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STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

STUDY  
FOR  
NEW JERSEY STATEWIDE  
SEPTAGE MANAGEMENT PLAN  
PURSUANT TO § 208  
OF THE FEDERAL CLEAN WATER ACT

Merry L. Morris Ph.D.	Environmental Scientist
Theresa Fabbioli	Environmental Specialist
Judith Miller	Program Development Specialist
Ann McManamon	Environmental Engineer Trainee

Arnold Schiffman, Director  
Division of Water Resources

Marwan M. Sadat, Ph.D., P.E.  
Assistant Director  
Water Quality Management

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## SUMMARY AND RECOMMENDATIONS

Planning remains to be done for environmentally acceptable disposal of the majority of the 140 million gallons of septage (septic tank pumpings) being generated in New Jersey. Because of the lack of disposal alternatives and the relatively high cost of legal dumping compared to illegal dumping, many private contractors have resorted to illicit and uncontrolled "mid-night dumping", a practice which often results in pollution of ground and surface waters. This unrecorded activity is prevalent and, of the estimated 140 million gallons of septage generated annually, the Solid Waste Administration's hauling records account for less than 83 million gallons.

The two groups involved in the planning process, the 201 facilities planning agencies and the county Solid Waste Advisory Councils (SWAC), each have strengths that can be put to use in the difficult task of septage disposal planning. The SWACs have developed the organization and contacts to deal with this problem on a local level. The 201 agencies have experience with sanitary waste treatment and, more importantly, have the structures for potential service as holding facilities and the means for obtaining state and federal funds. A novel approach presently being suggested is to transform certain SWAC organizations to 201 agencies for septage management and disposal since, clearly, the organization that can obtain funding would be the most logical and effective group for implementation of long term septage disposal plans. However, in most cases, interim disposal plans will also be necessary until facilities can be constructed to accept the material for stabilization prior to long-term utilization or disposal.

Although 201 Agencies and/or Solid Waste Advisory Councils could theoretically provide planning and eventual treatment facilities for septage, there is no guarantee that haulers would use such facilities. Therefore, the Department should recommend special legislation requiring municipalities to develop a type of manifest system to account for the disposal of the septage generated within their jurisdiction. In addition, those municipalities that do not demonstrate that they have a viable method of septage disposal after a period of five years should be prevented from issuing building permits for constructions with septic tanks.

In addition 201 Agencies should be compelled by Legislation to accept the responsibility for disposing of the septage generated in their service area.

Disposal of septage in accordance with the provisions of the Office of Sludge Management and Industrial Pretreatment's "Guidelines for Utilization and Disposal of Municipal and Industrial Sludges and Septage" will result in environmentally acceptable projects. Coupled with the implementation of effective septic tank management plans on a local basis, the degree of pollution resulting from these on-site units and their waste residues will be decreased to virtually insignificant levels, thus achieving the Department's goal of protecting the land and water resources of this State.

## 1. INTRODUCTION

Treatment of sewage and the effluent quality have been regulated in New Jersey by the EPA and the DEP for many years, but regulation of sewage sludge disposal from these facilities has only recently become a major factor in pollution control in the State. Even less attention has been paid to the problem of septic tank management and septage disposal, at the federal, state or local level. However, due to increased pollution from poorly managed or improperly constructed septic tanks and haphazard disposal practices, these environmental problems must now be addressed.

Generally, the design and construction of individual septic systems are the responsibility of local Boards of Health. Department of Environmental Protection's review of designs are required for septic systems from subdivisions of greater than 50 units; institutions and other non-single family buildings; alternative designs; septic systems in the Central Pine Barrens Critical area; and some septic systems in the Pinelands Protection areas. However, DEP does not review actual construction of these septic systems and, once constructed, there are no regulations to control tank operation or maintenance.

As a result, many homeowners, either as a move to save money or because of a lack of understanding of septic tank function, do not have their septic tank serviced for waste removal until a problem occurs.

