is the potential for an additional 3,675 dwelling units on the Salem River watershed and 1,986 dwelling units in the Oldmans Creek watershed. There is also the potential for 5.2 million square feet of commercial/industrial development in the Salem River watershed.

Preliminary County Zoning Buildout Analysis

The Salem County Planning Board has recently issued a build out analysis based on the Township's existing zoning regulations. *Table 42* compares the Township and County analyses based on the existing regulations by watershed. As the Table indicates, the preliminary County analysis indicates a much greater build out than the analysis conducted by the Township. The differences can be attributed to two factors. First, the County analysis is a total theoretical bailout analysis that does not recognize the existing developed land while the Township analysis applies zoning to the vacant developable or underutilized land. Second, the County analysis does not appear to deduct all of the environmentally constrained and preserved lands in the Township. The result is the County overstates the residential build out of the existing zoning by about 20%. Furthermore, the County build out appears to substantially underestimate the build out of the commercial and industrial districts and does not recognize the potential significance of the PLI district.

Table 41

Pilesgrove Township Build-out Calculation
Existing Zoning Analysis

HUC14 and Zone	Total Area (Acres)	Developed Lands	Streets	Preserved Farmland/Open Space(Acres)	Wetlands/ Water Area (Acres)	Developable Area (Acres)	Residential lots over 5 acres	Units/Acre	Potential Units
02040202160020 Oldmans Creek (East)									
Agricultural Retention (AR)	157.07	0.01	2.23	0.00	0.00	154.82	0.00	0.40	62
Conservation District (CD)	159.47	0.00	0.00	0.00	159.47	0.00	0.00	0.00	0
Restricted Residential (RR)	906.29	48.08	11.34	0.00	0.00	829.42	17.36	0.40	339
Single-Family Residential (SR)	118.27	48.13	7.26	0.00	0.00	62.87	0.00	0.80	50
TOTALS	1,341.10	96.22	20.83	0.00	159.47	1,047.11	17.36	0.42	451
02040202160030 Oldmans Creek (Central)									
Agricultural Retention (AR)	839.15	57.02	19.31	55.73	0.00	676.90	30.15	0.40	283
Conservation District (CD)	381.21	0.00	0.00	0.00	381.21	0.00	0.00	0.00	0
Restricted Residential (RR)	104.36	64.11	8.66	0.00	0.00	31.57	0.00	0.40	13
Single-Family Residential (SR)	1,268.98	137.28	38.09	77.95	0.00	1,007.77	7.85	0.80	812
TOTALS	2,593.70	258.41	66.06	133.68	381.21	1,716.24	38.00	0.63	1108
02040202160050 Oldmans Creek (West)									
Agricultural Retention (AR)	176.19	3.80	3.79	94.19	0.00	73.88	0.49	0.40	30
Conservation District (CD)	80.69	0.00	0.00	0.00	80.72	0.00	0.00	0.00	0
Single-Family Residential (SR)	1,082.42	481.91	81.08	22.63	0.00	389.35	107.14	0.80	397
TOTALS	1,339.30	485.71	84.87	116.82	80.72	463.23	107.63	0.75	427
02040206030010 Salem River (East)									
Agricultural Retention (AR)	2,299.07	58.25	54.46	757.95	0.00	1,390.19	37.49	0.40	571
Conservation District (CD)	428.51	0.00	0.00	0.00	428.51	0.00	0.00	0.00	0
Public - Parks - Education (PPE)	392.96	9.94	5.70	353.19	0.00	24.75	0.00	0.00	0
Restricted Residential (RR)	832.83	202.88	25.49	4.04	0.00	559.00	41.26	0.40	240
Single-Family Residential (SR)	85.35	26.01	2.79	0.00	0.00	52.69	3.84	0.80	45
TOTALS	4,038.72	297.08	88.44	1,115.18	428.51	2,026.63	82.59	0.41	856
02040206030020 Nichomus Run									
Agricultural Retention (AR)	1,109.76	40.26	33.49	108.13	0.00	927.10	2.86	0.40	372
Conservation District (CD)	511.98	0.00	0.00	0.00	511.98	0.00	0.00	0.00	0
Public - Parks - Education (PPE)	8.28	0.01	0.14	8.13	0.00	0.00	0.00	0.00	0
Restricted Residential (RR)	1,017.60	76.13	29.95	0.00	0.00	841.40	70.05	0.40	365
Single-Family Residential (SR)	232.92	37.13	9.06	0.15	0.00	181.13	5.46	0.80	149
TOTALS	2,880.54	153.53	72.64	116.41	511.98	1,949.63	78.37	0.44	886
02040206030030 Salem River (Central)									
Affordable Housing 1 (AH1)	7.81	5.72	0.08	0.00	0.00	2.01	0.00	11.00	74
Agricultural Retention (AR)	2,341.39	114.94	61.23	1,140.15	0.00	1,018.40	6.68	0.40	410
Conservation District (CD)	352.57	0.00	0.00	0.00	352.57	0.00	0.00	0.00	0
Public - Parks - Education (PPE)	66.00	0.22	0.00	65.68	0.00	0.03	0.00	0.00	0
Restricted Residential (RR)	855.70	242.35	20.58	0.11	0.00	587.16	5.49	0.40	237
Single-Family Residential (SR)	282.28	138.15	24.42	0.00	0.00	118.21	1.43	0.80	96
Single-Family Residential (SR-5)	15.58	11.55	3.14	0.09	0.00	0.77	0.00	1.60	1
Single-Family Residential (SR-CL)	87.79	3.13	1.12	0.06	0.00	83.40	0.00	0.80	67
PRD	89.75	3.54	2.31	0.00	0.00	83.88	0.00	1.15	96
Village Neighborhood (VN)	10.01	8.93	1.03	0.00	0.00	0.04	0.00	1.60	0
TOTALS	4,108.88	528.53	113.91	1,206.09	352.57	1,893.90	13.60	0.51	981

Table 4.2 continued
 Pilesgrove Township Build-out Calculation
 Existing Zoning Analysis

HUC14 and Zone	Total Area (Acres)	Developed Lands	Streets	Preserved Farmland/ Open Space (Acres)	Wetlands/ Water Area (Acres)	Developable Area (Acres)	Residential lots over 5 acres	Units/Acre	Potential Units
02040206030040 Salem River (Sharptown)									
Agricultural Retention (AR)	2,072.98	20.65	42.73	323.79	0.00	1,682.56	2.95	0.40	674
Conservation District (CD)	342.11	0.00	0.00	0.00	342.11	0.00	0.00	0.00	0
Public - Parks - Education (PPE)	92.51	21.52	3.63	67.24	0.00	0.03	0.00	0.00	0
Restricted Residential (RR)	44.01	6.68	0.01	0.00	0.00	29.47	7.86	0.40	15
Single-Family Residential (SR)	33.92	19.32	2.86	0.00	0.00	11.71	0.00	0.80	9
PRD	0.30	0.00	0.00	0.00		0.30	0.00	1.15	0
Village Neighborhood (VN)	54.10	37.49	10.20	0.00	0.00	6.41	0.00	1.60	10
TOTALS	2,639.93	105.66	59.43	391.03	342.11	1,730.48	10.81	0.41	709
02040206030050 Game Creek									
Agricultural Retention (AR)	1,053.44	25.11	13.23	606.97	0.00	408.13	0.00	0.40	163
Conservation District (CD)	61.13	0.00	0.00	0.00	61.13	0.00	0.00	0.00	0
Single-Family Residential (SR)	76.13	47.40	10.96	0.05	0.00	6.96	10.74	0.80	14
TOTALS	1,190.70	72.51	24.19	607.02	61.13	415.09	10.74	0.42	177
02040206030060 Salem River (West)									
Agricultural Retention (AR)	236.08	0.00	4.67	65.82	0.00	165.57	0.00	0.40	66
Conservation District (CD)	6.63	0.00	0.00	0.00	6.63	0.00	0.00	0.00	0
TOTALS	242.71	0.00	4.67	65.82	6.63	165.57	0.00	0.40	66
02040206040010 Mannington Creek									
Conservation District (CD)	3.20	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0
Public - Parks - Education (PPE)	5.08	3.99	1.08	0.00	0.00	0.00	0.00	0.00	0
Restricted Residential (RR)	7.04	0.00	0.00	0.00	0.00	7.02	0.00	0.40	3
Single-Family Residential (SR)	23.49	0.37	1.50	0.00	0.00	21.63	0.00	0.80	17
TOTALS	38.81			0.00	3.20	28.65	0.00	0.70	20
02040206060020 Alloway Creek									
Agricultural Retention (AR)	696.59	2.57	17.67	269.36	0.00	403.01	3.98	0.40	163
Conservation District (CD)	184.78	0.00	0.00	0.00	184.78	0.00	0.00	0.00	0
Public - Parks - Education (PPE)	35.88	33.15	2.72	0.00	0.00	0.00	0.00	0.00	0
Restricted Residential (RR)	138.09	25.98	4.92	0.00	0.00	93.31	13.84	0.40	43
Single-Family Residential (SR)	108.12	14.36	9.93	0.00	0.00	68.77	15.06	0.80	67
TOTALS	1,163.46	76.06	35.24	269.36	184.78	565.09	32.88	0.46	273
RESIDENTIAL ZONE TOTALS	21,577.85	2,073.71	570.28	4,021.41	2,512.31	12,001.62	391.98	0.48	5,955

Table 41 Continued
 Pilesgrove Township Build-out Calculation
 Existing Zoning Analysis

HUC14 and Zone	Total Area (Acres)	Developed Land Area (Acres)	Streets (Acres)	Preserved Farmland/ Open Space (Acres)	Wetlands/ Water Area (Acres)	Developable Area (Acres)	Residential lots over 5 acres	Intensity	SF
02040206030010 Salem River (East)									
Highway Commercial (HC)	133.42	25.39	6.99	0.00	0.00	101.03	0.00	15%	660,130
TOTALS	133.42	25.39	6.99	0.00	0.00	101.03	0.00	15%	660,130
02040206030020 Nichomus Run									
Highway Commercial (HC)	49.55	28.76	1.99	0.00	0.00	18.80	0.00	15%	122,839
TOTALS	49.55	28.76	1.99	0.00	0.00	18.80	0.00	15%	122,839
02040206030030 Salem River (Central)									
Highway Commercial (HC)	48.65	33.44	4.45	0.00	0.00	10.75	0.00	15%	70,241
Neighborhood Commercial (NC)	13.42	9.52	1.69	0.00	0.00	2.21	0.00	25%	24,067
TOTALS	62.07	42.96	6.14	0.00	0.00	12.96	0.00	17%	94,307
02040206030040 Salem River (Sharptown)									
Highway Commercial (HC)	192.58	92.26	3.31	0.00	0.00	96.98	0.00	15%	633,667
Neighborhood Commercial (NC)	22.12	3.62	2.41	0.00	0.00	16.09	0.00	15%	105,132
Planned Light Industrial (PLI)	359.28	0.71	2.10	0.00	0.00	356.41	0.00	20%	3,105,044
TOTALS	573.98	96.59	7.82	0.00	0.00	469.48	0.00	19%	3,843,843
02040206030060 Salem River (West)									
Planned Light Industrial (PLI)	65.56	0.00	3.26	0.00	0.00	62.29	0.00	20%	542,670
TOTALS	65.56	0.00	3.26	0.00	0.00	62.29	0.00	20%	542,670
NON-RESIDENTIAL ZONE TOTAL	884.58	193.70	26.20	0.00	0.00	664.56	0.00	18%	5,263,790

TOWNSHIP TOTALS	22,462.43	2,267.41	596.48	4,021.41	2,512.31	12,666.18	391.98	
Percent	100.0%	10.1%	2.7%	17.9%	11.2%	56.4%	1.7%	

Table 42
Pilesgrove Township
Zoning Buildout Analysis Comparison

Sub-watershed	HUC 14	Township Zoning Buildout				County Zoning Buildout		
		Existing Dwelling Dwelling Units	Future Dwelling Units	Total Dwelling Units	Future Non-Residential (SF)	Total Dwelling Units	Total Non-Residential (SF)	Total Non-Residential (SF)
Oldmans Creek (East)	02040202160020	64	451	515	0			
Oldmans Creek (Central)	02040202160030	177	1,108	1,285	0			
Oldmans Creek (West)	02040202160050	304	427	731	0			
Oldmans Creek Total		545	1,986	2,531	0	2,655	0	0
Salem River (East)	02040206030010	243	856	1,099	660,130			
Nichomus Run	02040206030020	137	886	1,023	122,839			
Salem River (Central)	02040206030030	382	981	1,363	94,307			
Salem River (Sharptown)	02040206030040	100	709	809	3,843,843			
Game Creek	02040206030050	55	177	232	0			
Salem River (West)	02040206030060	3	66	69	542,670			
Salem River Total		920	3,675	4,595	5,263,789	5,796	1,177,674	
Mannington Creek	02040206040010	1	20	21	0			
Mannington Creek Total		1	20	21	0	23	0	
Alloway Creek	02040206060020	47	273	320	0			
Alloway Creek Total		47	273	320	0	466	0	
Pilesgrove Township Total		1,513	5,954	7,467	5,263,789	8,940	1,177,674	

*Includes Bailey Corner & Friends Home

4.6.2 Nitrate Dilution Build-out Analysis

Pilesgrove Township adopted the New Jersey Geological Survey nitrate dilution model for the assessment of major subdivisions several years ago. The existing Land Development Ordinance specifically states that land developers must demonstrate that the nitrate generated by the proposed Individual Subsurface sewage disposal systems (ISSDSs) will be adequately diluted to achieve a nitrate standard of 5.2 mg/l. The ordinance specifies that the analysis be based on the proposed size of single-family dwellings (bedrooms).

The NJDEP water quality management regulations were amended in 2009 to achieve a target of 2.0 mg/l. This level has been represented to be an ambient nitrate quality in ground water for the whole state. The State also proposes that the nitrate modeling be based on an average loading of 30 lbs. per dwelling assuming 3 persons per residence and 10 lbs. per person. However, the NJDEP regulations specify that the 2.0 mg/l target be achieved on a gross watershed basis, taking into account dilution from preserved or publicly owned lands.

4.6.2.1 NJDEP/Salem County Analysis

Table 43 summarizes the preliminary nitrate dilution buildout analysis recently issued by the Salem County Planning Department based on HUC 11 density figures calculated by the NJDEP.

**Table 43
Pilesgrove Township
Preliminary Septic Buildout: Salem County**

Watershed	Zoning	Acres	Units
Oldmans Creek	AR-1; AR-2	1,049.7	148
	RR	838.0	118
	SR	1,597.9	225
	JCOAH	78.4	11
Subtotal		3,563.9	502
Salem River	AR-1; AR-2	8,180.8	1,136
	RR	2,316.6	322
	SR	363.5	50
	JCOAH	73.7	10
Subtotal		10,934.6	1,519
Mannington Creek	RR	7.0	1
	SR	19.5	2
Subtotal		26.5	3
Alloway Creek	AR-1; AR-2	673.9	92
	RR	97.8	13
	SR	74.1	10
Subtotal		845.9	116
Residential Total		15,370.9	2,140

This analysis indicates a total build out of 2,140 dwelling units or an average of one (1) dwelling unit using an ISSDS per 7.2 acres. It should be noted that the County build out analysis included the PPE zone which is public land that is not available for development. Under this analysis, the total development potential for the Township in the unsewered area would only be 900 dwelling units once existing dwelling units on septic systems are deducted.

The County has projected a zoning build out of 8,940 units and a nitrate dilution build out of 2,140 units for a differential of 6,800 units between the zoning and NJDEP nitrate dilution build out analyses.

4.6.2.2 Current Township Ordinance Analysis

Table 44 is a build-out analysis based on nitrate dilution modeling for each HUC 14 watershed. The analysis computes the area required to dilute the nitrate concentration in the effluent from individual septic systems to the 5.2 mg/l and 2.0 mg/l targets. The analysis uses the NJGS model for each soil type within the HUC 14 subwatershed to determine the area required to dilute the nitrate to the specified standard.

The initial case shown in *Table 44* computed the number of equivalent dwelling units (EDUs) that could be developed in the Township using ISSDSs based on a target limit of 5.2 mg/l. This analysis resulted in the determination that the soils in the Township are capable of supporting about 9,005 EDUs. The Township currently has about 1,438 dwelling units of which 1,322 units use individual systems. If these systems were deducted, the Township would have the ability to develop an additional 7,677 EDUs. If 700 EDUs were deducted for commercial and industrial uses, the Township would have the ability to construct almost an additional 7,000 units, which would support an additional 20,375 persons.

When the total number of dwelling residential units is divided by the total Township land area, the overall density is 1 unit per 2.5 acres or 0.4 units per total acre. Therefore, the 5.2 mg/l target is only slightly more restrictive than current zoning regulations from a build-out perspective even though it can be moderately limiting on a project-specific basis depending on soil conditions.

4.6.2.3 NJDEP Target: Township Analysis

The other case analyzed in *Table 44* computed the number of equivalent dwelling units (EDUs) that could be developed in the Township using ISSDSs based on a target limit of 2.0 mg/l. This analysis results in the determination that the soils in the Township are capable of supporting 3,682 EDUs or an additional 2,346 EDUs. If 700 EDUs were deducted for commercial and industrial uses, the Township would have the ability to construct an additional 1,646 dwelling units that rely on ISSDS, which could support an additional 4,790 persons. When the total number of residential units under this scenario is divided by the total land area, the overall density is 1 unit per 6.1 acres of land or 0.16 units per total acre.

4.6.3 Summary of Nitrate Dilution Analysis

Table 45 compares the three (3) nitrate dilution build out analyses by subwatershed. The differences in the build-out from the three cases are substantial.

The base case is that of the current Township nitrate dilution model which provides for a build out that is comparable to current residential district zoning even though it may be moderately restrictive on a project-specific basis. The zoning buildout provided for 5,954 dwelling units in residential districts. The ND analysis provides for a total of 7,683 EDUs which includes non-residential development.

Table 45 illustrates that the use of the same methodology based on the NJDEP nitrate dilution target of 2.0 mg/l provides for substantially less future dwelling units than is permitted by current zoning. Using this target, the Township analysis computes a total buildout of 2,359 additional EDUs or 5,324 units less than the current Township ordinance requirement or almost a 70% reduction from the build out under the current Township Ordinance.

Table 45 further indicates that the County/NJDEP analysis with the same target only provides for 900 future EDUs. The basis of this difference is unclear but appears to be related to the specificity of the NJDEP analysis in which gross density figures are used for the entire watershed without clear substantiation.

4.6.3.1 Watershed Breakdown

Table 45 indicates the breakdown of the future residential units by subwatershed and indicates the differences by specific watershed. The Township Ordinance nitrate dilution analysis projects about 800 dwelling units less than the current zoning in the Oldmans Creek watershed but almost 1,000 more dwelling units than the zoning permits in the Salem River watershed. The difference shown for the Salem River watershed is reduced when the EDUs for commercial and industrial development are deducted.

The breakdown of the future residential units by subwatershed for the Township analysis indicates that no additional units can be accommodated in the Oldmans Creek west subwatershed and relatively minor growth in the remainder of the Oldmans Creek watershed. The additional units in the Salem River watershed tend to be evenly distributed since pre-existing growth is relatively low in this watershed. ;

The County/NJDEP analysis provides for a total of 501 total dwelling units in the Oldmans Creek watershed which is less than the existing land development in this watershed. In other words, the County analysis appears to indicate that the existing land development exceeds the assimilative capabilities of the watershed and does not provide for any residential growth in this watershed.

The Township analysis using the NJDEP target provides for 1,831 EDUs in the Salem River watershed compared to 868 EDUs for this watershed in the preliminary County analysis which is a substantive difference. The basis of these variances requires further attention.

4.6.3.2 Water Quality Management Planning Regulations

The NJDEP Water Quality Management Planning Regulations (N.J.A.C. 7:15 et. seq.) indicate the potential importance of these build out analysis. N.J.A.C. 7:15-5.25(e)(2)iv states that if the wastewater management planning entity determines that the number of additional equivalent dwelling units calculated based on existing zoning regulations exceeds the allowable number of additional equivalent dwelling units based on the attainment of 2.0 mg/l using the nitrate dilution model *“then the plan shall include an adjustment to the zoning in order to achieve consistency between zoning and the allowable number of equivalent dwelling units at buildout in the undeveloped and underdeveloped areas”*.

The regulations further state that *“the allowable number of additional equivalent dwelling units may be distributed within the HUC 11 at the discretion of the municipality provided that the total number of additional equivalent dwelling units in the HUC 11 does not exceed the allowable number”*.

Notwithstanding that the NJDEP regulations indicate that the County shall require that the local zoning to be modified to match the nitrate dilution analysis, the Salem County Planning Director has indicated that this provision will not be advocated by the County nor enforced by the NJDEP.

In the event that the nitrate dilution provision is to be implemented and enforced as stipulated in the current NJDEP regulations, it is recommended that the Township build out analysis be further refined and reconciled with the build out analysis issued by the County. Once the total number of EDUs is established for each watershed, the Township should establish a equitable means of allocating these EDUs to land developments which may or may not replicate zoning.

It should be emphasized that the Township’s current nitrate dilution model is actually between these two build-out cases since the analysis is conducted on a project site basis and does not factor in the dilution that takes place on lands that will be preserved.

