

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: _____

Prepared By:

SICKELS & ASSOCIATES, INC.
833 KINGS HIGHWAY
WOODBURY, NEW JERSEY 08096
(PHONE: 856-848-6800)



Table of Contents

TABLE OF CONTENTS	2
LIST OF TABLES	4
LIST OF MAPS	5
I. INTRODUCTION	6
ALTERNATIVE ASSIGNMENT OF WASTEWATER MANAGEMENT PLANNING RESPONSIBILITY	6
STATUS OF PREVIOUS APPROVED LOCAL AND REGIONAL WMPs AFFECTED BY THE COUNTY WMP	6
OVERVIEW OF COUNTY	7
OVERVIEW OF CURRENT WASTEWATER SERVICES AND WASTEWATER RESPONSIBILITIES (OPTIONAL)	8
OVERVIEW OF CURRENT WATER SERVICES AND WATER SUPPLY RESPONSIBILITIES (OPTIONAL)	9
OVERVIEW OF MAJOR ENVIRONMENTAL, REGIONAL AND LOCAL CONSIDERATIONS TO WASTEWATER SERVICES	10
OVERVIEW OF MAJOR WATER RESOURCE MANAGEMENT ISSUES	11
OVERVIEW OF FUTURE WASTEWATER SERVICES AND RESPONSIBILITIES	11
SUMMARY OF SIGNIFICANT ACTIONS	12
II. EXISTING INFRASTRUCTURE AND DEMOGRAPHIC INFORMATION	13
EXISTING AREAS SERVED BY WASTEWATER FACILITIES	13
<i>Existing Public Wastewater Treatment Works</i>	<i>13</i>
<i>Major Transmission Piping and Pumping Stations</i>	<i>14</i>
<i>Existing On-site, Non-industrial Wastewater Facilities</i>	<i>14</i>
<i>Existing Industrial Treatment Works for Process Wastes and Sanitary Sewage</i>	<i>14</i>
<i>Wastewater Management Areas for Septic Systems and Other Small Treatment Works Not Discharging to Surface Waters</i>	<i>14</i>
EXISTING AREAS SERVED BY PUBLIC WATER SUPPLY FACILITIES	14
III. ENVIRONMENTAL AND OTHER LAND FEATURES	16
IV. DELINEATION OF SEWER SERVICE AREAS AND PLANNING INTEGRATION	18
ENVIRONMENTALLY SENSITIVE AREAS MAP	18
SEWER SERVICE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS	18
<i>Exceptions to the Use of Geographic or Political Boundaries</i>	<i>19</i>
DELAWARE RIVER BASIN COMMISSION	19
<i>Coordination with the Delaware River Basin Commission (if applicable)</i>	<i>19</i>
COORDINATION WITH MUNICIPALITIES, SEWER AUTHORITIES AND WATER UTILITIES	19
PROPOSED WASTEWATER SERVICE AREAS	20
V. FUTURE COUNTY WASTEWATER DEMAND AND FACILITIES	21
<i>Conformance and Nonconformance with Zoning and Prior Land Use Approvals</i>	<i>21</i>
<i>Availability of Land Parcel Data</i>	<i>21</i>
MUNICIPAL ZONING AND COMPOSITE ZONING (AS APPLICABLE IF COMPOSITE ZONING WAS USED)	21
CALCULATING FUTURE WASTEWATER AND WATER SUPPLY NEEDS AND CAPACITY	22
MUNICIPAL DEMAND PROJECTIONS IN URBAN MUNICIPALITIES	22
MUNICIPAL DEMAND PROJECTIONS IN NON-URBAN MUNICIPALITIES	23
<i>Future Wastewater from Non-Urban Municipalities' Sewer Service Areas</i>	<i>23</i>
<i>Septic System Development Within the Sewer Service Areas</i>	<i>25</i>
<i>Collection System Construction Within the Sewer Service Areas (if applicable)</i>	<i>25</i>
<i>Future Wastewater Outside of Sewer Service Areas</i>	<i>25</i>
<i>Non-degradation Areas</i>	<i>25</i>