The regular maintenance of a septic tank is imperative to insure proper functioning of the unit and adequate stabilization of the solids. Performance of such maintenance will limit the possibility of ground water pollution resulting from inadequately treated effluent being discharged through the percolation field. Establishment of municipal or regional septic tank management districts and development of plans requiring regular maintenance is highly recommended by the Department. This option is currently being investigated in several areas of the State.

The disposal of septic tank pumpings is another critical facet of the problem. In essence, there is a large volume of septage and only a limited number of currently acceptable disposal options. This material, septage, is an anaerobic slurry which is highly variable in physical and chemical composition. Characteristics of septage include high BOD<sub>5</sub>, COD, grease and foaming potential. In addition, septage contains pathogenic organisms, contact with which could have implications for public health. Therefore, haphazard disposal may result in either chemical, physical or biological contamination of ground or surface water supplies.

In an effort to assure the sound utilization/disposal of septic tank residues, the Office of Sludge Management and Industrial Pretreatment of the DEP has developed a document entitled "Guidelines for Utilization and Disposal of Municipal and Industrial Sludges and Septage." The purpose of this document is to aid municipalities and sewerage authorities in the development of

environmentally acceptable plans for the treatment and disposal of sludge and/or septage. Chapter 3 and 4 of this document provides guidance for the preparation of septage management plans. Emphasis is given on resource recovery techniques, whenever practicable (consult Appendix I).

## 2. ASSESSMENT OF THE CURRENT SITUATION

In order to determine the extent of the septage handling problem and the need for state government intervention, the Office of Sludge Management and Industrial Pretreatment (OSMIP) in cooperation with the Solid Waste Administration, has identified the amount and location of domestic septage being generated in New Jersey and determined what plans, if any, are being proposed for the handling of this waste (see Table 1).

The septage volume by county was estimated from information concerning 1970, 1975 and 1977 population and unsewered homes based on census data and Departmental projections. The septage hauled data is from the Solid Waste Administration's records. As can be seen from this table, although an estimated 140 million gallons of septage is generated, the Solid Waste Administration's records can account for the disposal of only 83 million gallons (see Table I).

Of the 80 designated 201 areas in the state, 65 have completed or are preparing sludge management plans but only 45 have begun planning for septage treatment and disposal. This represents 72% of the 140 million gallons of septage generated annually in New Jersey. However, of these 201 areas, very few have completed their septage management plans and none are ready to implement either short-term or long-term disposal options. The remaining 201 areas account for 18% of the septage produced in New Jersey, and their planning has not yet been initiated.

The areas without designated facilities planning agencies are a major problem. Since there is no coordinating 201 agency responsible for such planning there is little funding available to adequately do the required planning. With the exception of Sussex County which is intending to do a county-wide septage management plan, none of these undesignated areas have been planning for either sludge or septage disposal outside the SWAC planning activities. These areas represent the final 10% of the volume of septage annually produced.

For the purpose of solid waste management planning, the State is divided into 3 geographical areas, grouped by counties. There are staggered deadlines for submission of the plans are to the Department.

The county Solid Waste Management Plans, from areas 1 & 2 have already been submitted and are being reviewed while those from group 3 (Sussex, Warren, Morris, Hunterdon, Salem, Cumberland, Atlantic & Cape May, counties) are due on January 24, 1980.

### 3. DISPOSAL AND STABILIZATION OPTIONS

Septage can be bled into a treatment plant and will become part of the waste load. If disposed of on its own, acceptable disposal alternatives are virtually limited to landfilling or land application.

Disposal within landfills is becoming decreasingly viable. As of April 1, 1979, there were 29 landfills in the state that were registered with the Solid Waste Administration to accept septage, of which only 17 were licensed by the Public Utilities Commission to accept wastes on a commercial basis. This number is decreasing due to operational problems existing at these facilities and subsequent closure by the Department. To complicate matters further, in many counties, particularly in northern New Jersey, there are no landfills that may legally accept septage.