4.6.4 Proposed Policies

It is recommended that the nitrate dilution modeling issue and regulations be implemented in the following manner:

- Salem County should establish a consistent policy that equitably distributes the EDUs determined based on the capabilities of the soils of each watershed rather than reliance on overall density figures issued by the NJDEP as shown in *Table 43*.
- The NJDEP target limit of 2.0 mg/l should be applied on a subwatershed basis to establish a build-out that is related to the soil conditions in that subwatershed and to enable an equitable distribution of the build-out by municipality using an analysis similar to that presented in *Table 43*. The use of a watershed based analysis without a clear relationship to soil conditions is contrary to the intent of the NJDEP regulations. The preliminary analysis in *Table 43* indicates that the Township soils can support a maximum of 2,359 additional equivalent dwelling units using ISSDS under build out conditions while attaining the 2.0 mg/l target.
- Once the maximum development rights for each subwatershed are determined, the most effective means of equitably distributing these units should be determined by the Township. Development rights that exceed the equitable distribution of the fixed number of rights by subwatershed could only be utilized if the units use advanced treatment methods involving denitrification or under a transfer mechanism to a sewer area under a development rights transfer or clustering arrangement.
- The 5.2 mg/l target limit should continue to be applied on a project specific basis. Developers should be required to satisfy the model for a determination of their development rights. If the site-specific development rights were exceeded, the developer would need to provide advanced treatment units with de-nitrification in order to satisfy the project-specific model.
- The Township supports a process that would enable the use of alternative treatment units (ATUs) without reliance on NJDEP permitting. The process may involve an agreement between the NJDEP and the Salem County Health Department to enable the permitting of these facilities based on defined unit parameters.
- Differences between the NJDEP 50+ Certification nitrate dilution model and the Township model need to be reconciled on a technical basis.

The trend projection in *Table 19* indicates the projected need for 760 EDUs for residential purposes thru 2030. It appears that the trend projection can be accommodated in the Township but that there would be limitations within specific watersheds that would need to be overcome with alternative treatment units. If this approach is not feasible, the Township could consider zoning changes that maximize the availability of EDUs in the Township. However, zoning based solely on nitrate dilution may not be in the interests of the Township.

Table 24 indicates that the use of ISSDS would be reduced to 432 new units under the transfer/cluster alternative, which would effectively eliminate the need for alternative treatment units. In other words, the need for a means of overcoming the watershed nitrate dilution limitations with alternative treatment units would be reduced under the Town Center Extension option that is being pursued by the Township. Therefore, the Township supports a process that enables landowners and developers to transfer development rights to sewer areas using a development rights transfer mechanism provided that infrastructure can be extended to areas capable of receiving the units.

Table 44
Pilesgrove Township Build-out Calculations
Nitrate Dilution Analysis

HUC14 and Zone	Total Area (Acres)	Area required to dilute nitrate to 5.2 mg/l	Equivalent Dwelling Units	Area required to dilute nitrate to 2.0 mg/l	Equivalent Dwelling Units
02040202160050 Oldmans Creek (West)					
Chicone Silt Loam (ChsAt)	54.7	0.0	0	0.0	0
Downer loamy sand (DocB)	10.9	1.8	6	4.4	2
Downer loamy sand (DocC)	17.3	1.8	10	4.4	4
Downer-Galestown complex (DopB)	23.3	1.8	13	4.4	5
Fort Mott loamy sand (FodB)	144.0	1.7	85	4.1	35
Galestown Sand (GabB)	84.6	1.7	50	4.1	21
Manahawkin Muck (MakAt)	59.2	0.0	0	0.0	0
Marlton Silt loam (MasB)	100.6	2.1	48	5.1	20
Marlton Silt loam (MasC)	73.8	2.1	35	5.1	14
Muttontown sandy loam (MutA)	2.0	2.2	1	5.4	0
Othello & Fallsington soils (OTKA)	5.2	0.0	0	0.0	0
Sharptown Silt Loam (ShnB)	67.8	2.3	29	5.6	12
Swedesboro loamy sand (SwtB)	538.8	1.9	284	4.6	117
Swedesboro loamy sand (SwtC)	114.7	1.9	60	4.6	25
Urban Land (UR)	16.1	0.0	0	0.0	0
Water (WATER)	23.2	0.0	0	0.0	0
TOTALS	1,336.0		620		256
02040202160030 Oldmans Creek (Central)					
Alloway Sandy loam (AhmB)	8.4	2.1	4	5.2	2
Alloway loam (AhpB)	31.2	2.1	15	5.2	6
Alloway loam (AhpC)	125.2	2.1	60	5.2	24
Aura gr. Sandy loam (AuhB)	31.7	1.8	18	4.5	7
Chicone Silt Loam (ChsAt)	206.3	0.0	0	0.0	0
Chillum silt loam (ChtB)	145.0	1.8	81	4.5	32
Downer loamy sand (DocB)	26.0	1.8	14	4.4	6
Downer loamy sand (DocC)	14.1	1.8	8	4.4	3
Downer sandy loam (DoeB)	39.5	1.8	22	4.4	9
Downer-Galestown complex (DopB)	116.8	1.8	65	4.4	27
Evesboro Sand (EveC)	7.7	1.7	5	4.1	2
Fort Mott loamy sand (FodB)	194.5	1.7	114	4.1	47
Galestown Sand (GabB)	188.9	1.7	111	4.1	46
Galloway loamy sand (GamB)	20.3	1.8	11	4.4	5
Manahawkin Muck (MakAt)	6.9	0.0	0	0.0	0
Marlton Silt loam (MasB)	99.3	2.1	47	5.1	19
Marlton Silt loam (MasC)	63.4	2.1	30	5.1	12
Matapeake Silt loam (MbrC)	11.3	1.9	6	4.7	2
Mattapex Silt loam (MbuA)	17.8	2.3	8	5.6	3
Mattapex Silt loam (MbuB)	16.2	2.3	7	5.6	3
Muttontown sandy loam (MutA)	215.0	2.2	98	5.4	40
Othello & Fallsington soils (OTKA)	214.6	0.0	0	0.0	0
Pedricktown/Askecksey/Mullica Soils (PEEAR)	20.7	0.0	0	0.0	0
Sassafras sandy loam (SacB)	258.3	1.9	136	4.6	56
Sassafras sandy loam (SacC)	75.1	1.9	40	4.6	16
Sharptown Silt Loam (ShnB)	113.2	2.3	49	5.6	20
Swedesboro loamy sand (SwtB)	163.3	1.9	86	4.6	35
Swedesboro loamy sand (SwtC)	72.6	1.9	38	4.6	16
Water (WATER)	2.1	0.0	0	0.0	0
Woodstown sandy loam (WoeA)	71.5	2.2	32	5.4	13
TOTALS	2,576.8		1,104		453

Table 44 Continued
Pilesgrove Township Build-out Calculations
Nitrate Dilution Analysis

HUC14 and Zone	Total Area (Acres)	Area required to dilute nitrate to 5.2 mg/l	Equivalent Dwelling Units	Area required to dilute nitrate to 2.0 mg/l	Equivalent Dwelling Units
02040206030050 Game Creek					
Downer-Galestown complex (DopB)	28.1	1.8	16	4.4	6
Fort Mott loamy sand (FodB)	482.9	1.7	284	4.1	118
Hammonton loamy sand (HbmB)	40.4	2.2	18	5.4	7
Manahawkin Muck (MakAt)	50.1	0.0	0	0.0	0
Marlton Silt loam (MasB)	38.6	2.1	18	5.1	8
Muttontown sandy loam (MutA)	18.6	2.2	8	5.4	3
Pedricktown/Askecksey/Mullica Soils (PEEAR)	46.9	0.0	0	0.0	0
Sharptown Silt Loam (ShnB)	9.0	2.3	4	5.6	2
Swedesboro loamy sand (SwtB)	372.7	1.9	196	4.6	81
Swedesboro loamy sand (SwtC)	94.9	1.9	50	4.6	21
Urban Land (UR)	0.1	0.0	0	0.0	0
Water (WATER)	8.6	0.0	0	0.0	0
TOTALS	1,190.8		595		246
02040202160020 Oldmans Creek (East)					
Alloway Sandy loam (AhmB)	79.6	2.1	38	5.2	15
Alloway loam (AhpB)	83.4	2.1	40	5.2	16
Alloway loam (AhpC)	27.7	2.1	13	5.2	5
Alloway silt loam (AhrB)	11.8	2.1	6	5.2	2
Aura loamy sand (AucB)	43.8	1.8	24	4.5	10
Aura sandy loam (AugC)	35.3	1.8	20	4.5	8
Aura gr. Sandy loam (AuhB)	23.6	1.8	13	4.5	5
Chicone Silt Loam (ChsAt)	75.1	0.0	0	0.0	0
Chillum silt loam (ChtB)	51.2	1.8	28	4.5	11
Downer loamy sand (DocB)	5.6	1.8	3	4.4	1
Downer-Galestown complex (DopB)	95.8	1.8	53	4.4	22
Evesboro Sand (EveC)	20.8	1.7	12	4.1	5
Fort Mott loamy sand (FodB)	187.5	1.7	110	4.1	46
Galestown Sand (GabB)	7.7	1.7	5	4.1	2
Galloway loamy sand (GamB)	3.5	1.8	2	4.4	1
Hammonton loamy sand (HbmB)	5.4	2.2	2	5.4	1
Keyport loam (KeoC)	22.6	2.1	11	5.2	4
Matapeake Silt loam (MbrC)	7.3	1.9	4	4.7	2
Mattapex Silt loam (MbuA)	7.4	2.3	3	5.6	1
Mattapex Silt loam (MbuB)	12.8	2.3	6	5.6	2
Othello & Fallsington soils (OTKA)	167.9	0.0	0	0.0	0
Othello/Fallsington/Trussum Soils (OTMA)	19.3	0.0	0	0.0	0
Pedricktown/Askecksey/Mullica Soils (PEEAR)	14.2	0.0	0	0.0	0
Sassafras sandy loam (SacB)	120.5	1.9	63	4.6	26
Sassafras sandy loam (SacC)	12.1	1.9	6	4.6	3
Sharptown Silt Loam (ShnB)	5.6	2.3	2	5.6	1
Swedesboro loamy sand (SwtC)	8.3	1.9	4	4.6	2
Water (WATER)	4.3	0.0	0	0.0	0
Woodstown sandy loam (WoeA)	151.6	2.2	69	5.4	28
TOTALS	1,311.7		539		220
02040206030060 Salem River (West)					
Downer-Galestown complex (DopB)	176.6	1.8	98	4.4	40
Fort Mott loamy sand (FodB)	47.9	1.7	28	4.1	12
Hammonton loamy sand (HbmB)	69.3	2.2	31	5.4	13
Othello/Fallsington/Trussum Soils (OTMA)	12.1	0.0	0	0.0	0
Pedricktown/Askecksey/Mullica Soils (PEEAR)	0.6	0.0	0	0.0	0
Water (WATER)	1.7	0.0	0	0.0	0
TOTALS	308.2		158		65

Table 44 Continued
Piles Grove Township Build-out Calculations
Nitrate Dilution Analysis

HUC14 and Zone	Total Area (Acres)	Area required to dilute nitrate to 5.2 mg/l	Equivalent Dwelling Units	Area required to dilute nitrate to 2.0 mg/l	Equivalent Dwelling Units
02040206030040 Salem River (Sharptown)					
Alloway loam (AhpB)	172.1	2.1	82	5.2	33
Alloway silt loam (AhrA)	185.4	2.1	88	5.2	36
Alloway silt loam (AhrB)	19.6	2.1	9	5.2	4
Chicone Silt Loam (ChsAt)	168.8	0.0	0	0.0	0
Downer loamy sand (DocB)	21.9	1.8	12	4.4	5
Downer-Galestown complex (DopB)	770.8	1.8	428	4.4	175
Fort Mott loamy sand (FodB)	79.1	1.7	47	4.1	19
Hammonton loamy sand (HbmB)	105.9	2.2	48	5.4	20
Hammonton sandy loam (HboA)	3.4	2.2	2	5.4	1
Hammonton-Urban complex (HbrB)	35.3	2.2	16	5.4	7
Marlton Silt loam (MasB)	35.9	2.1	17	5.1	7
Marlton Silt loam (MasC)	137.0	2.1	65	5.1	27
Matapeake Silt loam (MbrC)	40.6	1.9	21	4.7	9
Othello/Fallsington/Trussum Soils (OTMA)	25.8	0.0	0	0.0	0
Pedricktown/Askecksey/Mullica Soils (PEEAR)	185.4	0.0	0	0.0	0
Sharptown Silt Loam (ShnA)	53.0	2.3	23	5.6	9
Sharptown Silt Loam (ShnB)	1,004.9	2.3	437	5.6	179
Swedesboro loamy sand (SwtB)	56.9	1.9	30	4.6	12
Swedesboro loamy sand (SwtC)	18.1	1.9	10	4.6	4
Urban Land (UR)	56.6	0.0	0	0.0	0
Water (WATER)	33.2	0.0	0	0.0	0
TOTALS	3,209.5		1,335		546
02040206030030 Salem River (Central)					
Alloway loam (AhpB)	24.4	2.1	12	5.2	5
Alloway loam (AhpC)	55.0	2.1	26	5.2	11
Alloway silt loam (AhrA)	78.5	2.1	37	5.2	15
Alloway silt loam (AhrB)	149.2	2.1	71	5.2	29
Aura loam (AupB)	13.3	1.8	7	4.5	3
Chicone Silt Loam (ChsAt)	288.4	0.0	0	0.0	0
Chillum silt loam (ChtB)	42.9	1.8	24	4.5	10
Galestown Sand (GabB)	76.7	1.7	45	4.1	19
Marlton Silt loam (MasB)	29.6	2.1	14	5.1	6
Marlton Silt loam (MasC)	398.2	2.1	190	5.1	78
Matapeake Silt loam (MbrA)	10.8	1.9	6	4.7	2
Mattapex Silt loam (MbuB)	18.0	2.3	8	5.6	3
Muttontown sandy loam (MutA)	25.4	2.2	12	5.4	5
Othello & Fallsington soils (OTKA)	450.1	0.0	0	0.0	0
Sassafras sandy loam (SacB)	155.0	1.9	82	4.6	34
Sassafras sandy loam (SacC)	40.3	1.9	21	4.6	9
Sharptown Silt Loam (ShnA)	472.7	2.3	206	5.6	84
Sharptown Silt Loam (ShnB)	1,133.6	2.3	493	5.6	202
Swedesboro loamy sand (SwtB)	323.7	1.9	170	4.6	70
Swedesboro loamy sand (SwtC)	265.3	1.9	140	4.6	58
Water (WATER)	3.6	0.0	0	0.0	0
Woodstown sandy loam (WoeA)	117.0	2.2	53	5.4	22
TOTALS	4,171.3		1,616		663

Table 44 Continued
Pilesgrove Township Build-out Calculations
Nitrate Dilution Analysis

HUC14 and Zone	Total Area (Acres)	Area required to dilute nitrate to 5.2 mg/l	Equivalent Dwelling Units	Area required to dilute nitrate to 2.0 mg/l	Equivalent Dwelling Units
02040206030020 Nichomus Run					
Alloway sandy loam (AhmB)	29.8	2.1	14	5.2	6
Alloway loam (AhpB)	762.0	2.1	363	5.2	147
Alloway loam (AhpC)	39.5	2.1	19	5.2	8
Alloway silt loam (AhrA)	130.4	2.1	62	5.2	25
Alloway silt loam (AhrB)	267.2	2.1	127	5.2	51
Aura sandy loam (AugC)	21.8	1.8	12	4.5	5
Aura loam (AupB)	27.1	1.8	15	4.5	6
Chicone Silt Loam (ChsAt)	206.5	0.0	0	0.0	0
Chillum silt loam (ChtB)	159.6	1.8	89	4.5	35
Downer loamy sand (DocC)	0.3	1.8	0	4.4	0
Evesboro Sand (EveC)	11.4	1.7	7	4.1	3
Galestown Sand (GabB)	126.7	1.7	75	4.1	31
Manahawkin Muck (MakAt)	27.0	0.0	0	0.0	0
Marlton Silt loam (MasC)	14.4	2.1	7	5.1	3
Matapeake Silt loam (MbrB)	4.8	1.9	3	4.7	1
Matapeake Silt loam (MbrC)	0.5	1.9	0	4.7	0
Mattapex Silt loam (MbuA)	2.8	2.3	1	5.6	0
Mattapex Silt loam (MbuB)	35.5	2.3	15	5.6	6
Othello/Fallsington/Trussum Soils (OTMA)	526.3	0.0	0	0.0	0
Pits,sand,gravel (PHG)	4.7	1.6	3	3.9	1
Sassafras sandy loam (SacB)	109.1	1.9	57	4.6	24
Sassafras sandy loam (SacC)	3.9	1.9	2	4.6	1
Sharptown Silt Loam (ShnA)	199.0	2.3	87	5.6	36
Sharptown Silt Loam (ShnB)	216.9	2.3	94	5.6	39
Woodstown sandy loam (WoeA)	10.2	2.2	5	5.4	2
TOTALS	2,937.5		1,057		429
02040206030010 Salem River (East)					
Adelphia sandy loam (AdkB)	6.0	2.1	3	5.2	1
Alloway sandy loam (AhmB)	11.0	2.1	5	5.2	2
Alloway loam (AhpB)	335.2	2.1	160	5.2	64
Alloway loam (AhpC)	33.9	2.1	16	5.2	7
Alloway silt loam (AhrA)	0.1	2.1	0	5.2	0
Alloway silt loam (AhrB)	311.2	2.1	148	5.2	60
Aura sandy loam (AugB)	50.8	1.8	28	4.5	11
Aura sandy loam (AugC)	47.2	1.8	26	4.5	10
Aura loam (AupB)	88.6	1.8	49	4.5	20
Chicone Silt Loam (ChsAt)	336.4	0.0	0	0.0	0
Chillum silt loam (ChtA)	1.2	1.8	1	4.5	0
Chillum silt loam (ChtB)	846.4	1.8	470	4.5	188
Evesboro Sand (EveC)	12.6	1.7	7	4.1	3
Galestown Sand (GabB)	52.3	1.7	31	4.1	13
Hammonton sandy loam (HboA)	12.6	2.2	6	5.4	2
Manahawkin Muck (MakAt)	2.2	0.0	0	0.0	0
Matapeake Silt loam (MbrB)	10.9	1.9	6	4.7	2
Matapeake Silt loam (MbrC)	229.9	1.9	121	4.7	49
Mattapex Silt loam (MbuA)	81.6	2.3	35	5.6	15
Mattapex Silt loam (MbuB)	313.6	2.3	136	5.6	56
Mattapex-Urban land complex (MbxB)	0.5	2.3	0	5.6	0
Muttontown sandy loam (MutA)	22.7	2.2	10	5.4	4
Othello & Fallsington soils (OTKA)	677.9	0.0	0	0.0	0
Othello/Fallsington/Trussum Soils (OTMA)	109.1	0.0	0	0.0	0
Pedricktown/Askecksey/Mullica Soils (PEEAR)	31.6	0.0	0	0.0	0
Sassafras sandy loam (SacB)	190.4	1.9	100	4.6	41
Sassafras sandy loam (SacC)	154.3	1.9	81	4.6	34
Water (WATER)	54.1	0.0	0	0.0	0
Woodstown sandy loam (WoeA)	148.4	2.2	67	5.4	27
TOTALS	4,172.5		1,508		611

Table 44 Continued
Pilesgrove Township Build-out Calculations
Nitrate Dilution Analysis

HUC14 and Zone	Total Area (Acres)	Area required to dilute nitrate to 5.2 mg/l	Equivalent Dwelling Units	Area required to dilute nitrate to 2.0 mg/l	Equivalent Dwelling Units
02040206040010 Mannington Creek					
Alloway sandy loam (AhmB)	4.7	2.1	2	5.2	1
Chillum silt loam (ChtB)	9.9	1.8	5	4.5	2
Downer loamy sand (DocC)	11.6	1.8	6	4.4	3
Othello/Fallsington/Trussum Soils (OTMA)	8.2	0.0	0	0.0	0
Woodstown sandy loam (WoeA)	2.0	2.2	1	5.4	0
TOTALS	36.3		15		6
02040206060020 Alloway Creek					
Alloway loam (AhpB)	14.6	2.1	7	5.2	3
Alloway loam (AhpC)	13.5	2.1	6	5.2	3
Aura sandy loam (AugB)	0.7	1.8	0	4.5	0
Chicone Silt Loam (ChsAt)	11.6	0.0	0	0.0	0
Chillum silt loam (ChtA)	315.4	1.8	175	4.5	70
Downer loamy sand (DocC)	10.4	1.8	6	4.4	2
Galestown Sand (GabB)	96.4	1.7	57	4.1	24
Matapeake Silt loam (MbrC)	12.3	1.9	6	4.7	3
Mattapex Silt loam (MbuA)	7.5	2.3	3	5.6	1
Mattapex Silt loam (MbuB)	65.7	2.3	29	5.6	12
Muttontown sandy loam (MutA)	55.8	2.2	25	5.4	10
Othello/Fallsington/Trussum Soils (OTMA)	204.0	0.0	0	0.0	0.0
Pedricktown/Askecksey/Mullica Soils (PEEAR)	56.9	0.0	0	0.0	0.0
Sassafras sandy loam (SacB)	103.9	1.9	55	4.6	23
Sassafras sandy loam (SacC)	53.3	1.9	28	4.6	12
Water (WATER)	8.7	0.0	0	0.0	0.0
Woodstown sandy loam (WoeA)	133.4	2.2	61	5.4	25
TOTALS	1163.7		458		186
TOWNSHIP TOTALS					
	22,414.2		9,005		3,682
Acres/Unit			2.5		6.1

Table 44

Pilesgrove Township

Nitrate Dilution Buildout Analysis-Unsewered Area

Sub-watershed	HUC 14	Township ND Ordinance Buildout (5.2mg/l)			NJDEP ND Target Buildout (2.0 mg/l)			County Nitrate Dilution Buildout (2.0 mg/l)				
		Total Units	Existing Units	Future Units	Total Units	Existing Units	Future Units	Total Units	Existing Units	Future Units	Non-Res. (SF)	
Oldmans Creek (East)	02040202160020	539	64	475	220	64	156					
Oldmans Creek (Central)	02040202160030	1,104	177	927	453	177	276					
Oldmans Creek (West)	02040202160050	620	304	316	256	304	-48					
Oldmans Creek Total		2,263	545	1,718	929	545	384	501	545	-44	0	
Salem River (East)	02040206030010	1,508	176	1,332	611	176	435					
Nichomus Run	02040206030020	1,057	137	920	429	137	292					
Salem River (Central)	02040206030030	1,616	258	1,358	663	258	405					
Salem River (Sharptown)	02040206030040	1,335	100	1,235	546	100	446					
Game Creek	02040206030050	595	55	540	246	55	191					
Salem River (West)	02040206030060	158	3	155	65	3	62					
Salem River Total		6,269	729	5,540	2,560	729	1,831	1,597	729	868	100,132	
Mannington Creek	02040206040010	15	1	14	6	1	5					
Mannington Creek Total		15	1	14	6	1	5	4	1	3	0	
Alloway Creek	02040206060020	458	47	411	186	47	139					
Alloway Creek Total		458	47	411	186	47	139	120	47	73	0	
Pilesgrove Township Total		9,005	1,322	7,683	3,681	1,322	2,359	2,222	1,322	900	100,132	

4.7 RIPARIAN CORRIDOR ANALYSIS

The “riparian zone” has been defined by the NJDEP as “*the land and vegetation within and directly adjacent to all surface waters including, but not limited to, lakes, ponds, reservoirs, perennial and intermittent streams, up to and including their point of origin*”. Numerous studies have demonstrated the value of vegetated buffers along stream corridors to surface water quality including but not limited to stabilizing the soil along the stream, reducing nutrients and pollutants in stormwater runoff, moderating storm flow discharge rates, providing cover to moderate stream temperatures, providing cover and habitat for aquatic and terrestrial organisms, and promoting groundwater recharge.