VI. ANALYSIS OF CAPACITY TO MEET FUTURE WASTEWATER NEEDS	25
ADEQUACY OF SEWAGE TREATMETN PLANT CAPACITY	30
ANALYSIS AND SELECTION OF TREATMENT ALTERNATIVES	30
COMPLIANCE WITH ENVIRONMENTAL PROTECTION STANDARDS	34
<i>TMDLs and Watershed Restoration/Regional Stormwater Management Plans</i>	35
<i>Environmental Protection Ordinances</i>	35
VII. WASTEWATER FACILITY TABLES	37
VIII. FUTURE COUNTY WATER SUPPLY AVAILABILITYANALYSIS	43
AVAILABILITY OF WATER SUPPLY	39
SUFFICIENCY OF WATER SUPPLY	40
IX. MUNICIPAL WASTEWATER MANAGEMENT CHAPTERS	42
IX.1: ALLOWAY TOWNSHIP	IX.1-1
IX.2: CARNEYS POINT TOWNSHIP	IX.2-1
IX.3: ELMER BOROUGH	IX.3-1
IX.4: ELSINBORO TOWNSHIP	IX.4-1
IX.5: LOWER ALLOWAYS CREEK TOWNSHIP	IX.5-1
IX.6: MANNINGTON TOWNSHIP	IX.6-1
IX.7: OLDMANS TOWNSHIP	IX.7-1
IX.8 PENNS GROVE BOROUGH	IX.8-1
IX.9: PENNSVILLE TOWNSHIP	IX.9-1
IX.10: PILESGROVE TOWNSHIP	IX.10-1
IX.11: PITTS GROVE TOWNSHIP	IX.11-1
IX.12: QUINTON TOWNSHIP	IX.12-1
IX.13: SALEM CITY	IX.13-1
IX.14: UPPER PITTS GROVE TOWNSHIP	IX.14-1
IX.15: WOODSTOWN BOROUGH	IX.15-1
X. SEPTIC MANAGEMENT PLAN	42
APPENDIX "A": Wastewater Facilities Tables	

List of Tables

Table	Title
1.	Table 1-1: Current WMPs
2.	Table 1-2: Geography of County
3.	Table 1-3: Percentage of County Served by FWSA
4.	Table 1-4: Estimates # of Persons Served by Sanitary Sewer
5.	Table 1-5: Estimates # of Persons Served by Potable Water
6.	Table 2-1: Wastewater Districts, Franchise Areas and Municipalities Served
7.	Table 2-2: Water Supply Districts, Franchise Areas and Municipalities Served
8.	Table 4-1: Municipalities and Utilities Contacted During WMP Process
9.	Table 5-1: Determination of Urbanized Municipalities
10.	Table 5-2: Urban Municipalities 20 Year Population, Employment and Wastewater Flow Projections
11.	Table 5-3: Additional Development at Build-out
12.	Table 6-1: Future Wastewater Planning Flows By Facility
13.	Table 6-2: New and Expanded Treatment Facilities
14.	Table 6-3: HUC11 Dilution Analysis Summary- Potential Development and Available Capacity
15.	Table 6-4: Status of Municipal Ordinances and Master Plan*
16.	Table 7-1: Summary of NJPDES Facility information
17.	Table 8-1: Future Potable Water Demand By Facility
18.	Table 8-2: Future Potable Water Demand By Facility
19.	Table 9-1: Ordinances for Septic System Development in Sewer Service Areas
20.	Table 9-2: Ordinances for Municipal Stormwater Management
21.	Table 9-3: Ordinances for Riparian Zone Protection
22.	Table 9-4: Ordinances for Steep Slope Protection
23.	Table 9-5: Zoning Ordinance and Municipal Master Plan Status

List of Maps

County Maps:

Maps	Title	Page
1.	WMP Planning Area and Water Supply	
2.	Existing Wastewater Facilities and Service Areas	
3.	Future Wastewater Service Areas	
4.	(Refer to Municipal Mapping for Specific Zoning)	
5A.	Environmental Features	
5B.	Environmental Features	
5C.	Environmental Features	

Municipal Maps:

Maps	Title	Page
1M	WMP Municipal Map/Water Infrastructure	
2M	Existing Facilities & Service Areas	
3M	Proposed Facilities & Service Areas	
4M	Municipal Zoning Map	
5M	(Refer to County Maps for Environmental Features)	

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 generally 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.

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 these previously approved WMPs of which the still relevant portions have been included in the County WMP. The County WMP incorporates the wastewater service areas and facility tables from these current WMPs.

A municipal chapter has been prepared for previous approved WQMP's 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 Sewer Authority	Pennsville Township	May, 2016 (Incorporated upon date of expiration)

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 b.)
	(Acres) (*)	(Acres)	(Percent)	(Acres)	(Percent)	(Acres)
Alloway	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 47% 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	574	98.6%
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	20,468	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	1,385	99.28%	2.10%
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	1,655	93.34%	2.50%
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%
<i>Note: Data regarding the estimated population served by water / sewer was obtain from the utilities as well as DEP online sources.</i>				

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.