Landfilling of septage is not a resource recovery technique. It has been found to increase the potential for ground water contamination and to increase methane generation. For these reasons, the Department has been discouraging the disposal of such wastes within landfills. As per the "Guidelines for the Utilization and Disposal of Municipal and Industrial Sludges and Septage," treatment works (including those for septage stabilization) "that have been designed after May, 1977, may not landfill unless it can be demonstrated to the Department that, due to the characteristics of the material, ultimate disposal in a landfill is the only environmentally acceptable method of disposal. In this case, disposal must be made in a secure (i.e., lined) landfill."

Land application of stabilized septage is one of the most viable disposal options remaining. As per the Guidelines, septage must be stabilized prior to land application (or landfilling) in order to reduce the potential public health hazard and to prevent nuisance conditions created by septage putrescibility. Therefore, all long-range septage disposal plans must be coupled with a stabilization method. Interim disposal plans may not require stabilization of the septage due to feasibility and cost considerations, although additional site monitoring and stricter site management may be necessary.

Acceptable methods of stabilization include anaerobic digestion, aerobic digestion, composting or other treatment processes which both significantly reduce the putrescible (i.e., volatile solids) portion of the septage, and accomplish pathogen reduction to a degree comparable to, or greater than, the level achieved by anaerobic digestion. Lime addition provides only minimal stabilization since volatile solids are not sufficiently reduced.

Several successful pilot studies have demonstrated that composting is a viable method of septage stabilization. Although the exact method varies somewhat from that used for dewatered sewage sludge composting because of septage's greater liquid content, the basic process and principles are still the same. The material is stabilized to reduce volatile solids and pathogen contents, and the end product is an aesthetic, humus-like material that may be used as a soil conditioner/low grade fertilizer.

Septage may also be stabilized in a specialized treatment facility, using basically the same types of processes as would be found in a wastewater treatment plant. In most cases, an aeration unit would be used, since aeration appears to be the key to successful septage stabilization. However, precautions must still be taken to avoid overload of any treatment system by additions of too large a quantity of septage at one time.

After stabilization, the material may be landspread. Each site must be thoroughly evaluated by the Department before land-spreading in order to assure that ground and surface water supplies will not be contaminated as a result of the operation. The operation should be coupled with monitoring, site management, recordkeeping and reporting requirement for each site. Application rates should be calculated on the basis of nitrogen content of the material and the nitrogen uptake of the vegetation cover, as well as the cumulative heavy metals levels. The adjustment of the soil pH to a minimum of 6.5 is necessary. Access to these sites must be restricted.

Septic tank cleanings may be added to an existing wastewater treatment plant provided that the design capacity of the facility is not exceeded due to septage's high organic loading or that there is sufficient sludge handling capacity. Successful stabilization by addition to a treatment plant is dependent on septage strength and volume, provisions for controlled discharge into the treatment system, and the plant's current waste load and excess capacity. Controlled metering of septage to the influent stream is necessary to prevent BOD shock loadings and insufficient aeration of the waste loads leading to depressed dissolved oxygen levels within the treatment system. In most cases, pretreatment methods such as grit removal and aeration will greatly reduce the possibility of septage-associated treatment problems. The septage then becomes an integral part of the sewage sludge and may be disposed of in the same way that sewage sludges are handled.

The Department highly recommends that the SWACs take advantage of municipal authorities' facilities in order to sufficiently stabilize and dispose of septage on a long-term basis at a minimal cost to the consumer.

#### 4. PLANNING EFFORTS

The DEP has the statutory authority on both the federal and state level to maintain and preserve the quality of the waters of the state and to abate pollution (in particular, through the Federal Water Pollution Control Act, the Federal Clean Water Act, the New Jersey Water Pollution Control Act, and the New Jersey Water Quality Planning Act). The planning for the treatment and disposal of septage, in addition to sewage sludge, is an integral part of obtaining these statutory goals. Planning for septage and sewage sludge disposal is being approached in two different, although overlapping, directions.