Because the value of riparian corridors has been clearly documented in scientific studies, storm water management and wastewater management regulations in New Jersey require that stream corridors be protected. The method of protecting or enhancing these natural resources has typically been in the form of state and local regulations that protect a designated riparian zone width.

The objective of the riparian corridor analysis is no loss of value due to short-term or long-term disturbance of stream corridors. This objective can be achieved by ensuring that there is no disturbance along stream corridors or to demonstrate that any disturbance is designed to avoid, minimize, or mitigate any impairment of the functions of the stream corridor.

4.7.1 Stream Corridor Protection

Pilesgrove Township intends to review its current ordinances and to adopt a stream corridor protection ordinance that conforms to the NJDEP Water Quality Management Planning Regulations. In particular, the ordinance will define the riparian zone to be as follows:

- 300 feet along both sides of Category one waters and all upstream tributaries,
- 150 feet along any trout production or trout maintenance waters and upstream tributaries;
- 150 feet along stream segments with documented habitat for water dependent threatened or endangered species and upstream tributaries;
- 50 feet along all other permanent surface waters not included in the above categories;

Map 5-7: Environmental Features Map shows the 50 feet minimum stream corridor protection zone along all permanent streams and the 300-foot stream protection zone along the existing and proposed Category One waters.

In accordance with the NJDEP regulations, Pilesgrove Township intends to adopt a stream corridor protection ordinance that prevents new disturbance for projects or activities within the designated zones except for 1) redevelopment activities within the limits of existing impervious surfaces and 2) new disturbances that are necessary to protect public, health safety or welfare; to provide an environmental benefit; and to prevent extraordinary hardship of the property owner provided that the hardship was not created by the property owner.

The ordinance shall require that any encroachment within the riparian zone protect the stream functions including, but not limited to, the filtering of stormwater runoff, nutrient uptake, groundwater recharge, forest canopy, vegetative litter, wildlife habitat, bank stabilization, and flood protection.

4.7.2 Steep Slope Regulation

The NJDEP has also proposed that steep slopes be regulated in Wastewater Management Plans. The proposed regulations state the issue as follows:

It has become widely recognized that disturbance of steep slopes should be restricted or prevented based on the impact disturbance of steep slopes can have on water quality and quantity and the environmental integrity of landscapes.

Although Pilesgrove Township is primarily gently sloping, there are areas along stream corridors that warrant protection. In this regard, it is recommended that the Township review its ordinances and adopt additional regulations that will prohibit the disturbance of steep slopes defined as those in excess of ten percent with limited exceptions. The specific exceptions would be similar to those established for riparian zone disturbance and would include the following:

- Redevelopment activities within the limits of prior development or disturbances in the steep slope zone;
- Development that is necessary to protect public, health safety or welfare;
- Development that will provide an environmental benefit; and
- Development to prevent extraordinary hardship of the property owner provided that the hardship was not created by the property owner.

Slopes in excess of ten percent are specifically excluded from the Future Sewer Service Area. If any such steep slope areas are included within the Future Sewer Service Area, these areas shall not be eligible for service unless they satisfy one of the above-cited exceptions.

4.8 ENDANGERED/THREATENED SPECIES ANALYSIS

The Future Sewer Service Areas in the Township Planning Area will need to conform to the NJDEP endangered and threatened species analysis program objectives. The Future SSA for the Woodstown Town Center extension and for the PLI zoning district will not include any lands ranked as 3, 4, or 5 based on the current version of the Landscape Project or will need to conduct a habitat suitability analysis to refute the Landscape Project.

4.8.1 Sharptown Village Center

The Township is proposing that the Sharptown Village Center be designated by the Office of Smart Growth. The village center will consist of the existing crossroads settlement including the former Richmans' ice cream plant. Sharptown is located at the confluence of several important tributaries as well as priority critical habitats. All of the four Natural Heritage Priority Sites are located in the Sharptown area. The intent of the proposed village center is to establish a limited and defined village and not to make the area part of a continuing growth corridor. Infill land development will be encouraged within the crossroads settlement provided that it does not impact the defined critical habitats.

The Township previously conducted a site-specific habitat analysis for the Kings Road LLC project site, which concluded that the site contained an extensive population of Greek Valerian, a critically imperiled plant, and a Cooper's Hawk nest. While the Salem River corridor was determined to have extensive biodiversity, it was determined that bog turtles were not present. Grasshopper sparrows were also evident in the upland farm fields.

Based on the foregoing conclusions, the Kings Road LLC project was modified to protect the critical habitats. In particular, the project was reconfigured to provide extensive buffers along the Salem River floodplain; to provide a buffer around the presumed location of a Cooper's Hawk nest; to provide for the removal of the Richman's treatment plant and the restoration of that site; and to provide for extensive open space, a portion of which could be set aside for passive open space for grassland birds and other species. Any land development on this Site would need to adhere to these principles.

4.8.2 Town Center Extension

Map 3 indicates potential future Sewer Service Areas based on the Town Center Extension concept adjacent to Woodstown. The portions of the potential Sewer Service Areas that will require habitat suitability evaluations are shaded. However, the Township believes that the rankings shown on the Landscape Project mapping need to be re-affirmed since much of the area shown as being critical habitat for grasslands birds does not conform to the life-cycle habitat suitability criteria for the species of concern.

4.8.3 Proposed WMP Policy

It is recommended that site specific habitat analyses be required for any future land development projects that are located within areas ranked as 3, 4, or 5 based on an affirmed version of the Landscape Project. The Township is concerned that the rankings under the Landscape Project are too inclusive for grassland birds. Tilled land or cropland generally involves more disturbance than is suitable for these species.

However, the Township believes that where critical habitats for threatened or endangered species are confirmed on the Landscape Project, site specific habitat suitability analyses should be undertaken regardless of whether the land development project is within or outside of the Future Sewer Service Areas. The site specific analysis would need to determine whether the species of concern are present and, if so, demonstrate that the project can be constructed without adversely impacting the defined critical habitats.

4.9 INDIVIDUAL SUBSURFACE SEWAGE DISPOSAL SYSTEMS

As noted previously, the residents and businesses in Pilesgrove Township are primary dependent on Individual Subsurface Sewage Disposal Systems (“ISSDS”) for wastewater disposal. It is estimated that 93% of Township residents currently have some type of ISSDS on their property. Septic systems are a suitable method of wastewater treatment when they are properly designed, constructed, and operated. All ISSDSs must be designed by a professional engineer and permitted by the County Health Department. The Health Department also issues a Certificate of Compliance when the system is completed to confirm that the system was properly constructed.

The primary regulatory concerns with ISSDSs is that some systems pre-date the individual subsurface disposal system regulations and that many systems are not being properly maintained. While health departments are required to notify homeowners with septic systems on long-term operation and maintenance practices, there is currently no program that documents system maintenance. The responsibility for these wastewater systems is that of the property owner.

Many property owners fail to properly maintain their ISSDS until a problem is evident. The problem with this approach is that there is often an environmental impact associated with a failing system. The NJDEP states that “*proper maintenance of ISSDSs is essential in order to offset the high costs of repair or replacement and hazards to the environment that failing systems pose*”. For this reason, the NJDEP is proposing that a mandatory maintenance program be established at the local level. The Department is not proposing to specify the form that the program must take beyond the requirement that pump-outs of accumulated septage occur every 3-7 years and that malfunctioning parts be repaired.

4.9.1 Management Options

The USEPA has listed the ISSDS management options to be as follows:

- Option 1: Homeowner Awareness Model: Retain homeowner responsibility but increase awareness and ensure basic system maintenance;
- Option 2: Maintenance contract model: Require maintenance contracts for complex system designs;
- Option 3: Operating Permit model: Regulate systems by issuing permits or licenses to provide a mechanism for continuous oversight;
- Option 4: Responsible Management Entity (RME) Operation and Maintenance. Public or private RME is designated as responsible agent for O&M with established rate schedule for services paid by homeowner;
- Option 5: Responsible Management Entity Ownership. Public or private RME owns and maintains systems and is fully responsible for system; User fees are paid by property owners to defray costs;

Certain areas of the country have rigorous septic tank management programs. In particular, the State of Massachusetts has established a model community septic management program. The program is unique because the Commonwealth provides no interest State Revolving Fund Loan funds to communities that are interested in implementing a comprehensive management program that conforms to state guidelines. The program involves an assessment of the systems that require repair and the implementation of Betterment Agreements to fund the upgrades.

While New Jersey has not yet implemented a similar program, there are communities in the state that have developed septic management ordinances. Many of these ordinances require all property owners to obtain licenses from the Health Department to operate an ISSDS. The license is issued upon the issuance of a certificate of compliance for a new system and in accordance with a maintenance schedule for existing systems. The licenses can only be issued based on as-built plot plans and after inspection of the systems by the Health Department. The licenses usually must be renewed every three (3) years. License fees are often used to defray the cost of the program. If problems are detected, the property owner is directed to correct the problem before the license can be issued or renewed.

Pilesgrove Township typically includes an article relating to septic maintenance each year in its Township newsletter. The Township Planning Board is also cognizant of determining lot suitability during subdivision review and seeks to ensure that nitrates from these systems are adequately diluted.

4.9.2 Proposed ISSDS Policy

NJDEP regulations specify that the WMP shall include a mandatory maintenance program to ensure that septic systems are being maintained. **Pilesgrove Township believes that the County should be responsible for developing and implementing any required septic maintenance program through the County Health Department.**

The recommended policies with regard to ISSDSs are as follows:

1. Pilesgrove Township should adopt an ordinance that allows alternative treatment units (ATUs) with denitrification as a means of achieving adequate nitrate dilution in future developments. Where these systems are to be proposed, the developer should be required to designate the lots that are to have these alternative systems on the subdivision plat. These lots would be deed restricted to ensure that the systems are properly permitted, designed, constructed, and maintained. All such systems would need to have a service contract with the manufacturer or other approved third party and shall abide by any permit requirements of the NJDEP.
2. An existing ISSDS or a series of ISSDSs on the same parcel that receive more than 2,000 gpd of wastewater shall not be permitted to continue in operation unless they are specifically included in this WMP as an approved facility. The owner of any such facility shall submit an engineering report fully describing the facility and any future improvements before being included in the WMP. The report shall also demonstrate that the nitrates from the system are being adequately diluted on the subject property based on the NJGS model. As a condition of approval by the Township, the owner of such a facility shall submit an annual inspection report prepared by a licensed professional engineer that includes a certification documenting that the system is operating in accordance with the design.
- 3.

4.10 ALTERNATIVES ANALYSIS

4.10.1 No Action Alternative

Under the No Action Alternative, no improvements would be made to the existing WSA WTP which would increase the capacity of the treatment plant. The result would be that the WSA WTP would not be capable of serving the regional planning needs based on the Town Center Extension. If no additional wastewater treatment capacity is made available to Pilesgrove Township, the potential for clustering land development near Woodstown Borough and the resultant preservation of farmland in the environs around the Town Center using a transfer mechanism would not be feasible. In the absence of this approach, land development would continue in the Township based on ISSDS without any effective control and land development would infringe on agricultural retention districts in a continuing sprawl pattern. It is highly unlikely that the Township will be able to preserve contiguous agricultural districts without the implementation of clustering mechanisms to supplement various development easement acquisition programs.

The No Action alternative with regard to Kings Road would thwart the implementation of a Settlement Agreement of *Mount Laurel* litigation. The Township and the Plaintiff reached an agreement on a builders remedy lawsuit after years of litigation and discussions under the guidance of a court assigned master. Because of changes in site ownership, the Township now only supports the inclusion of this project in the Water Quality Management Plan based on the principles and conditions described in this WMP.

The No Action alternative for the PLI development would preclude the development of over 3.6 million square feet of planned industrial development. It is the position of the Township that this area is well suited for planned industrial development and has the potential to contribute substantial employment to the smart growth corridor. However, the planned industrial development would need to be undertaken in strict accordance with an approved General Development Plan (GDP) and should only be included in the WMP with the prior approval of the GDP.

4.10.2 Regional Dupont Treatment Plant Alternative

Salem and Gloucester counties are currently working on a regional treatment plant alternative that would involve the conversion of a portion of the existing Dupont treatment plant for domestic wastewater. While this alternative is still being developed, it would provide an option to the upgrade of the small existing treatment plants around the County. This alternative has the potential of concentrating regional wastewater treatment flow to create the economies for efficient operation and would eliminate upstream discharges such as that of the WSA plant in Woodstown.

Pilesgrove Township does not support the regional treatment plant alternative due to concerns that a regional system would spur more land development in the Township. In the event that the WSA plant cannot or will not be expanded, the Township would need to evaluate other sub-regional alternatives to implement any development rights transfer mechanism.

4.10.3 Site Alternatives.

4.10.3.1 WSA WWTP.

The WSA plant is located off West Avenue in the Borough of Woodstown. While there are physical limitations, the WSA has acquired sufficient adjacent land to enable the plant to be expanded. The Township has not considered alternative treatment plant sites since the expansion of an existing POTW is preferable for both economic and environmental reasons to the creation of a new treatment plant in the same development area. The expansion of the treatment plant is also expected to be in the interest of the ratepayer since the capital cost will be borne by prospective developers and the basic operating costs would be defrayed over a larger user base. The existing ratepayer should therefore accrue certain operating cost benefits in future user fees.

4.10.3.2 Kings Road.

Alternate sites were considered for the Kings Road treatment plant. The Township determined that the onsite location was preferable from both economic and environmental perspectives. The site was also chosen by the Developer due to the presence of permeable soils in the event that subsurface discharge of the effluent is necessary. However, the Developer represented that the onsite soils were only adequate for the effluent from the first train and prefers the use of groundwater injection.

4.10.3.3. Planned Light Industrial (PLI) District

The prospective Developer has indicated that a modular onsite treatment plant with groundwater discharge is the most viable treatment approach for this type of project. **However, this project is not being pursued at this time.**

4.10.4 Treatment Process Alternatives

4.10.4.1 WSA

The basic process alternatives for expansion of the WSA treatment plant will be assessed by the WSA as owner and operator of the treatment plant. Pilesgrove Township intends to pursue the implementation of an inter-local services agreement with the WSA to support operating improvements related to future expansion.

4.10.4.2 Kings Road.

The Developer proposed the use of Zenon membrane filtration as the basis of the Kings Road treatment plant. The Zenon MBR process is capable of achieving high effluent quality in small-scale treatment plant applications. Plant operations are also simplified and require only periodic attention. While the capital and operating costs per EDU are not comparable to centralized systems, the Zenon system has been determined to be well suited to the Kings Road project size (35,000 gpd).

4.10.4.3. Planned Light Industrial (PLI) District

The planned industrial district would have utilized a modular package plant that is capable of achieving the groundwater discharge effluent quality standards.

*Pilesgrove Township
Wastewater Management Plan
August 2, 2010*

V. DISCUSSION OF JUSTIFICATION OF SERVICE AREA DELINEATIONS

5.1 PROPOSED SEWER SERVICE AREA

Map 3: Future Wastewater Facilities and Service Areas indicates the following:

- **Existing Sewer Service Area.** The approximate actual sewer service area limits are shown on *Map 2* for comparison purposes to the Future Sewer Service Area.
- **Conveyance Facilities.** The existing conveyance facilities shown on *Map 2* are also shown on this map. Proposed facilities needed to serve the areas beyond the actual limits of existing service have not been located or designed.
- **Future Sewer Service Area.** The potential Future Sewer Service Area limits are shown. The actual limits would be determined based upon inter-municipal discussion as well as the Plan Endorsement process. Habitat suitability determinations would be required for the portions of tracts that are shaded on *Map 3* to refute the information contained in the Landscape Project.
- **Preserved Farmland/Open Space Areas** These areas are areas owned by federal, state, county or municipal government agencies or preserved through programs administered by any government agency or preserved through private investment or the purchase of development rights where no sewerage generating structures are planned to occur.
- **Restricted Septic Service Area (Planning flows of less than 2,000 gpd)** These areas are shown as areas suitable for individual subsurface disposal systems with flows of 2,000 gpd or less. These areas would be restricted to six residential units until the nitrate dilution issue is resolved by the adoption of the Salem County WMP.

In accordance with NJAC 7:15-5.20(b)2, the boundaries of the Future Sewer Service Area coincides with recognizable geographic or political features (i.e., roads, lot lines, zoning district limits, water bodies), wherever feasible. To the extent possible, individual lots are not divided into different service areas unless a zoning boundary or obvious feature is used that divides the lot.

Individual subsurface sewage disposal systems (ISSDS) for individual residences can only be constructed in depicted sewer service areas if legally enforceable guarantees are provided, before such construction, that use of such systems will be discontinued when the depicted sewer service becomes available. This provision applies to ISSDS that require certification from the NJDEP under the Realty Improvements Sewerage and Facilities Act (N.J.S.A. 58:11-23) or Individual Treatment Works Approval or New Jersey Pollutant Discharge Elimination Permits (under N.J.A.C. 7:14A). It also applies to ISSDS which require only local approval if the WMP acknowledges adequate arrangements for enforcement of the requirement (such as through a municipal or sewerage authority ordinance).

Development in areas mapped as wetlands, flood prone areas, designated river areas, or other environmentally sensitive areas may be subject to special regulation under Federal or State statutes or rules. Interested persons should check with the NJDEP for the latest information. Depiction of environmental features is for general information purposes only, and shall not be construed to define the legal geographic jurisdiction of such statutes or rules.

5.2 LAND USE

Map 4-1: Aerial Photograph provides an overview of the rural Township Planning Area surrounding a small, densely developed town center (Woodstown). The parcel mapping on the aerial also illustrates the historic pattern of land development in the Township as well as a general indication of agricultural lands and environmental constraints.

Map 4-2: Existing Land Use Map depicts the general land use conditions in the Planning Area based on tax assessment classifications using an accepted land use color scheme. *Map 4-2* illustrates that land development within Woodstown Borough is approaching build-out conditions. The Map also illustrates the extent of developable land if the qualified farmland were to be converted to a developed use. The land use patterns can be summarized as follows:

Pilesgrove Township

- Residential land use is predominantly comprised of single family detached dwellings of moderate density within the limited sewer service area and rural large lot development outside of the sewer service area;
- Due to the limited availability of planned infrastructure and the rural nature of the region, the Township does not currently have any multi-family residential development other than the Bailey Corner affordable housing project currently under construction;
- The limited commercial land use in the Township is concentrated along the U.S. Route 40 corridor.
- Major commercial recreation uses include the Cowtown Rodeo in the western part of the Township, the Town and Country golf course near Woodstown, and the Four Seasons campground along the eastern border.
- Industrial land use in the Township is very limited and includes the defunct Richman's Ice Cream plant;
- The public schools and library that serve Woodstown and Pilesgrove are located in Woodstown Borough;
- Churches are the primary form of tax-exempt developed land use in the planning area.
- Public open space tends to be concentrated along the Salem River corridor. The County and the State have acquired a series of parcels along this corridor. Other public open space includes Marlton Park along Marlton Road, the bird sanctuary along Kings Highway, and Harrisonville Lake Park.
- Agricultural land use encompasses virtually all of the undeveloped land in the Township. Qualified farmland that has not been preserved is the primary area available for land development within the Planning Area;
- The vacant land category generally includes land parcels that are available for development or under development. In some cases, the development capabilities of these vacant land parcels are constrained by environmental conditions (wetlands) or by prior use (landfills).