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.

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

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

Table 2-2. Water Supply Districts, Franchise Areas and Municipalities Served	
Water Supply Utility	Municipalities Served
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.

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.

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.

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 are keyed to a list of qualifying developments. However, specific developments have been identified for inclusion within the WMP.

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 haven'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.

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 profession 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 was also provided by the County.

Table 4-1: Municipalities and Utilities Contacted During WMP Process		
Municipality	Wastewater Utilities	Water Supply Utilities
Alloway Township		
Carneys Point Township	Carneys Point Sewerage Authority	New Jersey American Water
Elmer Borough		Elmer Water Department
Elsinboro Township		
Lower Alloways Creek Township	Lower Alloways Creek Township	
Mannington Township		
Oldmans Township		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		
Pittsgrove Township		
Quinton Township		
Salem City	Salem City Sewer Department	Salem City Water Department
Upper Pittsgrove Township		
Woodstown Borough	Woodstown Sewer Authority	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 is 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 is 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	TBD	TBD	TBD	TBD	TBD
Elsinboro Township	No Adopted 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	No Adopted FWSA at this Time				
Quinton Township	238.8	214	5	n/a	219
Salem City	261.3	1,081	16	221	1,318
Upper Pittsgrove Township	No Adopted 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 below.

Future Wastewater Outside of Sewer Service Areas

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 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 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 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.

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

The next step in the wastewater management planning process is to assess 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.

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 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 warranted.

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 Penns Grove Borough	0.750	0.405							0.052	0.293
				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)		N/A	0.000							.242	.242
	Elmer Borough			TBD	TBD	TBD	TBD	TBD	TBD	TBD	

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			TBD	TBD

Analysis and Selection of Treatment Alternatives

The FWSA sanitary build-out analysis results indicate that Carneys Point Township, Oldmans Township and the Borough of Elmer does not have sufficient wastewater treatment capacity to support future wastewater management needs projected by the plan. The Carneys Point 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.

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.

Adequacy of dilution to meet future non-sewer service area demand

The quantity of new development that can be accommodated on septic systems in developable areas consistent with the Ground Water Quality Standard of mg/L nitrate (nitrate target) on a HUC 11 watershed basis must be determined. This nitrate standard has been established to satisfy the antidegradation standard intended to satisfy the Department's obligation to prevent future degradation of water quality.

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.

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 County performed the analysis using annual average recharge (provided in the GSR-32 model).

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 utilizes 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).

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.

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 6-3 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 6-3. HUC11 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						
	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
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						
	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

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 is 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 1 lake (Memorial Lake in Woodstown Borough). 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 9-3 reflects Stormwater management plan ordinances 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.

Table 6-4. Status of Municipal Ordinances and Master Plan*					
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		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. A copy of each facilities table is located in Appendix "A".

Table #7-1	Summary of NJPDES Facility information (From Available DEP Sources, August, 2012)			Municipality
	NJPDES	Facility Name	DIS TYPE	
	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
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)			

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. In addition, the Borough of Woodstown appears to have sufficient monthly allocation but the annual diversion may be exceeded if the complete FWSA build-out is realized.

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.

The above noted municipalities do have sufficient water supply to support existing demands and short-term development in the future. Currently NJAW is operating at 54% of their monthly allocation and approximately 60% of their annual diversion limit. 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. However, it should be noted that NJAW system has additional water production capabilities and could supply more than the current allocation. This may require NJAW to make adjustments to their water system and/or construct infrastructure improvements.

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					TBD	TBD	TBD	TBD
	Elmer Borough	10.00	80.00	4.34	52.03	TBD	TBD	TBD	TBD		
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

Separate municipal chapters have been prepared for inclusion within the Salem County WMP. These chapters have been provided to further define the following:

- 1) Describe any special considerations used in preparing the build-out for that municipality:*
- 2) Water and sewer build-out tables for applicable municipalities.*
- 3) A summary of the results of each analysis for the municipality including a narrative of how it meets or does not meet the rule standards and what can be considered by the municipality to meet the standards.*
- 4) Mapping has been prepared for each municipality. This mapping is for reference. It should be noted that the Salem County FWSA map, adopted by the Department on September 19, 2013, supercedes information that may be provided on the municipal maps.*

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	

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

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

APPENDIX "A" - Wastewater Facilities Tables