#### A. 201 PLANNING AGENCIES' RESPONSIBILITIES

It is the Department's policy that the responsibility for the planning, design and construction of permanent septage and sewage sludge facilities to serve delineated 201 areas rests with the 201 Planning Agencies (consult Appendix II). The planning aspects for septage disposal in the 201 planning areas must be comprehensively addressed in all sludge management plans. Such plans must conform to the Department's draft "Guidelines for the Utilization and Disposal of Municipal and Industrial Sludges and Septage." Chapter III of the Guidelines specifically deal with the technical aspects and requirements for the stabilization, treatment and disposal of septage.

It is the intention of the Department to modify NJPDES permits upon reissuance to include such compliance schedules as would be deemed necessary to insure conformance to the Statewide Septage Management Plan.

As a result of the Federal Water Pollution Control Act and the Federal Clean Water Act, 201 construction grant monies have been allocated for the completion of wastewater treatment systems, which includes the proper utilization/disposal of wastewater residues. The construction grants program can provide funding from the EPA and the DEP ranging from 75% to 93% or more of the eligible capital costs of a project. Thus, this planning approach will enable 201 agencies to not only upgrade their sewage treatment plant's capabilities, but also to thoroughly evaluate sludge and septage alternatives and implement cost-effective, environmentally sound management plans which will become a proviso of their NJPDES permit.

For the purpose of properly evaluating the cost effectiveness of various alternatives for the treatment, disposal and/or utilization of septage, it will be necessary for the 201 agencies to consider the following:

- (a) retaining existing structures such as storage tanks, digesters, etc. and converting them to septage treatment facilities.
- (b) renovating existing package treatment plants in the service areas for the purposes of pretreating the septage, and
- (c) constructing new facilities for the treatment of septage.

In addition, it will be necessary for 201 agencies to consider the regionalization aspects of septage treatment whenever possible and feasible.

In order to evaluate the possibility of 201 treatment plants accepting septage, the Office of Sludge Management and Industrial Pretreatment generated Table I (attached). The septage volume by county was prepared based on census data and Departmental projections as previously discussed. Information concerning the capacity available in the existing treatment facilities was obtained from the Wastewater Management Information System. The available capacity was determined by calculating the difference between the design capacity and the average daily flow. That number was then adjusted to reflect the relative strength of septage as compared to sewage.

Table I demonstrates that most counties have sufficient capacity in their treatment plants to accept all or a majority of the septage being generated. This is important because it indicates that in most cases treatment of septage in sewage treatment plants may be achieved with minimal construction of elaborate facilities. Generally, provisions for receiving areas and pretreatment units would be the only major additional items necessary.

#### B. SOLID WASTE ADVISORY COUNCIL'S RESPONSIBILITIES

The second approach for septage management planning has resulted from the implementation of the New Jersey Solid Waste Management Act. Each county and the Hackensack Meadowlands Development Commission's jurisdictional area have been designated as Solid Waste Management Districts (SWMDs). Within each SWMD, a Solid Waste Advisory Council has been set up which is required to plan for the disposal of all solid wastes within its jurisdiction.\*\* The SWAC membership consists of an official from each municipality, an environmentalist, a landfill operator, a hauler, and members of the general public.

The Solid Waste Management Act does not explicitly limit the planning to the SWACs only. The SWAC is an advisory group and is not necessarily a technically oriented organization. Therefore, most of the actual planning is done by county planning boards, county Health Departments or private consultants. The SWACs are not only encouraged but are required to consult with the county and municipal agencies concerned with and responsible for water pollution control. These includes sewerage and municipal utilities authorities which may already be involved in the 201 facilities planning process.

The SWAC receives the plan from the planning groups and either approves, disapproves or modifies it. The plan is then submitted to the County Board of Freeholders for approval. Some 20-25 other agencies also review the plan after it is submitted to the Department for approval.

\*\*Although 201 Planning Agencies are responsible for the operation of permanent (long-term) septage disposal facilities, it is the responsibility of the SWAC to plan for the short-term disposal of septage.