5.3 PROPOSED LAND USE REGULATIONS - ZONING

Map 4-3: Composite Zoning Map provides an overview of the existing zoning regulations in the Planning Area based on the Pilesgrove Township Land Development Ordinance. The zoning regulations in adjacent communities including Woodstown Borough are also shown in a generalized manner. The composite zoning map correlates zoning districts of similar use and intensity to provide a general indication of the pattern and intensity of proposed land use. A careful review of the composite zoning map has resulted in the following conclusions:

Pilesgrove Township

- Most of Pilesgrove Township is included in Agricultural Retention (AR) zoning districts where the intent is to preserve farmland. The current minimum lot size is two acres for lots that front on internal streets and three (3) acres on lots fronting on collector roads.
- The Restricted Residential (RR) zoning district encompasses areas with environmental constraints or severe soil limitations for individual subsurface sewage disposal systems (ISSDS). The intent of this zoning district is to restrict or control land development in a manner that is compatible with the environmental constraints. This district includes important headwaters areas of the Nichomus Run and tributaries of Oldmans Creek and Salem River. The minimum lot size is two acres in the RR district.
- The Single Family Residential (SR) zoning district encompasses two areas along the northern fringe of the Township. The area to the northwest includes several existing low-density residential developments where in-fill development is permitted. The zone in the northeastern corner of the Township is less developed. Both areas generally have suitable soils for an ISSDS. The minimum lot size under the current zoning is one acre.
- The SR-5 residential zoning district encompasses an area adjacent to Woodstown that is served by the existing water and sewer systems. The density in this area is consistent with that in Woodstown.
- Village Neighborhood. The VN district encompasses the existing crossroads settlement area known as Sharptown. Most of this district is already developed with single-family detached units with a compact development pattern. The intent of the district is to allow in-fill development and to respect pre-existing conditions.
- Planned Residential. The Planned Residential (PRD-1) zoning district was established in compliance with the Kings Road Settlement Agreement. The zoning district provides for traditional neighborhood design (TND) development of 96 single-family detached dwelling units. The use of this zoning is contingent upon the development of community public water and sewer facilities by the developer to support the project.
- Neighborhood Commercial. The intent of the Neighborhood Commercial (NC) zoning district is to allow for the development of commercial entities to serve local needs. The NC district is specifically designed to serve the proposed Sharptown village center and surrounding areas.
- Highway Commercial. There are three highway commercial districts along US Route 40. The intent of these districts is to serve the needs of the region and the traveling public

- Planned Light Industrial. The PLI zoning district is located in the extreme western part of the Township. The Ordinance specifies that this 470± acre tract must be developed under a General Development Plan (GDP). The planned development is to be located within an Agricultural/Industrial Node and would be capable of supporting the Salem County growth corridor as well as the expansive farmland to the east.
- Affordable Housing. Pilesgrove Township established the AH-1 zoning district in 2002 to provide for the development of affordable housing. The Township subsequently designated a redevelopment area and adopted a redevelopment plan to foster the implementation of a municipally sponsored affordable housing project within this zone.
- Judicially Court Ordered Affordable Housing. This zoning district was created as a result of prior Mt. Laurel litigation. The developers are no longer seeking to be included in the Wastewater Management Plan. A revised settlement agreement is anticipated.
- Public, Parks, & Education. The PPE zone recognizes the lands that have been acquired for public purposes. These lands are focused along the Salem River.
- The Conservation zoning district includes all of the potential wetlands and delineated wetlands in the Township. These wetlands are located along stream corridors and in headwaters areas. Development is not permitted within regulated wetlands.

A comparison of Map 4-2: Existing Land Use Map and Map 4-3: Composite Zoning Map results in the conclusions that the potential for very low-density residential development under current zoning regulations in the Township is extensive. There are no substantive opportunities for moderate density development due to the absence of planned infrastructure.

The local zoning regulations are fully compatible with the Future Sewer Service Area for the PLI and Sharptown areas. However, these areas would only be included in the County WMP if affirmative action is taken by the owner/developers.

The zoning for the Woodstown town center will be modified to enable overlay zoning under a non-contiguous clustering or transfer of development rights option. The specific mechanism of the proposed zoning is dependent upon the nitrate dilution modeling issue and the provision of additional treatment capacity to serve the receiving areas.

5.4 STATE DEVELOPMENT AND REDEVELOPMENT PLAN (SDRP)

5.4.1 Adopted SDRP

Map 4-4: State Development and Redevelopment Plan Map illustrates the policy recommendations of the most recent version of the State Development and Redevelopment Plan (SDRP) for the Planning Area. The key SDRP recommendations for the Planning Area are as follows:

- Rural Planning Area (PA 4). Virtually all of the Township Planning Area has been designated as Rural Planning Area (PA 4). The growth policy for PA 4 is to limit infrastructure extensions to those serving designated centers.
- Environmentally Sensitive/Rural Planning Area (PA 5). The extreme northeastern corner of the Township is designated as Planning Area 5. The growth policy for PA 5 is to discourage infrastructure extensions to this environmentally sensitive area.
- Designated Centers. The SDRP indicates that the Borough of Woodstown is a designated rural town center. The limits of the town center designation are the Borough boundaries.

5.4.2 Preliminary Plan Cross Acceptance

The Office of Smart Growth (OSG) has issued a Preliminary Plan that proposes to change the designation of the Rural Fringe Planning Area to PA4. Pilesgrove Township was actively involved in the cross-acceptance process but was advised that its objections to this change were more suited to Plan Endorsement process.

5.4.3 Plan Endorsement

The Township of Pilesgrove and the Borough of Woodstown are in the process of pursuing their respective interrelated Plan Endorsement petitions. The key issues being pursued by the Township in Plan Endorsement process are as follows:

1. To support the continuation of the Woodstown Town Center designation;
2. To modify the existing town center designation to include the actively sewer service area and a limited extension thereto to conform to affordable housing regulations. The current designation of areas within the SSA as a Rural Planning Area designation is not sound planning. The Township has sought to have its affordable housing project site deemed to be a smart growth area to no avail.
3. To enable the Woodstown Town Center to be extended in select areas for the purpose of reinforcing the town center and to enable the environs to be preserved through clustering and transferring mechanisms. This concept requires that the receiving areas have sufficient planned infrastructure.
4. To designate the village of Sharptown as a village center; Planned infrastructure would only be supported if the owners/developers of the Kings Road project established site control prior to April 1, 2011.

The policies in this WMP are intended to be fully consistent with the Plan Endorsement petition and the recently endorsed Municipal Self-Assessment Report.

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*Pilesgrove Township
Wastewater Management Plan
August 2, 2010*

VI. MAPPING REQUIREMENTS

This Wastewater Management Plan has been prepared in accordance with NJDEP requirements (NJAC 7:22-10.5). The referenced maps have been prepared at a scale of 1:24000 and are included in the Appendix. All maps have been prepared in accordance with the NJDEP Geographic Information System (GIS) requirements and rely on the natural resource database of the Department. The referenced maps follow the appendices.

The referenced maps are numbered in accordance with the NJDEP guidance. Where more than one map was required to address a specific information requirement, the maps were numbered as sub-parts as shown below:

- Map 1:** Existing Planning Area Map
- Map 2:** Existing Wastewater Facilities and Service Area Map
- Map 3:** Future Wastewater Facilities and Service Area Map
- Map 4:** Land Use/Zoning Maps
 - Map 4-1: Existing Land Use Map*
 - Map 4-2: Composite Zoning Map*
 - Map 4-3: State Development & Redevelopment Plan Map*
- Map 5:** Environmental Constraints Map
 - Map 5-1: Surface Water Resources Map*
 - Map 5-2: Geology and Groundwater Resources Map*
 - Map 5-3: Topographic Map*
 - Map 5-4: Important Farmland Soils Map*
 - Map 5-5: Critical Habitats Map*
 - Map 5-6: Open Space & Conservation Map*
 - Map 5-7: Environmental Features Map*
 - Map 5-8: Environmental Constraints Map*

BUILD-OUT ANALYSIS

PITTSGROVE TOWNSHIP, SALEM COUNTY



AUGUST 2009



Clarke Caton Hintz

Architecture

Planning

Landscape Architecture

Build-out Analysis

Pittsgrove Township, Salem County

August 2009

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INTRODUCTION

Pittsgrove Township is a rural, agriculturally-based municipality occupying the eastern corner of Salem County. Spanning 46 square miles, Pittsgrove is bounded by Upper Pittsgrove Township to the west and north, Elmer Borough to the west, Franklin Township to the north, the City of Vineland to the east, Deerfield Township to the southeast and Upper Deerfield to the southwest.

Pittsgrove is accessible from major transportation routes that serve to connect the Township with Wilmington and Philadelphia to the west and New Jersey shore points to the east. The Township is traversed from east to west by New Jersey State Route 40, and Landis Avenue (State Highway 56), which serves as its commercial corridors. Additionally, the major north-south traffic artery is State Route 55, located just outside of the Township to the east, and links to I-295, which provides access to both Philadelphia and northern points in New Jersey.

On July 7, 2008 the New Jersey Department of Environmental Protection (hereinafter referred to as “DEP”) adopted revised Water Quality Management Planning rules, N.J.A.C. 7:15. These revised rules made several important changes to the regulations regarding sewer service areas, septic system areas, permitting and requirements of wastewater management plans (hereinafter referred to as “WMP”). The DEP regulations require that the municipality assign residential and commercial septic densities (the minimum area required for one septic system) on the basis of the Hydrologic Unit Code 11 (hereinafter “HUC 11”) within the municipality. A HUC 11 is defined as the following by DEP:

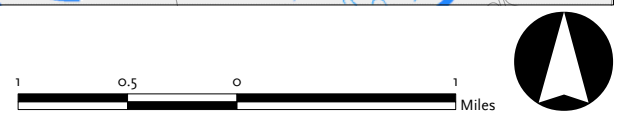
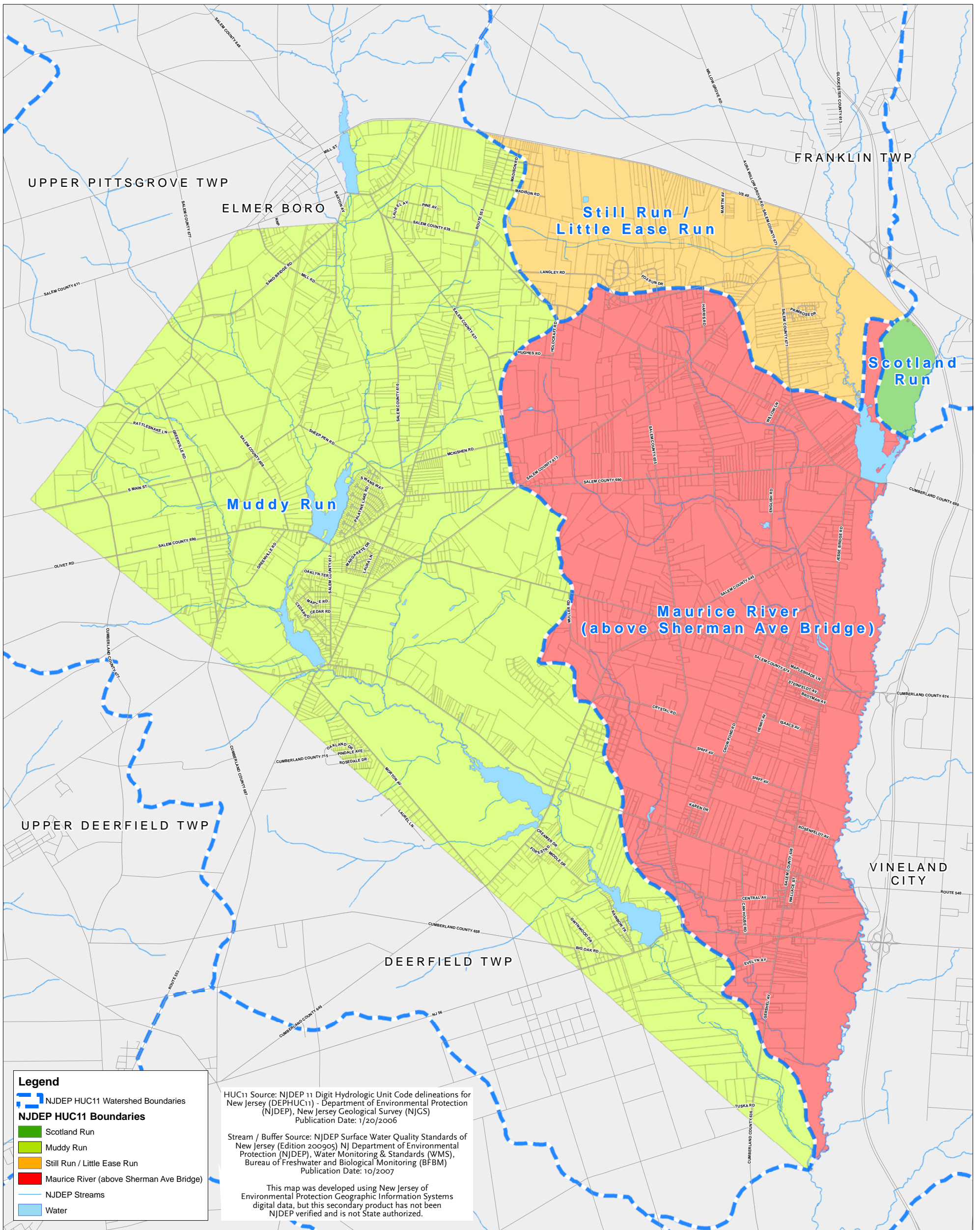
“an area within which water drains to a particular receiving surface water body, also known as a watershed, which is identified by an 11-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geologic Survey.”

These HUC 11’s are important to a municipality that is all or in part served by septic systems because the DEP regulations require that each WMP include an analysis of the remaining development capacity, pursuant to DEP septic density regulations, within each HUC 11. Specifically, the rule amendment requires that the municipality’s zoning and ultimate build-out for available lands must comply with a nitrate dilution standard of 2.0 mg/l over each HUC 11 in areas served by septic systems. This is a significant change from previous State regulations which did not require that development meet a particular nitrate dilution standard.

The required nitrate dilution standard of 2.0 mg/l represents the limit of the total nitrate effluent from septic systems within a HUC 11. Nitrate acts as a conservative surrogate for any of a number of constituents that could be discharged from a septic system (e.g. cleaners, solvents, pharmaceuticals, etc.). Nitrate was chosen by DEP because it is highly soluble in water, and because it is a stable compound that by itself could render water unsuitable for human consumption. The septic density required to meet the 2.0 mg/l standard is based on the ability of the soil types in the HUC 11 to accommodate the nitrate effluent from septic systems. DEP will require that a municipality's zoning regulations limit the development capacity to that cited in the DEP-approved WMP. As such, Pittsgrove Township will likely be required to amend the zoning regulations as necessary to ensure that the limit is not exceeded. However, it is important to note that a municipality is not required to enact a minimum lot area that meets or exceeds the 2.0 mg/l standards; instead the municipality may use clustering, lot size averaging, etc., provided the resulting development capacity does not exceed that which is included in the approved WMP for each HUC 11.

The purpose of this report is to provide an analysis of the capacity for new septic systems within each HUC 11, pursuant to the DEP Water Quality Management Planning regulations (*N.J.A.C. 7:15*). These regulations require that the municipality examine the capacity pursuant to the nitrate dilution standards as well pursuant to the zoning in place at this time.

This analysis, in conjunction with the Township's decision regarding the available lands, is intended to be utilized by the Salem County Department of Planning in their preparation of the Salem County Wastewater Management Plan, which will include the Wastewater Management Plan for Pittsgrove Township as well as the County's other 14 municipalities. The analysis will also inform Township officials of the impacts of the build-out based on the amended DEP rules and the existing zoning on the Township's future population and tax expenditures and revenues.



BUILD-OUT ANALYSIS

Watershed Boundaries

Pittsgrove Township, Salem County, NJ August 2009

EXISTING TOWNSHIP CONDITIONS

Pittsgrove Township is home to a wealth of natural resources that require protection, including its expansive agricultural lands. In fact the Township is among the top 20 New Jersey municipalities in terms of active agriculture. While the Township has experienced substantial growth rates, as compared to other Salem County municipalities, it has maintained its rural character.

Environmental Constraints

Pittsgrove Township is 46 square miles (29,239 acres). The Township contains a moderate amount of environmental constraints with 28.8% of the total land area constrained by water, wetlands, flood prone areas, stream corridor buffers and steep slopes. Including critical habitat, 58.2% of the Township is constrained. The stream corridor buffers consist of 300 feet for Category 1 waterways and 50 feet for all other waterways (there are currently no waterways that are required to have a 150 foot buffer). In addition to these environmental constraints which limit development, the Township contains a significant amount of critical habitat area, as defined by the DEP Landscape project. Table 1, indicates the environmental constraints and critical habitat present in Pittsgrove.

Table 1. Township Environmental Constraints

	Area in Acres	Percent of Total
Water	557.8	1.9%
Wetlands	5,459.3	19%
Wetland Buffers	1,633.81	5.6%
Flood Prone Areas – 100 Year	5,693.2	19.4%
Stream Corridor Buffers	1,842.26	6.3%
300 Foot Category 1 Buffers	1,108.7	3.8%
50 Stream Corridor Buffers	733.6	2.5%
Steep Slopes – 15% or greater	115.5	0.3%
Critical Habitat Area 3	9,679.3	33.1%
Critical Habitat Area 4	5,944.5	20.3%
Critical Habitat Area 5	0	0%

	Area in Acres	Percent of Total
<i>Composite Total</i>	17,030.1	58.2%

**Note that the sum of the above figures does not accurately represent the total environmentally constrained areas in the Township due to overlay of the various environmental constraints.*

There are four HUC II drainage areas present in Pittsgrove Township:

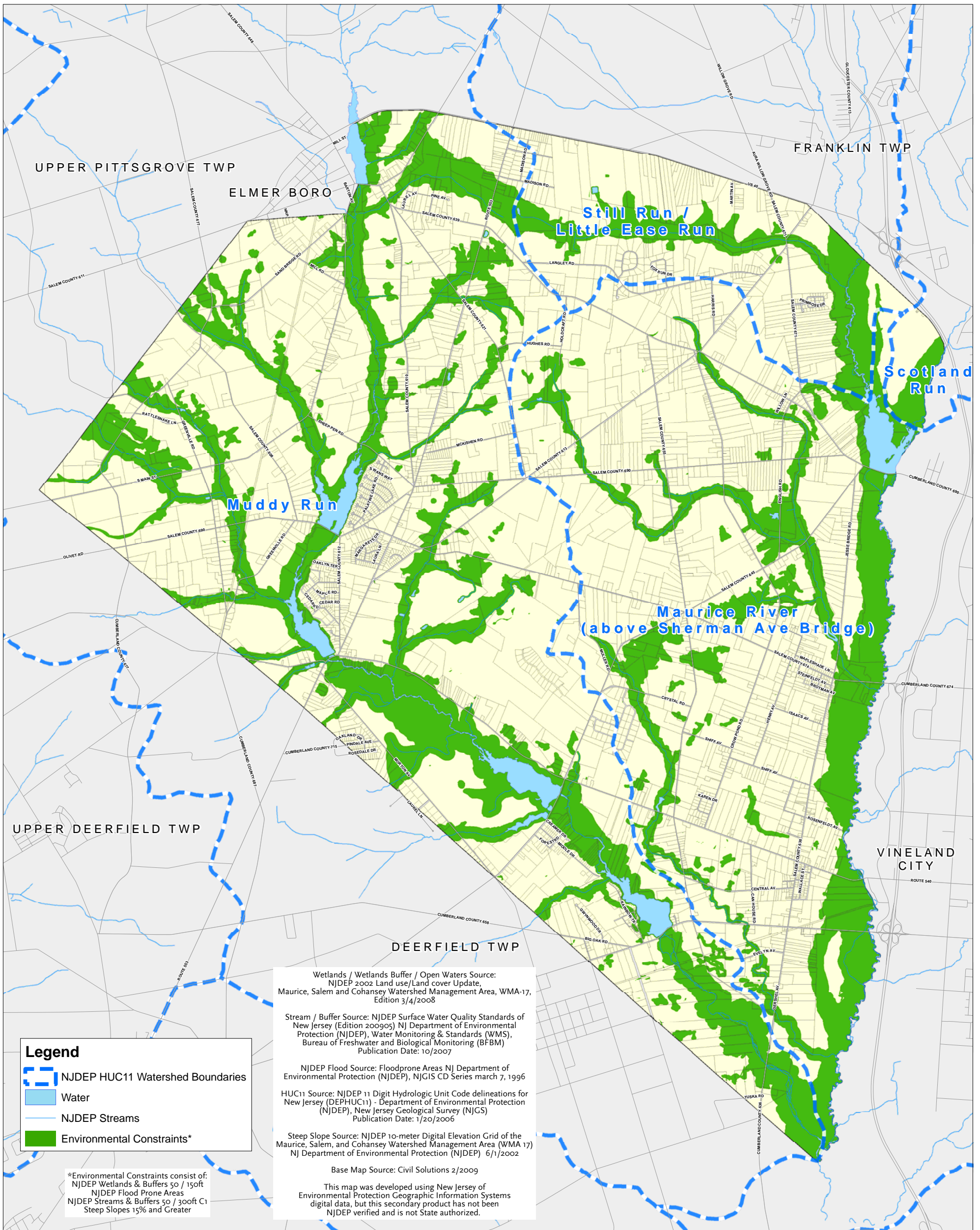
- Still Run / Little Ease Run (02040206120)
- Scotland Run (02040206130)
- Maurice River – above Sherman Ave. Bridge (02040206140)
- Muddy Run (02040206150)

The Muddy Run, at 15,360.85 acres or 52.5% of the Township generally occupies the western half of the Township. It includes the villages of Centerton and Olivet as well as five (Centerton Lake, Elmer Lake, Palatine Lake, Parvin Lake and Rainbow Lake) of the six primary surface water bodies in the Township. Associated with these water bodies are a variety of surface waterways, including Category I waterways. Additionally, this HUC II contains significant areas of wetlands, wetland buffers and flood prone areas which are associated with the surface waters.





The second largest HUC II in Pittsgrove is the Maurice River (above Sherman Ave. Bridge). This area, at 10,819.18 acres or 37% of the Township consists of the lower eastern portion of the Township and includes the villages of Norma, Brotmanville and Willow Grove. This area also includes a number of waterways and significant areas of wetlands, wetland buffers and flood prone areas along the Maurice River which delineates much of the eastern boundary of the Township.

The Still Run / Little Ease Run HUC II occupies the northeastern portion of the Township and consists of a rather small area at 2,796.98 acres or 9.6 % of the Township. It encompasses the Township’s sixth primary surface water body, Willow Grove Lake. Despite its size it includes significant wetlands, wetland buffers and flood prone areas.

The fourth HUC II, Scotland Run, is a small area of 262.3 acres or 0.9% of the Township located in the northeastern corner. A significant portion of it consists of wetlands, wetlands and wetland buffers and flood prone areas.



Legend

-  NJDEP HUC11 Watershed Boundaries
-  Water
-  NJDEP Streams
-  Environmental Constraints*

*Environmental Constraints consist of:
 NJDEP Wetlands & Buffers 50 / 150ft
 NJDEP Flood Prone Areas
 NJDEP Streams & Buffers 50 / 300ft C1
 Steep Slopes 15% and Greater

Wetlands / Wetlands Buffer / Open Waters Source:
 NJDEP 2002 Land use/Land cover Update,
 Maurice, Salem and Cohansey Watershed Management Area, WMA-17,
 Edition 3/4/2008

Stream / Buffer Source: NJDEP Surface Water Quality Standards of
 New Jersey (Edition 200905) NJ Department of Environmental
 Protection (NJDEP), Water Monitoring & Standards (WMS),
 Bureau of Freshwater and Biological Monitoring (BFBM)
 Publication Date: 10/2007

NJDEP Flood Source: Floodprone Areas NJ Department of
 Environmental Protection (NJDEP), NJGIS CD Series march 7, 1996

HUC11 Source: NJDEP 11 Digit Hydrologic Unit Code delineations for
 New Jersey (DEPHUC11) - Department of Environmental Protection
 (NJDEP), New Jersey Geological Survey (NJGS)
 Publication Date: 1/20/2006

Steep Slope Source: NJDEP 10-meter Digital Elevation Grid of the
 Maurice, Salem, and Cohansey Watershed Management Area (WMA 17)
 NJ Department of Environmental Protection (NJDEP) 6/1/2002

Base Map Source: Civil Solutions 2/2009


This map was developed using New Jersey of
 Environmental Protection Geographic Information Systems
 digital data, but this secondary product has not been
 NJDEP verified and is not State authorized.



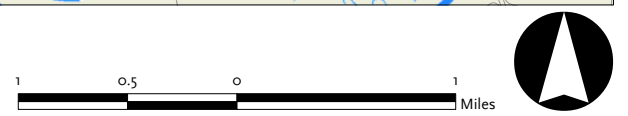
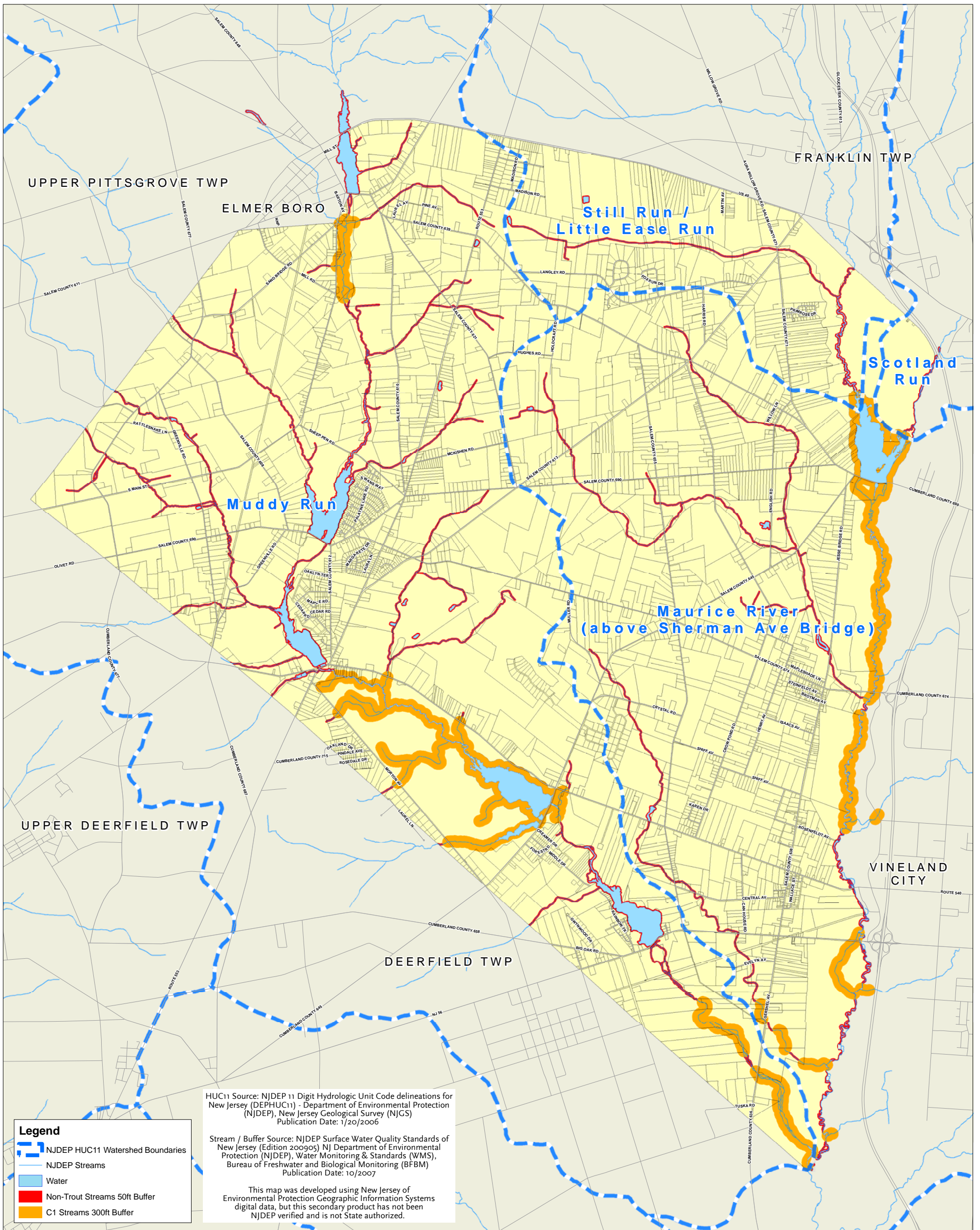
BUILD-OUT ANALYSIS

Composite Environmental Constraints

Pittsgrove Township, Salem County, NJ August 2009

Clarke Caton Hintz 

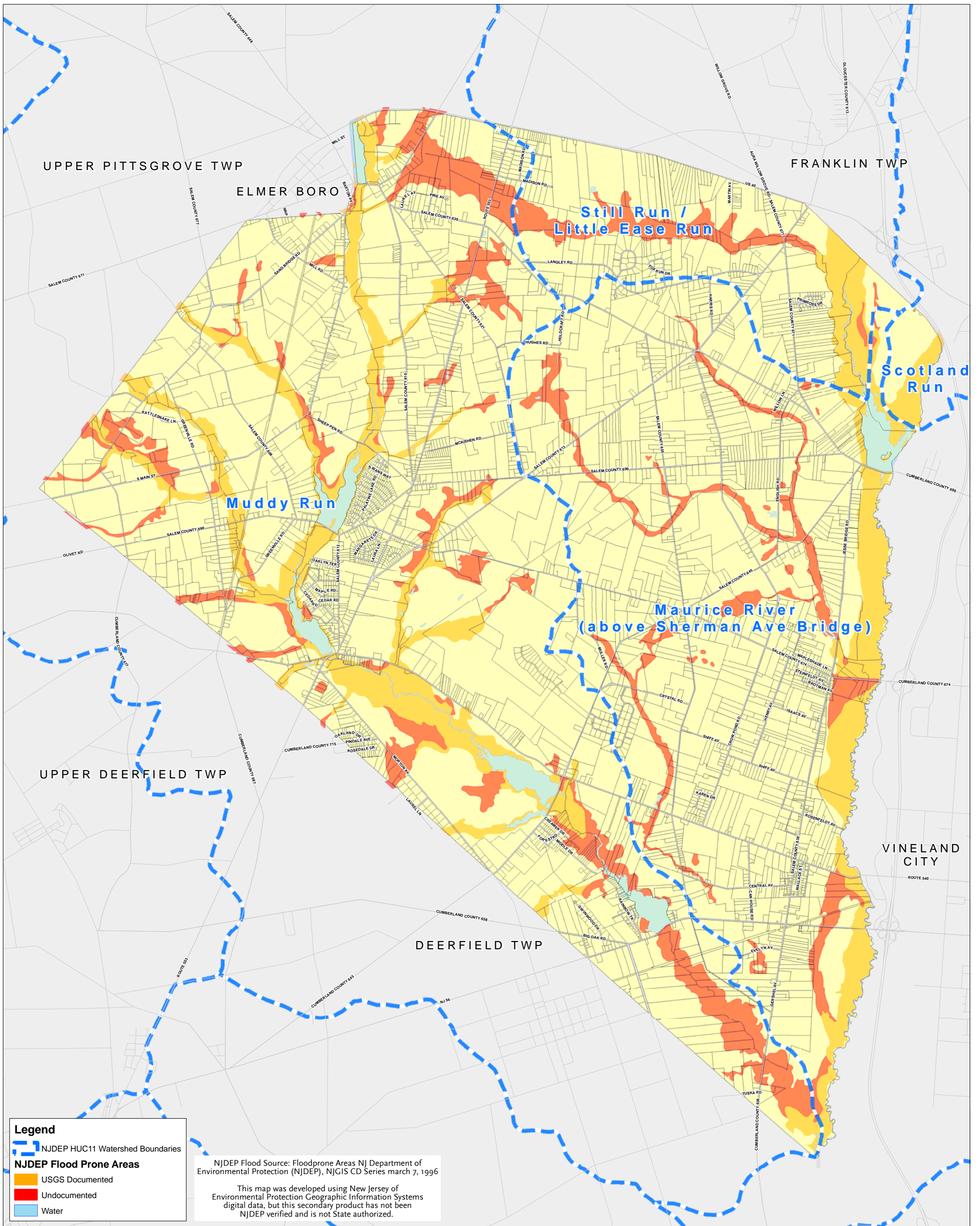
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BUILD-OUT ANALYSIS

Surface Hydrology

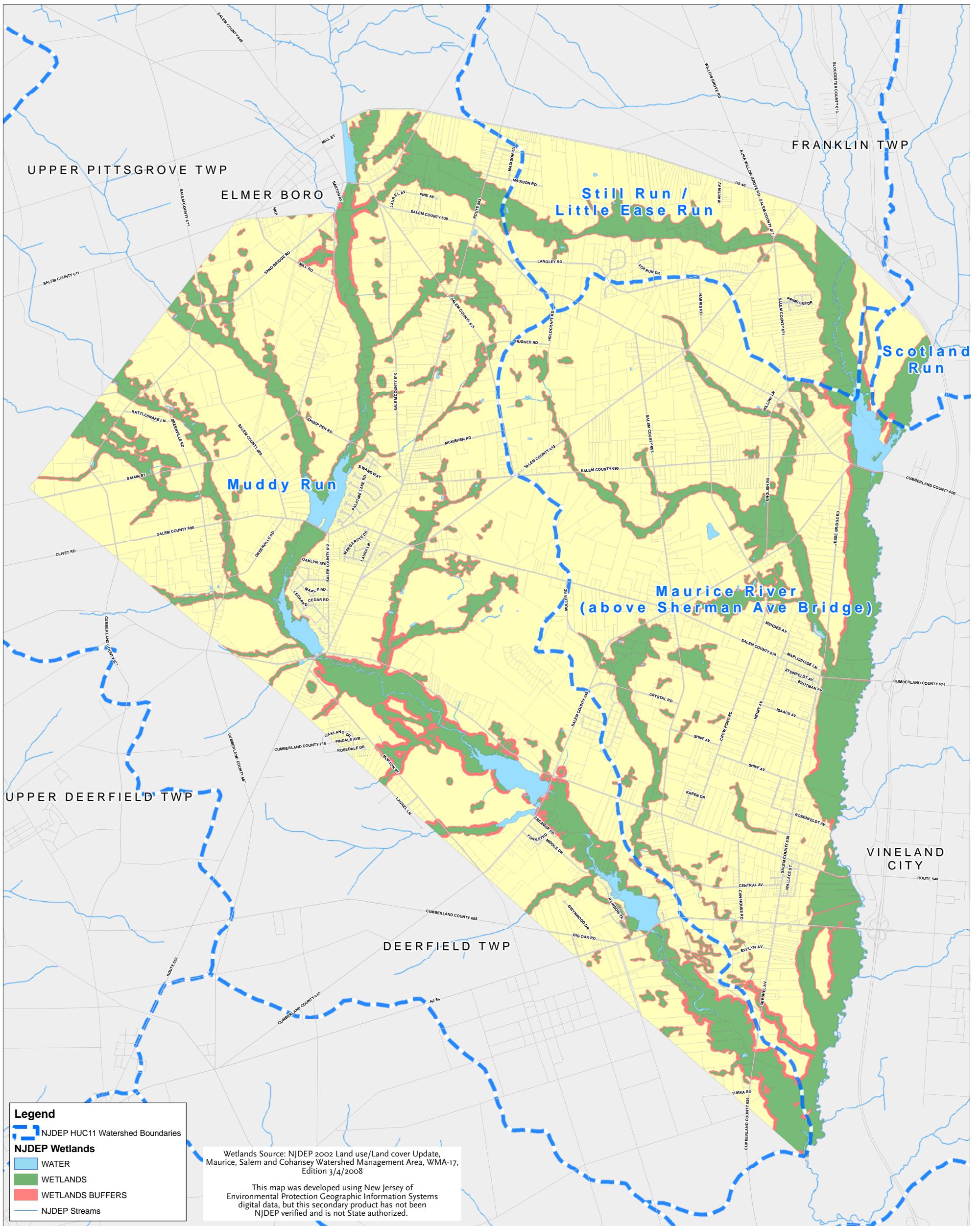
Pittsgrove Township, Salem County, NJ July 2009



BUILD-OUT ANALYSIS

Flood Prone Areas

Pittsgrove Township, Salem County, NJ July 2009

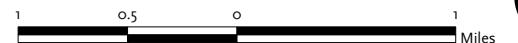


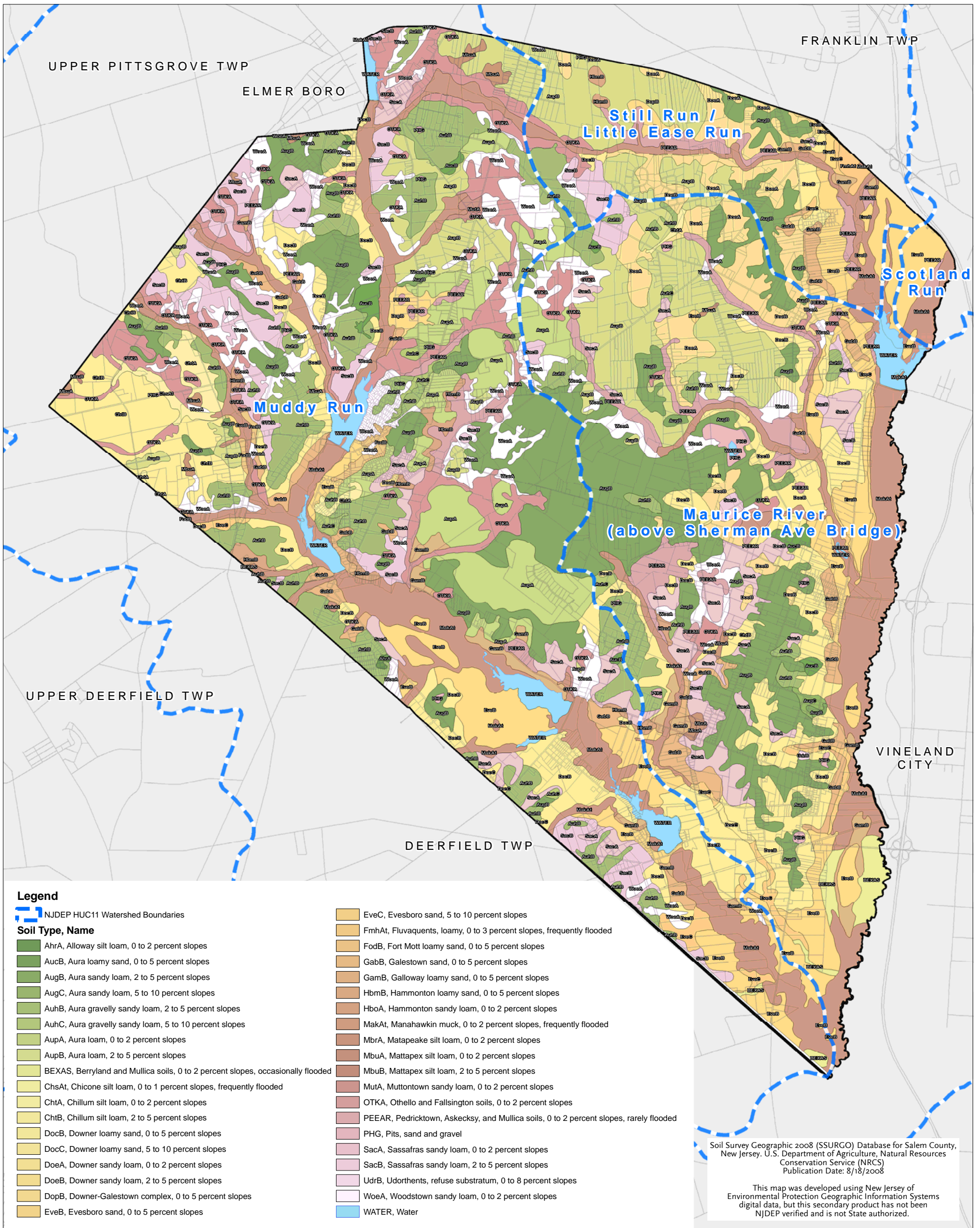
BUILD-OUT ANALYSIS

Freshwater Wetlands

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BUILD-OUT ANALYSIS

Soils

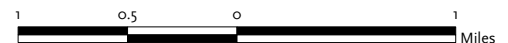
Pittsgrove Township, Salem County, NJ July 2009