Funding for a District's Solid Waste Management Plan (SWMP) only provides up to 50% (up to \$60,000) of the plan's total cost for all solid waste planning within the county. Unfortunately, septage and sludge have generally received only a very minor portion of the necessary planning effort. Therefore, the SWMD's planning should include, wherever possible, the treatment and disposal capabilities of the 201 facilities within its jurisdiction as part of its SWMP. This is not only because of time and money constraints but because the 201 agencies have or can hire consultants with the expertise necessary to do the required planning.

In many cases, the SWMD may find it advantageous to contract with one or more 201 agencies within its jurisdiction to provide for the treatment and disposal of both septage and sludge outside of the 201's service area. If sufficient capacity is not available within the existing sewage treatment plant, upgrading the facility to accommodate the wastes generated outside of the plant's service area may still be less costly than construction of a new treatment plant.

In areas where a legally formed 201 planning agency has not been created, the SWMD is responsible for the planning of waste disposal, both on a long-term as well as a short-term basis. The SWMD should consider the creation of new 201 areas expressly for the development and implementation of such long-term treatment facilities in order to receive funding through the construction grants program.

The SWMD may also designate a private or commercial concern the responsibility for residuals disposal, particularly in undesignated 201 areas. Such facilities, for either disposal or long-term storage, which are not operated directly by the municipality or POTW will have to meet the EPA and DEP requirements, except that a Solid Waste Disposal Facility Permit will be required from the Department in addition to a NJPDES permit.

## 5. PRINCIPAL IMPEDIMENTS TO PROGRESS

The principal obstacles preventing development of septage treatment and disposal systems in New Jersey are not technical, but can be divided into interrelated categories of deficiencies in organization, cooperation, funding and legal basis.

- A. Organization - In many rural or sparsely populated areas there exist no central authority to deal with the septage disposal question. The "septage management district" concept has been proposed but has gained little acceptance. The county planning bodies (SWAC, boards of health, planners) lack the authority for funding and implementation of proposed plans.

- B. Cooperation - Historically, the 201 agencies have not been eager to receive septage because to do so meant an expansion of their existing duties and/or increase in operational costs. Until the present time little has been provided in the way of economic incentives to induce 201 agencies to treat this material. Such incentives may now be possible with the assumption of new programs such as the New Jersey Pollutant Discharge Elimination System and continuation of the Construction Grants Program.
- C. Funding - Since economics play a critical role in the development of a septage program, the funding sources must be clarified: Federal funding, State funding or purely local funding. The mechanisms for "new" septage management groups to obtain funds and disperse them is unclear at the present.
- D. Legal basis - The legal problems facing organizations that wish to become 201 agencies must be recognized and assistance must be provided by the State. Legal questions facing existing 201 agencies in determining charges to septage haulers and charge allocations to customers must also be clarified.

## 6. CONCLUSIONS

Where the septage treatment and disposal problems are being addressed, the activities are being carried out by the county solid waste planning groups (nominally the County Solid Waste Advisory Councils) and the 201 agencies. While the former have developed lines of communication and organization, they are lacking in facilities and funding.

With a determined and consistent effort on the part of the State to clarify legal questions and to make funding available to 201 agencies and organizations becoming 201 agencies, many of the existing voids in septage treatment and disposal can eventually be filled. Even the 201 agencies' lack of cooperation may be reduced in face of a systematic, economically acceptable plan for dealing with these residuals.

TABLE 1  
SEPTAGE VOLUME BY COUNTY

<u>COUNTY</u>	<u>SEPTAGE* GENERATED 1979 IN MG/YR</u>	<u>SOLID WASTE ADMIN. SEPTAGE HAULED (1978) IN MG/YR</u>	<u>AVAILABLE CAPACITY POTW IN MG/YR</u>
ATLANTIC	4.740	9.200	15.340
BERGEN	15.936	.435	13.910
BURLINGTON	6.949	5.234	4.550
CAMDEN	4.856	4.761	33.085
CAPE MAY	4.818	4.578	9.425
CUMBERLAND	5.942	4.162	8.255
ESSEX	1.053	1.062	5.655
GLOUCESTER	6.637	2.543	-
HUDSON	.340	12.589	64.155
HUNTERDON	6.450	-	0.845
MERCER	3.600	.901	11.245
MIDDLESEX	3.477	3.416	57.395
MONMOUTH	8.109	8.021	18.915
MORRIS	15.335	.218	13.455
OCEAN	21.129	14.672	21.320
PASSAIC	6.052	.300	-
SALEM	3.114	3.900	-
SOMERSET	6.377	2.425	3.575
SUSSEX	8.689	4.154	-
UNION	.357	-	46.085
WARREN	4.626	.047	2.210
ALL 21 COUNTIES	138.586	82.618	329.420

\* 1979 estimated by OSMIP

APPENDIX I

Chapters 3 and 4 of "Guidelines  
for the Utilization and Disposal of  
Municipal and Industrial Sludges  
and Septage"

## CHAPTER 3 - SEPTAGE DISPOSAL

### 3.1 - General

It has been estimated that 29% of the population of the United States uses on-site disposal facilities, of which 85% are septic tanks and cesspools. Septage (septic tank wastes) accumulates at a rate of 65 to 70 gallons per capita per year.\* In New Jersey approximately 10% of the population uses septic tanks, annually producing nearly 140 million gallons of wastes which require treatment and disposal.

Septage is an anaerobic slurry which is highly variable in physical and chemical composition depending on the nature of the waste input, tank design, tank efficiency and clean-out frequency. Characteristics of septage include high BOD<sub>5</sub>, COD, grease and foaming potential. Table III-1 provides mean values and ranges for various components of septage and sludge. On a dry weight basis, septage contains 1/2 to 2 orders of magnitude lower heavy metal concentrations than do municipal wastewater sludges and often has poor dewatering and settling characteristics.

\*Robert P.G. Bowker, "Treatment and Disposal of Septic Tank Sludges - A Status Report." U.S. EPA - Wastewater Research Division, Cincinnati, Ohio, May 1977, p.1.

Table III-1  
 CHARACTERISTICS OF SEPTAGE AND SLUDGE  
 (all values in mg/liter except where noted)

PARAMETER	SEPTAGE <sup>1,2</sup>		SLUDGE (Anaerobically Digested) <sup>3</sup>	
	MEAN	RANGE	MEAN	RANGE
TS	38,800	1,132 - 130,475	99,800	59,928 - 119,856
TVS	25,259	1,260 - 85,860	399,520	299,640 - 599,280
SS	13,014	310 - 93,378		
VSS	8,719	903 - 51,500		
BOD <sub>5</sub>	5,000	440 - 78,600		
COD <sub>5</sub>	42,850	1,500 - 703,000		
TKN	677	66 - 1,900	49,940	4,994 - 175,789
NH <sub>3</sub> -N	157	6 - 385	9,400	120 - 67,600
Total P	253	20 - 760	32,960	4,994 - 142,828
pH (units)	6.9	1.5 - 12.6		
Grease	9.09	604 - 23,468		49,940 - 199,760
LAS	157	110 - 200		
Fe	205	3 - 750	15,981	999 - 152,816
Zn	49.0	4.5 - 153	3,380	108 - 27,800
Al	48	2 - 200	16,980	999 - 134,838
Pb	8.4	1.5 - 31	1,640	58 - 19,730
Cu	6.4	0.3 - 38	1,420	85 - 10,200
Mn	5.02	0.5 - 32	400	58 - 7,200
Cr	1.07	0.3 - 3.0	2,070	24 - 28,950
Ni	0.90	0.2 - 28	400	2 - 3,520
Cd	0.71	0.05 - 10.8	106	3 - 3,410
Hg	0.28	0.0002 - 4.0	1,100	0.5 - 10,600
As	0.16	0.03 - 0.5	119	10 - 230
Se	0.076	0.02 - 0.3	20	10 - 180

<sup>1</sup>Robert P.G. Bowker, "Treatment and Disposal of Septic Tank Sludges - A Status Report." U.S. EPA - Wastewater Research Division, Cincinnati, Ohio, May 1977, p.3.