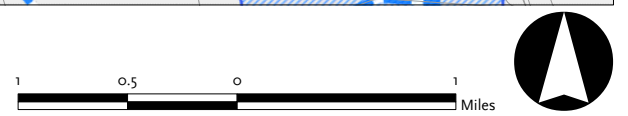
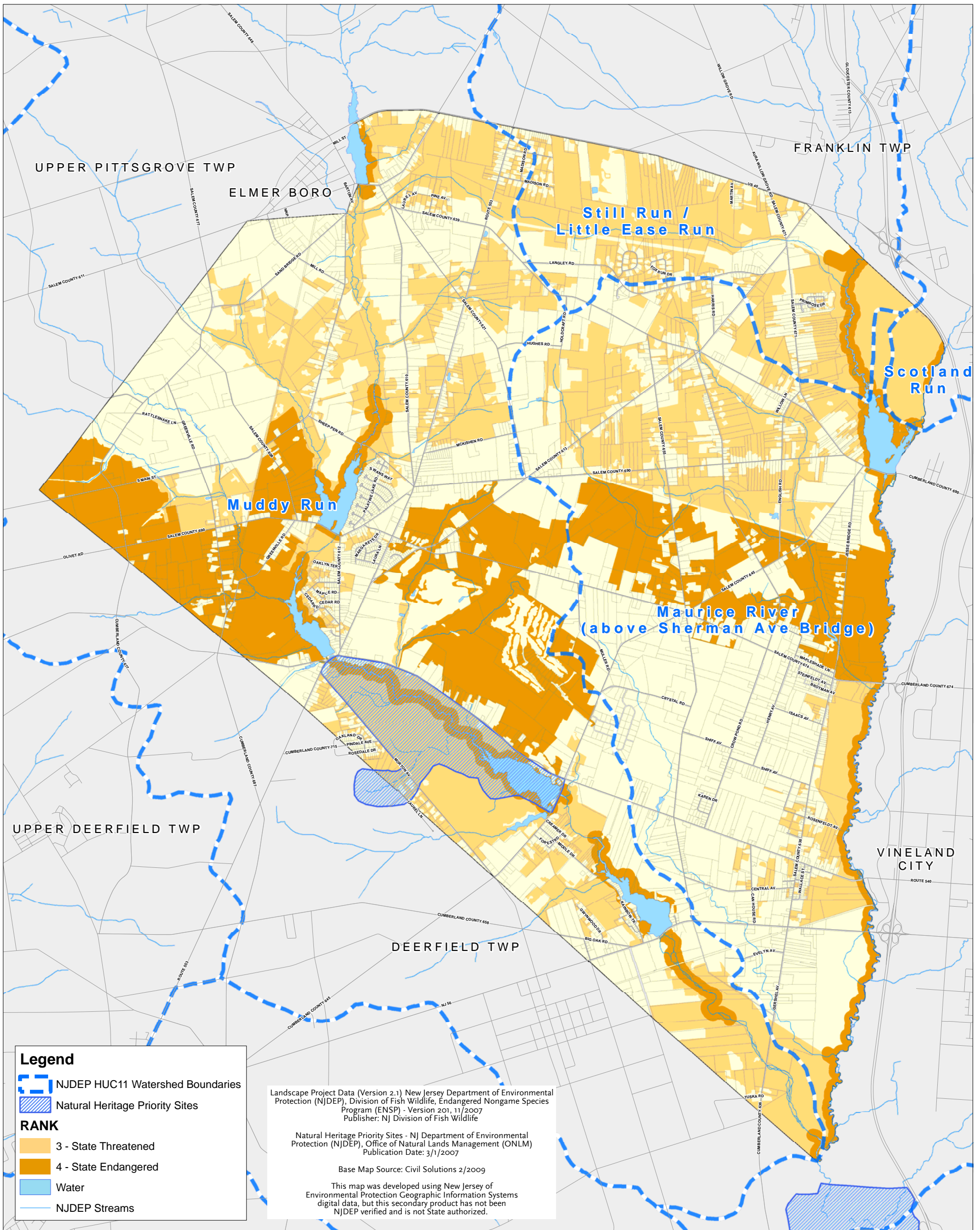
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BUILD-OUT ANALYSIS

Critical Habitat & Natural Heritage Priority Sites

Pittsgrove Township, Salem County, NJ August 2009

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Table 2, provides additional information on each HUC 11 and the environmental constraints contained within.

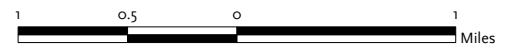
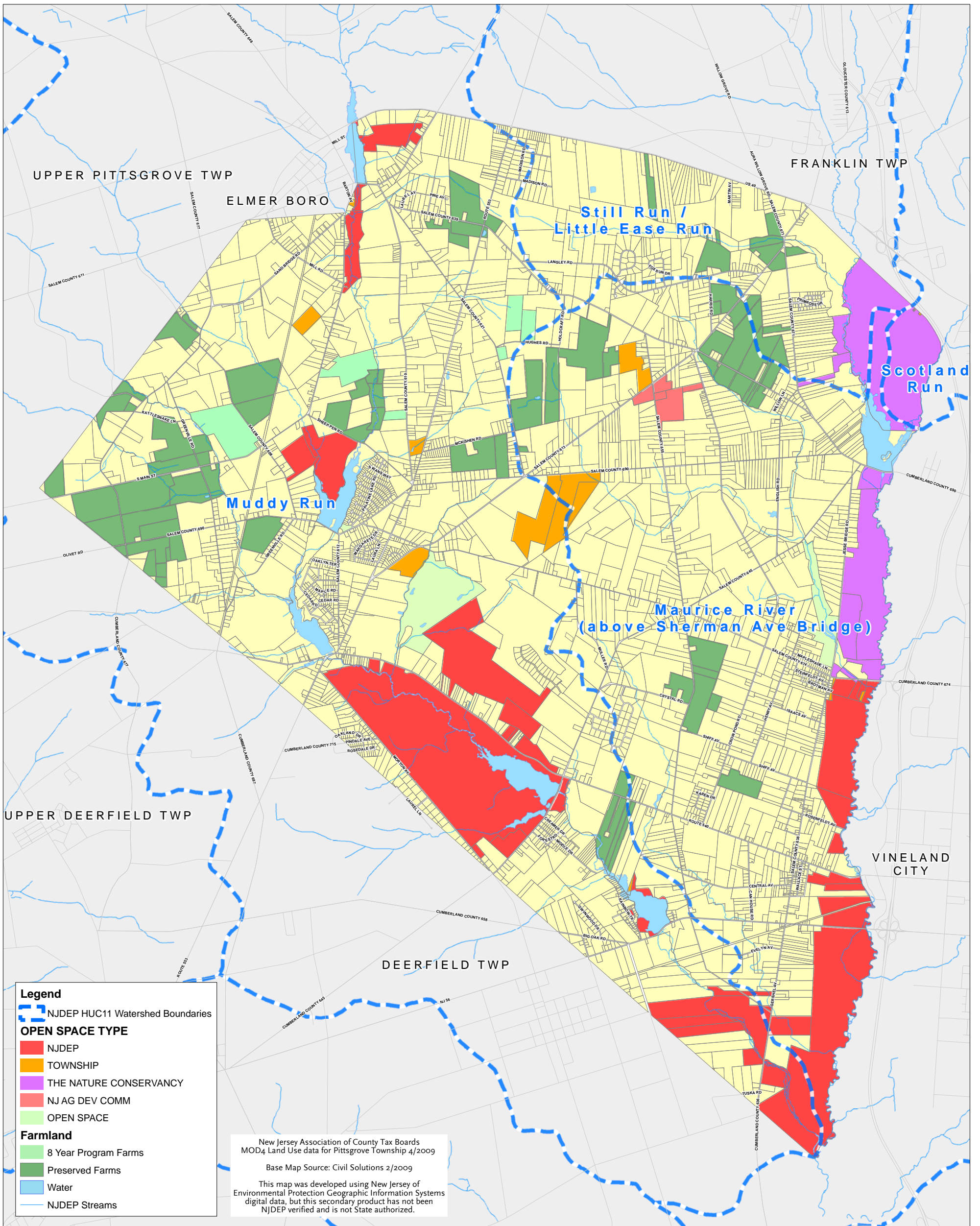
Table 2. HUC 11 Environmental Constraints

	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
Water	393.83	149.1	14.1	0.7
Wetlands	2,800.7	1971.3	585.6	101.6
Wetland Buffers	1,029.0	507.9	85.54	11.37
Flood Prone Areas	3,320.7	1643.6	622.8	106.1
Stream Corridor Buffers	1,173.1	579.3	76.0	13.9
300 Foot Category 1	739.5	354.1	8.8	6.2
50 Stream Corridor	433.6	225.2	67.2	77
Steep Slopes	75.5	39.2	0.8	0
15 to 25%	72.3	39.1	0.8	0
25% +	3.2	0.1	0	0
Critical Habitat Area 3	4943.9	2,684.6	1,790.8	259.9
Critical Habitat Area 4	3,872.4	1,890.7	151.7	29.8
Critical Habitat Area 5	0	0	0	0
<i>Composite Total</i>	<i>9,437.6</i>	<i>5,396.2</i>	<i>1,937.57</i>	<i>262.3</i>

**Note that the sum of the above figures does not accurately represent the total environmentally constrained areas in the Township due to overlay of the various environmental constraints.*

Land Preservation

The Township has a successful history of preserving farmland and open space. In fact, to date 2,390 acres or 8.2% of the Township has been preserved through the various farmland preservation programs. Table 3. provides information on all preserved land in Pittsgrove Township, which includes lands such as farmland, parks and open space.



BUILD-OUT ANALYSIS

Preserved Farmland & Open Space

Pittsgrove Township, Salem County, NJ August 2009

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Table 3. Preserved Property

	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run	Total Pittsgrove Township
Preserved Acres	4169.3	2391.3	467.76	262.3	7,290.9
Preserved Lots	-	-	-	-	160

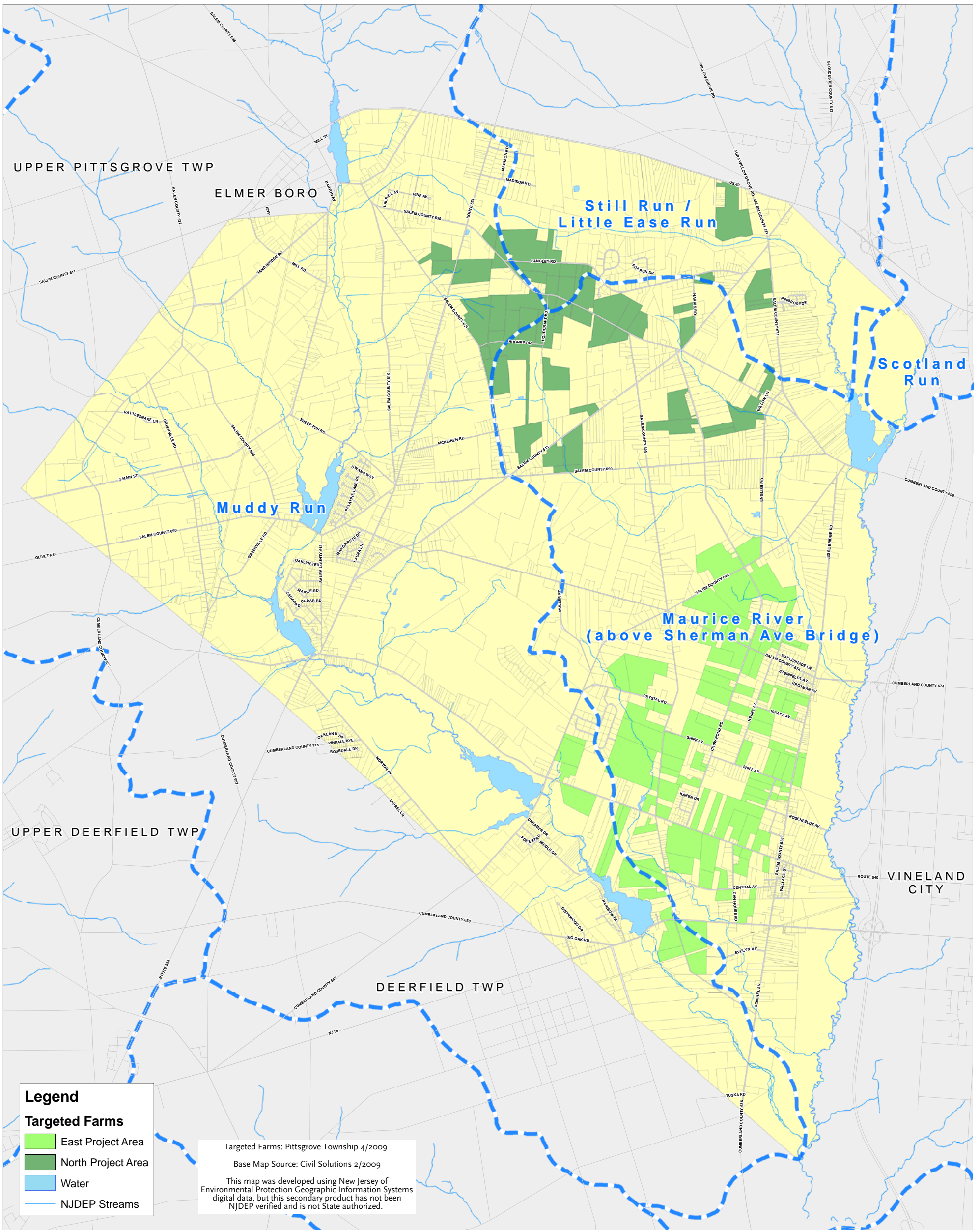
The number of preserved lots per HUC 11 is not given since many of the preserved lots span across multiple HUC 11 areas.

As described in more detail in the 2008 Farmland Preservation Plan, Pittsgrove Township is targeting 3,180 acres across the Township for farmland preservation. The Farmland Preservation Plan identified two project areas – the North Project Area and the East Project Area. The North Project Area is located primarily in the Maurice River (above Sherman Ave. Bridge) HUC 11. The East Project Area is located in the Maurice River (above Sherman Ave. Bridge), Muddy Run and a small portion is in the Still Run / Little Ease Run HUC 11. The Plan targets 29 farms consisting of 58 properties and 1,269 acres in the North Project Area and 64 farms consisting of 170 lots and 1,911 acres in the East Project Area. Table 4. provides additional information on the targeted farms.

Table 4. Targeted Farms

	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run	Total Pittsgrove Township*
North Project Area					
Acres	306.8	659.8	342.8	0	1309.3 acres
Lots	13	29	16	0	58
East Project Area					
Acres	295.9	1560.6	0	0	1856.4 acres
Lots	13	93	0	0	106

**Note that the 2008 Farmland Preservation Plan noted a total acreage of targeted farms in the North Project Area of 1,269 and a total acreage of targeted farms in the East Project Area of 1,911. The difference in these numbers and the table above is rooted in discrepancies between the tax data relied upon in the Farmland Preservation Plan and the Geographic Information Systems data relied upon in this report.*



BUILD-OUT ANALYSIS

Targeted Farmland Preservation

Pittsgrove Township, Salem County, NJ August 2009

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Population & Housing Conditions

Pittsgrove Township has experienced tremendous population growth in the last few decades as compared to other parts of Salem County and New Jersey. Notwithstanding this, the Township’s growth rates appear to be stabilizing.

Table 5. Population Growth

	1930	1940	1950	1960	1970	1980	1990	2000
Pittsgrove Twp.	2,091	2,157	2,808	3,785	4,618	6,954	8,121	8,893
Salem County	36,834	42,274	49,508	58,711	60,346	64,676	65,294	65,285
New Jersey	4,041,334	4,160,165	4,835,329	6,066,782	7,168,164	7,364,823	7,730,188	8,414,350

Source: 1930, 1940, 1950, 1960, 1970, 1980 1990, 2000 US Census

Table 6. Recent Population Growth Trends

	1980	Percent Change	1990	Percent Change	2000	Percent Change
Pittsgrove Township	6,954	33.6%	8,121	16.8%	8,893	9.5%
Salem County	64,676	7.2%	65,294	1.0%	65,285	0.0%
New Jersey	7,364,823	2.70%	7,730,188	4.96%	8,414,350	8.85%

Source: 1970, 1980, 1990, 2000 US Census

Pittsgrove Township’s population as of December 2008 is estimated to be 9,885. The population estimate was derived by multiplying the number of certificates of occupancy issued since the April 2000 by Pittsgrove Township’s median household size of 2.90, pursuant to the U.S. Census. This number was then added to Pittsgrove’s population in 2000 as was reported by the U.S. Census. This approximate growth of 992 persons between 2000 and 2008 represents a growth rate of 11.2%. This growth rate over this period combined with the current economic climate, indicates that the Township’s growth rate between 2000 and 2010 is likely to be modestly higher than the growth rate of 9.5% of the period 1990 and 2000.

Similar to population growth, the number of housing units in Pittsgrove Township has increased significantly from 2,671 units in 1990 to 3,155 housing units in 2000 – a growth rate of 18.1% and an average of 44 new units per year. Tables 7 and 8 provide information on housing unit types present in the Township in 1990 and 2000. Between 2000 and 2008, there were 391 certificates of occupancy issued for new residential

units¹ and 27 demolition permits issued for residential units – a net average of 40.4 new homes per year. As such, the total number of housing units in Pittsgrove Township as of December 2008 is 3,519 - a growth rate of 11.5% since 2000². This growth between 2000 and 2008 suggests that the Township will grow at a more modest rate between 2000 and 2010 as compared to between 1990 and 2000.

Table 7. 1990 Housing Units by Number of Units in Structure

Number of Units	Owner Occupied	Rental	Total
1, Detached	1,873	146	2,019
1, Attached	16	6	22
2	5	11	16
3 or 4	0	12	12
5 to 9	0	5	5
10 to 19	0	0	0
20 to 49	0	0	0
50 or more	0	0	0
Mobile Home	569	25	594
Other	3	0	3
<i>Total</i>	<i>2,466</i>	<i>205</i>	<i>2,671</i>

Source: 1990 US Census

Table 8. 2000 Housing Units by Number of Units in Structure

Number of Units	Owner Occupied	Rental	Vacant	Total
1, Detached	2,257	188	74	2,519
1, Attached	9	16	0	25
2	18	12	0	30
3 or 4	18	19	0	37
5 to 9	0	8	0	8

¹ Source: New Jersey Department of Community Affairs Construction Reporter

² Please note that a small overlap may exist in 2000. The US Census was taken in April of 2000, however, the certificates of occupancy cited for 2000 were issued during the entirety of the year.

Number of Units	Owner Occupied	Rental	Vacant	Total
10 to 19	0	0	0	0
20 to 49	0	0	0	0
50 or more	0	0	0	0
Mobile Home	428	47	61	536
Other	0	0	0	0
<i>Total</i>	<i>2,730</i>	<i>290</i>	<i>135</i>	<i>3,155</i>

Source: 2000 US Census

Development Patterns

The primary development pattern in Pittsgrove Township is strip frontage development (also known as ribbon development) where residential lots are developed along the frontage of existing roads. This leaves the interior lands largely undeveloped as the existing woodlands or farmland. Consistent with this type of development, there are few large residential subdivisions; the majority of subdivisions in recent years consist of five or less units. Nonresidential development has followed a similar pattern; however, there has been only modest commercial development in Pittsgrove over the last decade.

As of June 2009, there were 2,569 developed or underdeveloped (lots with a septic system that are capable of being subdivided) residential lots and 74 developed or underdeveloped nonresidential lots in the Township. The remaining 1,258 lots are not developed with a septic system. There are 1,000 lots or 13,629.6 acres which are considered undeveloped for the purposes of this build-out analysis and are not open space or farmland preserved. Note that the Wastewater Management Planning rules, N.J.A.C. 7:15, do not allow a municipality to assign development capacity to lots with unconstrained areas that do not meet the minimum lot area for the zone which they are located in.

Existing Zoning

There are 13 zoning districts in the Township, of which seven are residential districts, five are nonresidential districts and one is the Public zone district. The characteristics present in these districts vary widely depending on the predominant land uses and the environmental conditions.

A Agricultural district. This principally residential district encompasses much of the Township's prime farmland. Permitted uses include but are not limited to agricultural, single family detached dwellings, educational uses and recreation uses. Conditional uses include but are not limited to farm businesses, garden centers and planned residential cluster developments. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant land use, single family detached dwellings, has a minimum lot area of three (3.0) acres.

B-1 Neighborhood Business district. This nonresidential district is located in and near the villages of Centerton and Norma and contains a variety of uses on moderate sized lots. Permitted uses include but are not limited to day care, professional service, professional office and retail. Conditional uses include but are not limited to planned commercial centers and restaurants. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant required lot area is two (2.0) acres. Similarly, the maximum building cover varies by permitted and conditional uses but has no predominant standard; however, the average maximum permitted building cover for permitted uses is 5.0%.

HB-40 Highway Business district. This nonresidential district is located along Route 40 and contains a variety of uses on moderate sized lots. Permitted uses include but are not limited to low intensity retail and services, gasoline stations, professional offices and restaurants. Conditional uses include but are not limited to planned commercial centers, personal storage centers and vehicle, boat and farm equipment sales. The required minimum lot size in the district varies by the permitted and conditional uses with no predominant lot size. The average lots size of the permitted use, excluding the 15 acre lot size for nursing facilities, is 3.50 acres. Similarly, the required maximum permitted building cover in the district varies by the permitted and conditional uses; however, the average maximum permitted building cover for permitted uses, excluding nursing facilities, is 15.8%.

HB-56 Highway Business district. This nonresidential district is located along Route 56 and contains a variety of uses on moderate sized lots. Permitted uses include but are not limited to retail and services, gasoline stations, professional offices and restaurants. Conditional uses include but are not limited to planned commercial centers and personal storage centers. The required minimum lot size in the district varies by the permitted and conditional uses with no predominant lot size. The average lots size of the permitted use, excluding the 15 acre lot size for nursing facilities, is 3.13 acres. Similarly, the required maximum permitted building cover in the district varies by the permitted

and conditional uses; however, the average maximum permitted building cover for permitted uses, excluding nursing facilities, is 16.1%.

C Conservation district. This principally residential district encompasses much of the Township's environmentally constrained lands and generally follows the surface waterways. Permitted uses include but are not limited to agricultural, single family detached dwellings, educational uses and recreation uses. Conditional uses include but are not limited to windmills and studios or workshops. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant land use, single family detached dwellings, has a minimum lot area of five (5.0) acres.

MC-1 Industrial / Commercial district. This nonresidential district is located south of the village of Norma on larger sized lots. Permitted uses include but are not limited to retail and services, gasoline stations, professional offices, vehicle, farm equipment and boat sales, warehouse and distribution facilities and low intensity industrial operations. Conditional uses include but are not limited to planned commercial centers, limited to planned industrial parks and personal storage centers. The required minimum lot size in the district varies by the permitted and conditional uses with no predominant lot size. The average lots size of the permitted use is 4.08 acres. Similarly, the required maximum permitted building cover in the district varies by the permitted and conditional uses; however, the average maximum permitted building cover for permitted uses is 16.5%.

P Public district. This nonresidential district is scattered throughout the Township and consists of publicly owned lands. Permitted uses include but are not limited to municipal uses, educational uses and recreational uses. Conditional uses include but are not limited to windmills and wireless communication facilities. The required minimum lot size in the district varies by the permitted and conditional uses with no predominant lot size. The average lots size of the permitted use is three (3.0) acres. Similarly, the required maximum permitted building cover in the district varies by the permitted and conditional uses; however, the average maximum permitted building cover for permitted uses, excluding conservation uses, is 31.3%.

PHB Planned Highway Business district. This nonresidential district is located along Route 40 and contains a variety of uses on moderate sized lots. Permitted uses include but are not limited to low intensity retail and services, gasoline stations, landscape and garden centers, professional offices and restaurants. Conditional uses include but are not limited to planned commercial centers, personal storage centers and vehicle, boat and farm equipment sales. The required minimum lot size in the district varies by the

permitted and conditional uses with no predominant lot size. The average lot size of the permitted use, excluding the 15 acre lot size for nursing facilities, is 3.50 acres. Similarly, the required maximum permitted building cover in the district varies by the permitted and conditional uses; however, the average maximum permitted building cover for permitted uses, excluding nursing facilities, is 15.8%.

R-1 Residential District. This principally residential district largely consists of moderate sized residential lots south of the Route 40 frontage and along Crow Pond Road. Permitted uses include but are not limited to agricultural, single family detached dwellings and recreation uses. Conditional uses include but are not limited to daycare, planned residential cluster developments, farm businesses and churches. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant land use, single family detached dwellings, has a minimum lot area of two (2.0) acres.

R-2 Residential District. This principally residential district largely consists of moderate sized residential lots along Buck Road, Jesse Bridge Road and near the village of Norma. Permitted uses include but are not limited to agricultural, single family detached dwellings and recreation uses. Conditional uses include but are not limited to daycare, churches and windmills. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant land use, single family detached dwellings, has a minimum lot area of 45,000 square feet (1.0 acre).

R-3 Residential District. This principally residential district largely consists of moderate sized residential lots north of the village of Norma along Jesse Bridge Road. Permitted uses include but are not limited to agricultural, single family detached dwellings and recreation uses. Conditional uses include but are not limited to daycare, churches and windmills. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant land use, single family detached dwellings, has a minimum lot area of 30,000 square feet (0.7 acre).

R-4 Residential District. This principally residential district largely consists of moderate sized residential lots along Buck Road, Jesse Bridge Road and near the village of Norma. Permitted uses include but are not limited to agricultural, single family detached dwellings and recreation uses. Conditional uses include but are not limited to daycare, churches and windmills. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant land use, single family detached dwellings, has a minimum lot area of 22,000 square feet (0.5 acres).

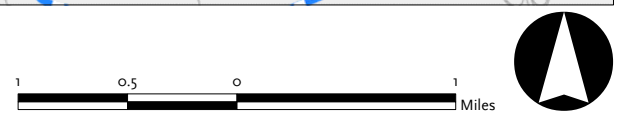
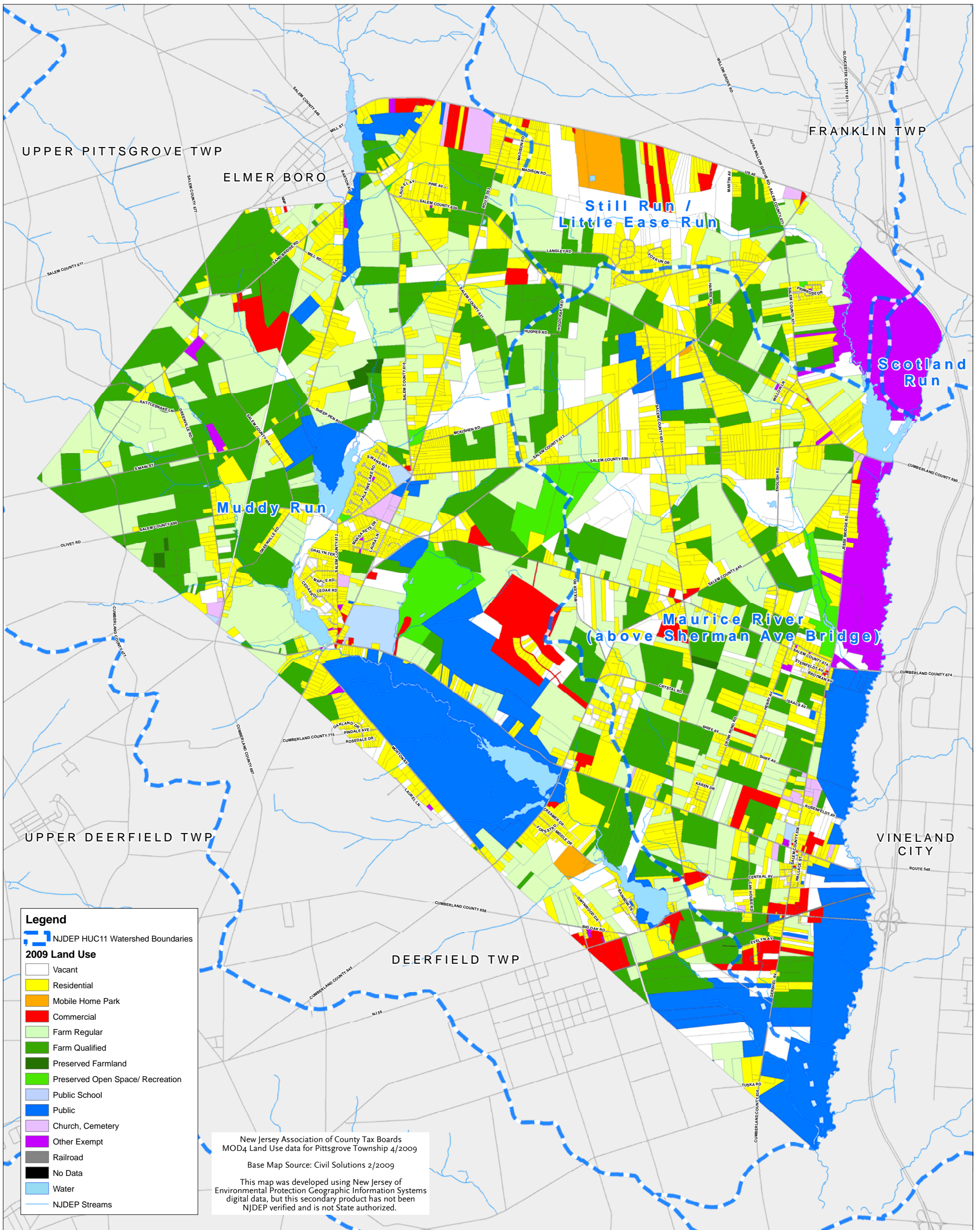
RR Rural Residential district. This principally residential district, which is the largest in the Township, contains much of the Township’s farmland and scattered single-family residential development. Permitted uses include but are not limited to agricultural, churches, single family detached dwellings, educational uses and recreation uses. Conditional uses include but are not limited to daycare, planned residential cluster developments, farm businesses and golf courses. The required minimum lot size in the district varies by the permitted and conditional uses; however, the predominant land use, single family detached dwellings, has a minimum lot area of three (3.0) acres.

Table 9. below provides information on the total area of each district (including roadways) and the area within each HUC II.

Table 9. Zone District Areas and Developed/Undeveloped/Underdeveloped Land Area

	Total Area*	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
A District	5,206.9	4,000.3	943.8	262.8	0
B-1 District	321.7	82.9	238.8	0	0
HB-40 District	144.1	63.3	0	80.8	0
HB-56 District	161.1	49.0	112.1	0	0
C District	6,261.5	3,000.4	2,185.7	813.1	262.3
MC-1 District	412.6	202.2	210.4	0	0
P District	1,423.8	1,354.8	69.1	0	0
PHB District	282.6	74.9	42.6	165.2	0
R-1 District	2,282.7	5,66.9	1,280.5	435.3	0
R-2 District	1,383.8	826.0	400.2	157.6	0
R-3 District	296.6	0	296.6	0	0
R-4 District	369.2	305.2	64.1	0	0
RR District	9,979.1	4,466.4	4,675.2	837.5	0

* Excludes water



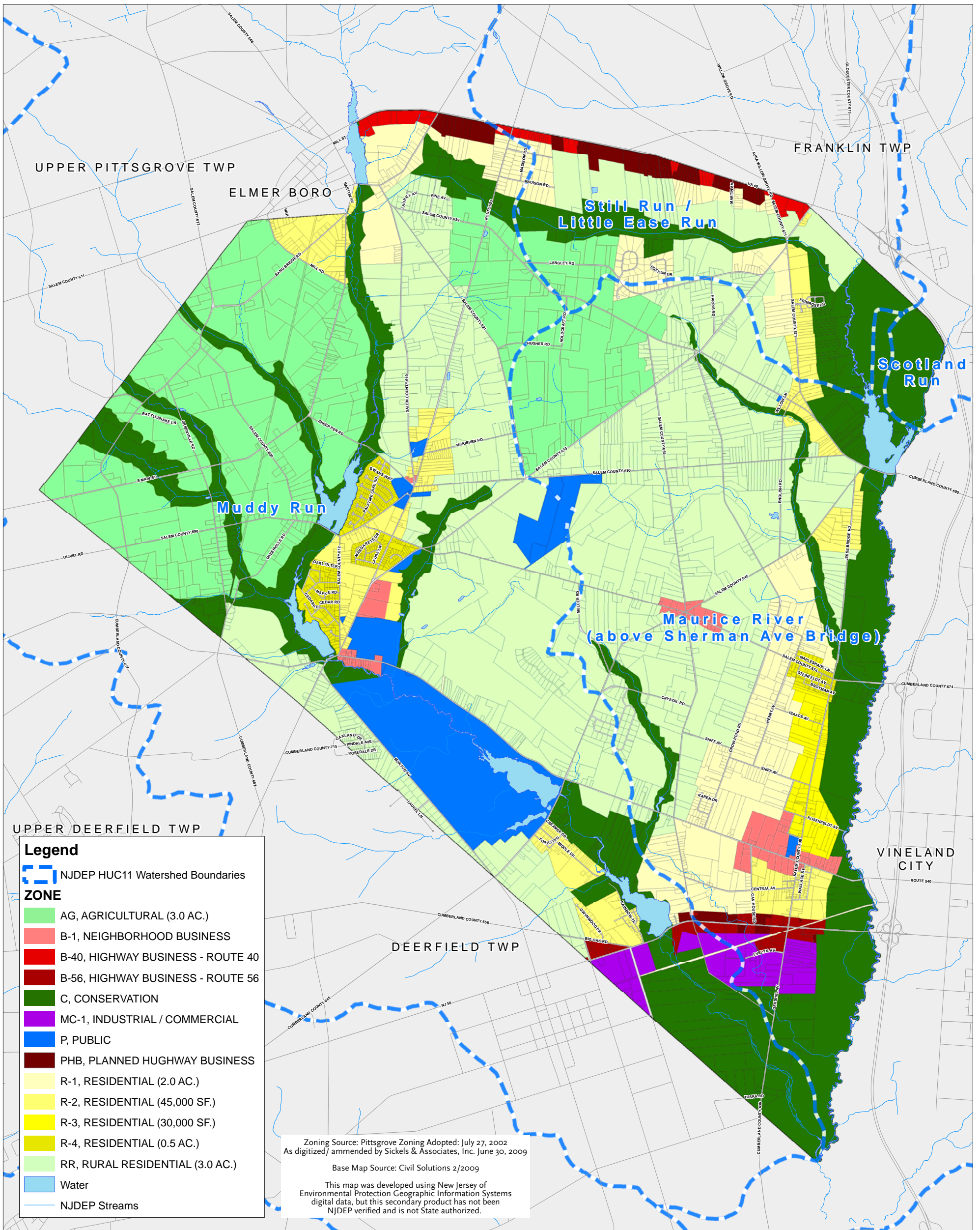
BUILD-OUT ANALYSIS

Existing Land Use

Pittsgrove Township, Salem County, NJ August 2009

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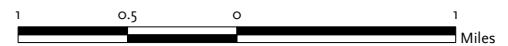


BUILD-OUT ANALYSIS

Zoning

Pittsgrove Township, Salem County, NJ August 2009

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 Architecture
 Planning
 Landscape Architecture



New Jersey State Development and Redevelopment Plan

The adopted 2001 and draft 2009 New Jersey State Development and Redevelopment Plan (“State Plan”) has designated Pittsgrove Township lands as one of three planning areas: the Rural Planning Area (PA4), the Rural Environmentally Sensitive Planning Area (PA 4B) and the Environmentally Sensitive Planning Area (PA 5). The Township also has significant lands designated as Parks and Recreation Areas. The below table provides additional information on the Township’s Planning Areas.

Table 10. State Plan Planning Areas

Planning Area	2001 Adopted State Plan		2009 Draft State Plan	
	Acres	% of Total	Acres	% of Total
Rural	640.4	2.2%	591.7	2.0%
Rural Environmentally Sensitive	16,759.0	57.3%	16,269.6	55.6%
Environmentally Sensitive	9,299.6	31.8%	8,411.7	28.7%
Parks and Recreation	2,570.7	8.8%	3,677.6	12.0%

The Rural Environmentally Sensitive Planning Area is described as the following in the State Plan:

“Some lands in the Rural Planning Area (PA4) have one or more environmentally sensitive features qualifying for delineation as Rural/Environmentally Sensitive (PA4B). This subarea contains valuable ecosystems or wildlife habitats. Rural/Environmentally Sensitive Planning Areas are supportive of agriculture and other related economic development efforts that ensure diversity within New Jersey. Any development or redevelopment planned in the Rural/Environmentally Sensitive Area should respect the natural resources and environmentally sensitive features of the area.”

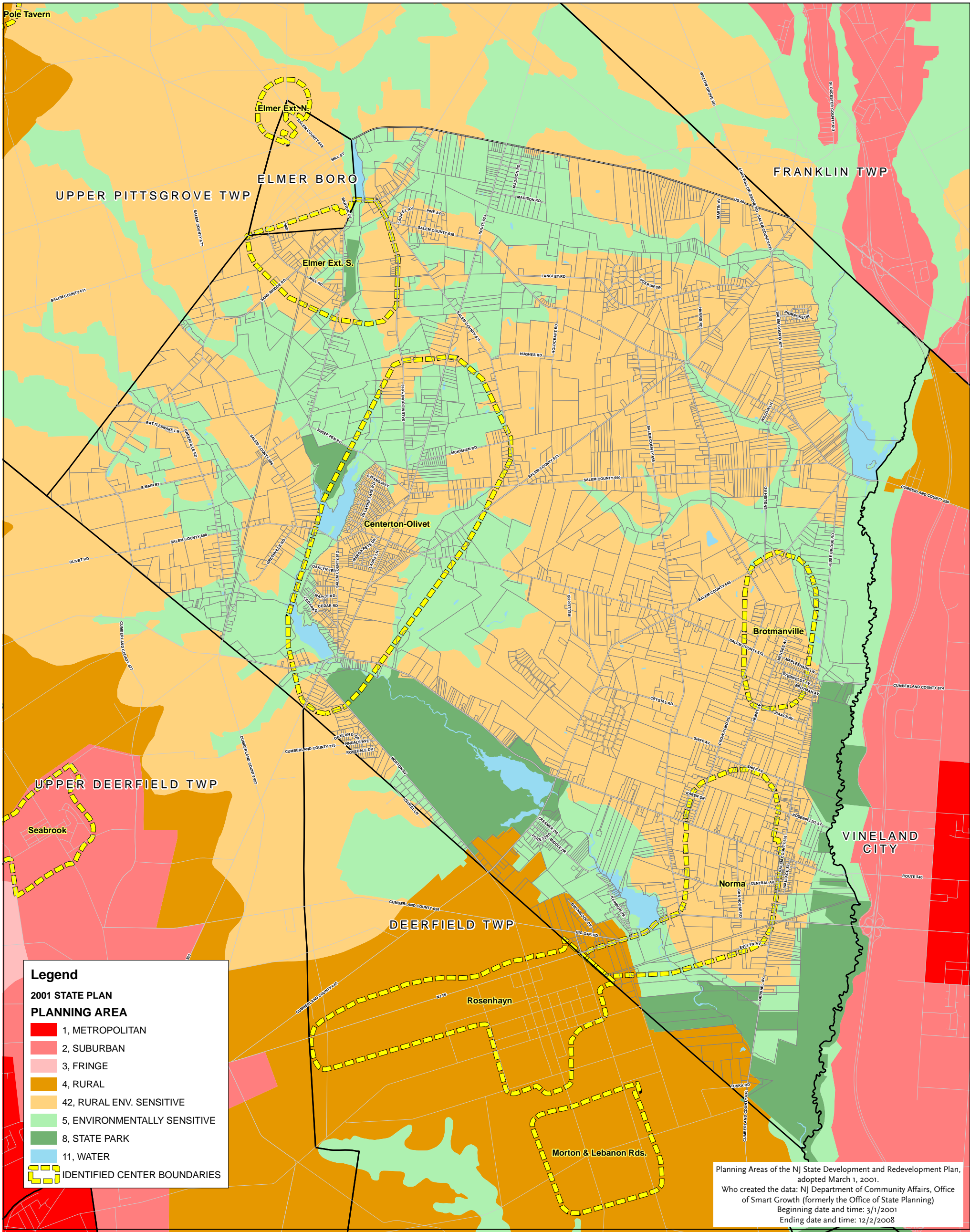
The Environmentally Sensitive Planning Area is described as the following in the State Plan:

“The Environmentally Sensitive Planning Area contains large contiguous land areas with valuable ecosystems, geological features and wildlife habitats particularly in the Delaware Bay and other estuary areas, the Highlands Region, and coastal area. The future environmental and economic integrity of

the state rests in the protection of these irreplaceable resources. Some of these lands have remained somewhat undeveloped or rural in character. Other areas, particularly New Jersey's coastal barrier islands, have experienced advanced levels of development, but remain highly vulnerable to natural forces. Environmentally Sensitive Planning Areas are characterized by watersheds of pristine waters, trout streams and drinking water supply reservoirs; recharge areas for potable water aquifers; habitats of endangered and threatened plant and animal species; coastal and freshwater wetlands; prime forested areas; scenic vistas; and other significant topographical, geological or ecological features, particularly coastal barrier spits and islands. These resources are critically important not only for the residents of these areas, but for all New Jersey citizens."

In addition to these planning areas, the Township also has several areas of Critical Environmental Constraints. These areas, are described as the following the in State Plan.

"The Critical Environmental Sites (CES) and Historic and Cultural Sites (HCS) designations are used to help organize planning for new development or redevelopment by singling out the elements of natural systems, small areas of habitat, historic sites, and other features that should continue to be expressed in the future landscape through protection and restoration. Riparian corridors are excellent examples of eligible features for mapping, as are remnants of forest and small wetlands. The presence of CES and HCS gives land owners and developers important advance information on how to shape their proposals for development of the land around them, focusing on including them within the design and function of the development whenever possible, while at the same time protecting them from adverse impacts."



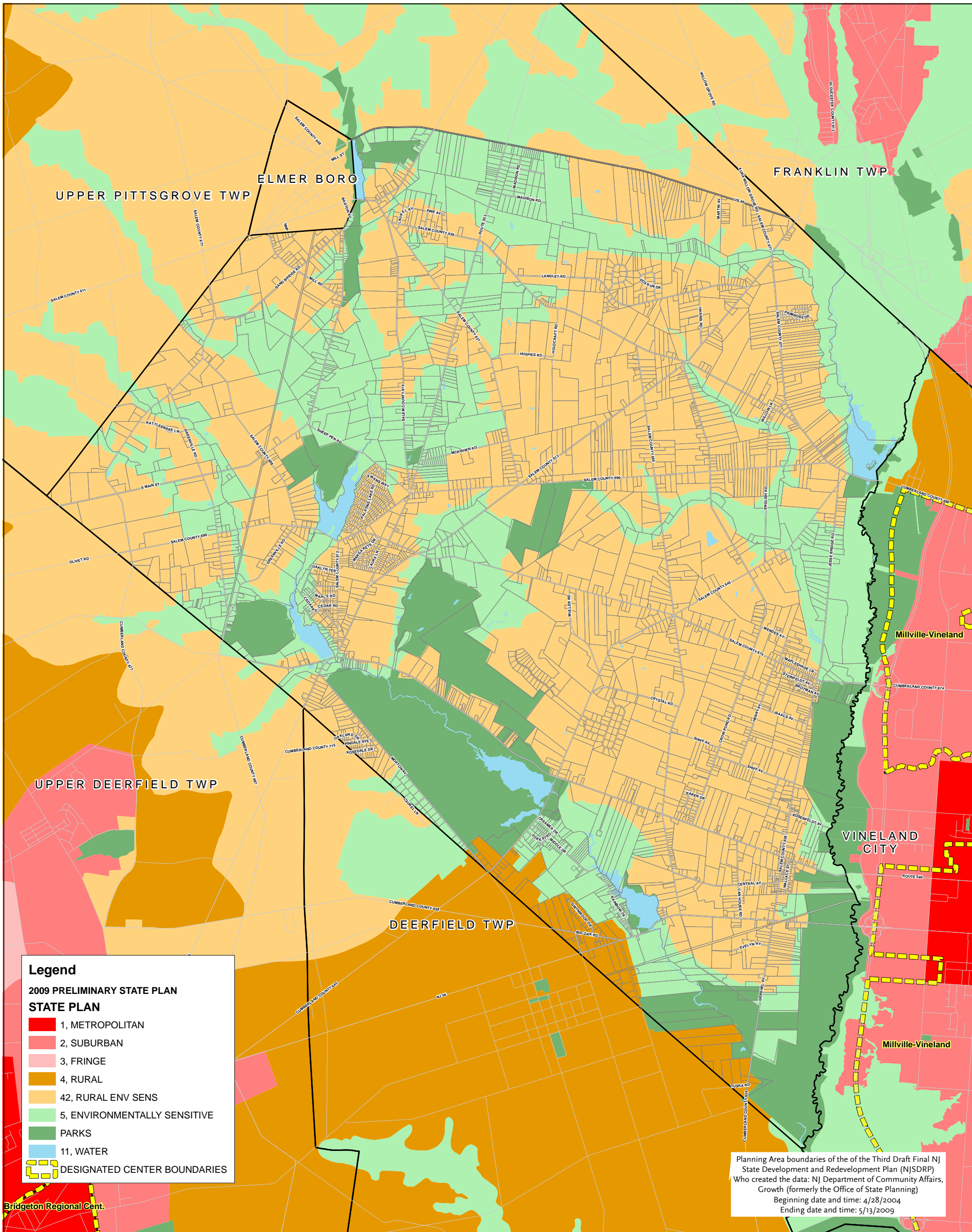
BUILD-OUT ANALYSIS

2001 NJ Adopted SDRP

Pittsgrove Township, Salem County, NJ August 2009

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- Architecture
- Planning
- Landscape Architecture



BUILD-OUT ANALYSIS

2009 NJ Draft SDRP

Pittsgrove Township, Salem County, NJ August 2009



Clarke Caton Hintz



Architecture
 Planning
 Landscape Architecture

BUILD-OUT ANALYSIS METHODOLOGY

This report provides an analysis of the development capacity in areas served by septic systems under the following scenario:

- Existing Zoning;
- Net Nitrate Dilution: DEP nitrate dilution standards applied to available lands which *exclude* permanently preserved properties and environmentally constrained lands.

Note that the Township’s few sites with a NJPDES discharge permit are not served by septic systems and are therefore excluded from the build-out analysis. These sites are listed below in Table 11.

Table 11. NJPDES Discharge Permits

NJPDES No.	Facility Name	Facility Address
NJ0061841 / NJ0103039	B & B Poultry Co. Inc.	Almond Road
NJ0090221	Arthur Schalick High School	Route 553
NJ0099678	Harding Woods Inc.	187 Harding Highway
NJ0157716	Daytop of NJ	4 Harding Highway
NJG0084883	The Villages I	388 Porchtown Road
NJG0108405	Holly Tree Acres Mobile Home Park	109 Middle Drive
NJG0112305	Lee Transport Inc.	Garden Road
NJG0129577	Centerton Country Club	1022 Almond Road
NJG0133167	Parvin State Park	701 Almond Road
NJG0154512	Pittsgrove Township	989 Centerton Road
NJG0160652	Region South Drainage	Route 40
NJG0165042	NJDOT Rt 40.	Route 40 4, Elmer
NJG0169129	NJDOT Rt. 56 Rainbow Lake Dam Replacement	Route 56 Rainbow Lake

The DEP provided the septic densities to be approved by each HUC 11 in the build-out analyses. The septic densities have been converted to nonresidential floor area ratio in order to provide a development intensity equivalent for nonresidential districts. There are four HUC 11 areas in Pittsgrove. The below table lists each HUC 11 and the associated septic density.

Table 12. HUC 11 Area Septic Densities

HUC 11 Drainage Area	Residential Septic Density	Nonresidential Floor Area Ratio
Still Run / Little Ease Run (02040206120)	6.6 acres	.0139
Scotland Run (02040206130)	6.4 acres	.0140
Maurice River – above Sherman Ave. Bridge (02040206140)	6.8 acres	.0133
Muddy Run (02040206150)	6.9 acres	.0135

Existing Zoning Build-out Analysis

The existing zoning analysis was conducted pursuant to the Water Quality Management Planning regulations, *N.J.A.C. 7:15*. As such, an analysis of the development capacity for areas served by septic systems was conducted for each zone district and broken down by each HUC 11 area.

The first step in the analysis was to determine the “available” lands. Available lands include lots that either do not contain a septic system or contain one septic system and the unconstrained lands area is capable of being subdivided pursuant to the minimum lot area required by the zoning standards. Environmental constraints and lots which are permanently preserved via a deed restriction permitting only conservation, recreation or agriculture are excluded from the available lands in this scenario. The land use information is largely based on a land use survey completed for the Township; a land use survey is advantageous over the DEP Land Use Land Cover data since the Land Use Land Cover, which is current as of 2002, is out dated and a land use survey provides more detailed information. Environmental constraints, for this purpose, are defined as areas of water, wetlands, wetlands buffers, stream corridor buffers, 100 year flood plain and steep slopes. It is important to note that the Water Quality Management Planning Rules do not permit the analysis to assign a unit, or septic system, to existing lots whose available area (excludes environmental constraints) is undersized pursuant to the zoning regulations. Instead, the undersized lots must be excluded from the available land area.

Once the available lands within each district have been determined, the permitted residential density or nonresidential floor area, as applicable, is applied to the lands in each zone in order to yield the residential and nonresidential development capacities. Chapter 60 of the Township’s Code, Land Use and Development, limits development in the nonresidential districts via building cover. While the Township permits multi-story

buildings in the nonresidential zones, nearly every nonresidential building in the Township is a single story. As such, this analysis assumes the construction of single story buildings in the nonresidential districts and the floor area is limited by the building cover standard.

This application yields the number of new septic systems – or new homes – and the nonresidential floor area permitted under the existing zoning.

The permitted density of each residential zone is applied to the available lands in the residential zone districts. The available lands include underdeveloped lots that contain a septic system and are capable of being subdivided; however, the GIS model does not recognize that existing units are present on a portion of the land. The build-out must be adjusted to account for the existing septic systems/units, so that the existing units are not double counted and included in the model. Accordingly, the number of existing housing units on the underdeveloped lots is subtracted from the development capacity. The result is the existing zoning residential build-out – the number of new septic systems (i.e. new homes) that are permitted in each residential district.

The permitted building cover of each nonresidential zone is applied to the available lands in the nonresidential districts. This results in the building cover (floor area of a single story building) permitted in each nonresidential district. Data to account for existing floor area on the nonresidential underdeveloped lots is not available; as a result this build-out analysis accounts for the existing buildings in the underdeveloped lots by reducing the unconstrained underdeveloped land area by half. This reduction provides an estimate of the land area devoted to the existing commercial use and accommodates the fact that the best lands in terms of access and suitability are generally developed first, leaving the less desirable lands to be developed at a future point in time. However, these resulting nonresidential floor areas must be converted to equivalent dwelling units, as defined in *N.J.A.C. 7:15*. An equivalent dwelling unit represents one septic system accommodating the maximum permitted nonresidential construction. More specifically, the definition states it is the nonresidential floor area that is the equivalent to a three-bedroom, three-person single family detached home from the perspective of release of nitrate into the environment; this standard is 500 gallons per day. As such, to determine the equivalent dwelling unit, the permitted floor area is multiplied by .1 – the standard for wastewater generation per square foot of nonresidential development; every 500 gallons that results from this calculation requires one septic system. The nonresidential building cover and nonresidential equivalent dwelling units is the existing zoning nonresidential build-out.

Net Nitrate Dilution

The net nitrate dilution analysis excludes environmental constraints and permanently preserved properties from the available lands.

The first step in the analysis was to determine the “available” lands. Available lands include lots that either do not contain a septic system or contain one septic system and the unconstrained lands area capable of being subdivided pursuant to the minimum lot area required by the zoning standards. This information is largely based on a land use survey completed for the Township; a land use survey is advantageous over the DEP Land Use Land Cover data since the Land Use Land Cover, which is current as of 2002, is out dated and a land use survey provides more detailed information. Environmental constraints and lots which are permanently preserved via a deed restriction permitting only conservation, recreation or agriculture are excluded from the available lands in this scenario. Environmental constraints, for this purpose, are defined as areas of water, wetlands, wetlands buffers, stream corridor buffers, 100 year flood plain and steep slopes. It is important to note that the Water Quality Management Planning Rules do not permit the analysis to assign a unit, or septic system, to existing lots whose available area (excludes environmental constraints) is undersized pursuant to the zoning regulations. Instead, the undersized lots must be excluded from the available land area.

Once the available lands within each district have been determined, the residential septic density or nonresidential floor area ratio, as applicable, is applied.

The residential septic density, per the DEP, is applied to the available lands in the residential zone districts. The available lands include underdeveloped lots that contain a septic system and are capable of being subdivided; however, the GIS model does not recognize that existing units are present on a portion of the land. The build-out must be adjusted to account for the existing septic systems/units, so that the existing units are not double counted and included in the model. Accordingly, the number of existing housing units on the underdeveloped lots is subtracted from the development capacity. The result is the existing zoning residential build-out – the number of new septic systems (i.e. new homes) that are permitted in each residential district.

The nonresidential floor area, per the DEP, is applied to the available lands in the nonresidential districts. This results in floor area permitted in the nonresidential districts within each HUC 11 area. Data to account for existing floor area on the nonresidential underdeveloped lots is not available; as a result this build-out analysis accounts for the existing buildings in the underdeveloped lots by reducing the unconstrained underdeveloped land area by half. This reduction provides an estimate of

the land area devoted to the existing commercial use and accommodates the fact that the best lands in terms of access and suitability are generally developed first, leaving the less desirable lands to be developed at a future point in time. However, these resulting nonresidential floor areas must be converted to equivalent dwelling units, as defined in *N.J.A.C. 7:15*. An equivalent dwelling unit represents one septic system accommodating the maximum permitted nonresidential construction. More specifically, it is the nonresidential floor area that is the equivalent to a three-bedroom, three-person single family detached home from the perspective of release of nitrate into the environment; this standard is 300 gallons per day. As such, to determine the equivalent dwelling unit, the permitted floor area is multiplied by .1 – the standard for wastewater generation per square foot of nonresidential development; every 500 gallons that results from this calculation requires one septic system. The nonresidential building cover and nonresidential equivalent dwelling units is the net nitrate dilution nonresidential build-out.

Population Projection

Once the residential development capacity calculations were completed, the anticipated population increase was determined. The anticipated people per household is best determined using demographic multipliers for New Jersey. The most recent document which addresses this data is one which was developed in November 2006 by the Center for Urban Policy Research and is titled “*Who Lives in New Jersey Housing? A Quick Guide to New Jersey Residential Demographic Multipliers*”³. The multipliers for a four bedroom single family detached home, all values, was used in the population projection. The Tax Assessor reported in June 2009 reported that the majority of new homes built in the Township contain four bedrooms. Furthermore, this housing type is appropriate since, excluding mobile home units, approximately 96% of the Township’s housing stock consists of single family detached units⁴.

³ Listokin, David. *Who Lives in New Jersey Housing? A Quick Guide to New Jersey Residential Demographic Multipliers*. Center for Urban Policy Research, Edward J. Bloustein School of Planning and Public Policy, Rutgers, The State University of New Jersey. November 2006.

⁴ 2000 US Census

EXISTING ZONING BUILD-OUT ANALYSIS

This office has constructed a development capacity analysis of the Township based on the existing zoning conditions, pursuant to the methodology described previously. Table 13. demonstrates the number of new residential units that can be constructed in the Township within each zone district, and broken down by HUC 11, based on the existing zoning. These figures indicate that the existing zoning standards would permit an additional 4,542 housing units in the Township at full build-out. This would result in an approximate total of 8,061 housing units in Pittsgrove Township.⁵

Table 13. Residential Zone Capacity Based on Existing Zoning Standards

	Zone District Subtotal	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
A District	955.6	697.6	184.4	73.6	0
C District	104.0	56.4	22.5	25.1	0
R-1 District	587.4	108.4	375.6	103.4	0
R-2 District	727.8	410.1	214.6	103.1	0
R-3 District	342.3	0	342.3	0	0
R-4 District	143.3	107.3	36.0	0	0
RR District	1,555.2	701.9	853.3	1,28.1	0
<i>Total</i>	<i>4,416</i>	<i>2,081</i>	<i>2,028</i>	<i>433</i>	<i>0</i>

These residential capacity figures are translated into population projections using the demographic multipliers discussed in the Methodology section of this report. The population of the existing zoning build-out is 16,666 additional persons, of which 4,892 are school-aged children. Table 14 below illustrates these population projections.

⁵ This figure is derived from the 2008 estimate of housing units added to the Existing Zoning Build-out of housing units.

Table 14. Existing Zoning Population Projection

	Population Multiplier	Projected Units	Population Projection
Total Persons	3.774	4,416	16,666
School-aged Children	1.077	4,416	4,756

The Township has 6 nonresidential districts. The nonresidential development capacity determines the number of septic systems, illustrated in this report as equivalent dwelling units, which can be accommodated as well as the floor area that can be accommodated. Table 15. demonstrates the development capacity for new nonresidential buildings and floor area by zone district and HUC 11.

Table 15. Nonresidential Development Capacity Based on Existing Zoning Build-out

	Zone District Subtotal	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
B-1 District					
Equivalent Dwelling Units	71.8	18.8	53.0	0.0	0.0
Floor Area	358,895.1	93,934.6	264,960.5	0.0	0.0
HB-40 District					
Equivalent Dwelling Units	25.8	10.6	0.0	15.2	0.0
Floor Area	128,949.5	52,777.4	0.0	76,172.1	0.0
HB-56 District					
Equivalent Dwelling Units	89.1	25.4	63.7	0.0	0.0
Floor Area	445,572.9	126,946.8	318,626.1	0.0	0.0
MC-1 District					
Equivalent Dwelling Units	325.5	185.2	140.4	0.0	0.0
Floor Area	1,627,610.8	925,829.7	701,781.1	0.0	0.0
P District					
Equivalent Dwelling Units	52.6	39.8	12.8	0.0	0.0
Floor Area	262,860.3	198,979.7	63,880.7	0.0	0.0

Build-out Analysis
Pittsgrove Township, Salem County

	Zone District Subtotal	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
PHB District					
Equivalent Dwelling Units	163.9	39.7	45.9	78.4	0.0
Floor Area	819,614.2	198,271.3	229,477.1	391,865.8	0.0
<i>Total Equivalent Dwelling Units</i>	728.7	319.3	315.7	93.6	0.0
<i>Total Floor Area</i>	3,643,502.6	159,6739.4	157,8725.4	468,037.8	0.0

NET NITRATE DILUTION BUILD-OUT ANALYSIS

This office has constructed a development capacity analysis of the Township based on the existing zoning conditions, pursuant to the Net Nitrate Dilution methodology described above. Table 16. demonstrates the number of new residential units that can be constructed in the Township within each zone district, and broken down by HUC 11. These figures indicate that the existing zoning standards would permit an additional 1290 housing units in the Township at full build-out. This would result in an approximate total of 4,809 housing units in Pittsgrove Township.⁶

Table 16. Residential Zone Capacity Based on Net Nitrate Dilution Build-out Analysis

	Zone District Subtotal	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
A District	404.6	294.8	77.5	32.4	0
C District	74.0	38.7	16.3	19.0	0
R-1 District	129.6	20.0	96.3	13.2	0
R-2 District	15.4	14.5	0.0	0.9	0
R-3 District	9.5	0.0	9.5	0.0	0
R-4 District	0.0	0.0	0.0	0.0	0
RR District	658.5	268.5	334.5	55.5	0
<i>Total</i>	<i>1,292</i>	<i>637</i>	<i>534</i>	<i>121</i>	<i>0</i>

These residential capacity figures are translated into population projections using the demographic multipliers discussed in the Methodology section of this report. The population of the existing zoning build-out is 4,868 additional persons, of which 1,389 are school-aged children. The below table illustrates the population projections.

⁶ This figure is derived from the 2008 estimate of housing units added to the Net Nitrate Dilution Build-out of housing units.

Table 17. Existing Zoning Population Projection

	Population Multiplier	Projected Units	Population Projection
Total Persons	3.774	1,292	4,876
School-aged Children	1.077	1,292	1,391

The Township has 6 nonresidential districts. The nonresidential development capacity determines the number of septic systems, illustrated in this report as equivalent dwelling units, that can be accommodated as well as the floor area that can be accommodated. Table 18. demonstrates the development capacity for new nonresidential buildings and floor area by zone district and HUC 11.

Table 18. Nonresidential Development Capacity Based on Net Nitrate Dilution Build-out

	Zone District Subtotal	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
B-1 District					
Equivalent Dwelling Units	33.1	18.8	14.3	0.0	0
Floor Area	96,525.9	24,986.6	71,539.3	0.0	0
HB-40 District					
Equivalent Dwelling Units	11.9	10.6	0.0	1.3	0
Floor Area	11,143.9	4,442.7	0.0	6,701.2	0
HB-56 District					
Equivalent Dwelling Units	30.7	25.4	5.3	0.0	0
Floor Area	37,204.0	10,486.9	26,717.1	0.0	0
MC-1 District					
Equivalent Dwelling Units	26.4	14.9	11.5	0.0	0
Floor Area	132,045.9	74,627.5	57,418.5	0.0	0
P District					
Equivalent Dwelling Units	2.3	1.7	0.6	0.0	0
Floor Area	11,210.3	8,455.1	2,755.2	0.0	0

Build-out Analysis
Pittsgrove Township, Salem County

	Zone District Subtotal	Muddy Run	Maurice River (above Sherman Ave. Bridge)	Still Run / Little Ease Run	Scotland Run
PHB District					
Equivalent Dwelling Units	14.1	3.3	3.9	6.9	0
Floor Area	70,771.4	16,689.9	19,607.2	34,474.3	0
<i>Total Equivalent Dwelling Units</i>	118.5	74.7	35.6	8.2	0
<i>Total Floor Area</i>	358,901.40	139,688.60	178,037.30	41,175.50	0

BUILD-OUT ANALYSIS CONCLUSION

The results of the build-out scenarios indicates that the existing zoning yields radically more construction than net nitrate dilution. The existing zoning yields 350% more housing units than do net nitrate dilution scenario.

Table 19. Comparison of Build-out Scenarios

	Housing Units	Population	School Aged Children	Nonresidential Floor Area	Nonresidential Equivalent Dwelling Units
Existing Zoning	4,542	16,666	4,756	3,643,502.6	1,214.6
Net Nitrate Dilution	1,292	4,876	1,391	358,901.4	119.6

The available lands in the build-out scenarios include lands which have received approval for construction. However, as a practical matter many of these approved units and nonresidential construction will be built in the future, before revised zoning or permitting is implemented. As such, these approved units and nonresidential floor area must be accounted for in the number of units and nonresidential floor area which the Township’s zoning may accommodate.

To date, there are 79 approved residential units that have not been constructed. The below table indicates the impact of these units on the Township’s remaining residential capacity.

The results from the two build-out scenarios differ from those completed as part of the 2000 Master Plan. At this time, it was estimated that the Township could accommodate an additional 8,423 residential lots and 25,600 additional residents. Since 2000, the Township has created 364 new residential units⁷. The build-out of the Township’s residential zones has been adjusted downward since the 2000 due to changes in the zoning and changes in New Jersey DEP regulations. However, these nitrate dilution standards will result in a significant further reduction of the 2000 projected build-out.

⁷ Department of Community Affairs Construction Reporter; reported residential certificates of occupancy minus reported residential demolition permits.

Table 20. Impact of Approved but Unbuilt Residential Units

	Build-out Housing Units	Approved but Unbuilt Units	Remaining Development Capacity
Existing Zoning	4,542	79	4,463
Net Nitrate Dilution	1,290	79	1,211

To date, there is 21,100 square feet of approved but unbuilt nonresidential space – all of which is storage space. The below table indicates the impact of this floor area on the Township’s remaining nonresidential development capacity.

Table 21. Impact of Approved but Unbuilt Nonresidential Floor Area

	Build-out Nonresidential Space	Approved Nonresidential Space	Remaining Development Capacity
Existing Zoning	3,643,502	21,100	3,622,402
Net Nitrate Dilution	358,901	21,100	337,801