<sup>2</sup>I.A. Cooper and J.W. Rezek, "Septage Treatment and Disposal." Prepared for the EPA Technology Transfer Seminar Program on Small Wastewater Treatment Systems, 1977, p.6.

<sup>3</sup>Municipal Sludge Management: Environmental Factors. U.S. EPA - Office of Water Program Operations (EPA 430/9-77-004, MCD-28), October 1977, App. VII, p.2-7.

### 3.2 - Monitoring for Toxic Inputs

Septage treatment facilities (including sewage treatment plants) must be protected from upsets due to input of cleanouts containing toxic materials. According to the Rules of the Bureau of Solid Waste Management, septage may not be intermixed with other wastes of a chemical or industrial nature for haulage or disposal. However, as a routine monitoring procedure, a sample from each load entering the septage treatment facility must be obtained, preserved by refrigeration, and retained for a period equal to the retention time of the treatment facility. Each sample should be immediately sealed and labelled with load volume, arrival date, time, hauler's registration number, Board of Public Utilities' (BPU) certification number and the name of the person who took the sample. In case of treatment facility upset or suspected dumping of prohibited materials, the samples which are in storage should be tested for pH, BOD, heavy metals and any specific toxic compound which may be implicated in the upset. The presence of toxic or inhibitory materials in the sample and the identification numbers should be used as a basis for appropriate legal and enforcement actions.

### 3.3 - Septage Stabilization

Septage must be stabilized prior to land application in order to reduce the public health hazard and to prevent nuisance conditions created by septage putrescibility. Lime addition (as per Appendix C.5) provides only a minimal degree of stabilization, and will therefore be considered by the Department on a case-by-case basis. More complete stabilization techniques (refer to Appendix C) are recommended by the Department and may be attained by septage treatment and/or digestion within sewage treatment plants (see Section 3.4) or within specialized septage treatment facilities (see Section 3.5). Stabilization by these methods achieves not only higher pathogen reductions but results in lower volatile organics, putrescibles and better odor control.

### 3.4 - Septage Treatment in Sewage Treatment Plants (STP)

Septic tank cleanings may be added to existing sewage treatment plants if care is taken not to exceed either the plant's capacity to treat the material or the sludge-handling capability (due to the increased sludge volume). Successful treatment of septage by addition to an STP is dependent on septage strength and volume, the STP's pro-

visions for controlled discharge of the septage into the treatment system, and the plant's current waste load and the excess treatment capacity.

Septage should be added at the head of the facility in order to utilize the STP's screening and degritting systems, and because the treatment plant personnel are able to supervise the dosing rate to maintain a sufficient flow of raw sewage for dilution of the septage and to guard against illegal or peak-flow dumping. Controlled metering of septage to the liquid stream is necessary to prevent BOD shock loadings and insufficient aeration of the waste loads leading to depressed dissolved oxygen levels within the treatment system. Refer to Figure III-1 for recommended rates of septage addition based on hydraulic and actual flows.\* Septage addition to activated sludge facilities may be computed by the equation  $Q_s = \frac{Q_A - Q_H}{a}$ , where

$Q_s$  = Septage added (in MGD);  $Q_A$  = Actual sewage flow (in MGD);

$Q_H$  = Hydraulic capacity (in MGD);  $a$  = -35 (slope of lines)

For example, a plant with a design capacity of 20 MGD, operating at an actual flow of 15 MGD (or 75% of the plant capacity), would yield a septage addition of 0.14 MGD (140,000 gallons/day). Likewise, if the 20 MGD plant was operating at 8 MGD, up to 0.34 MGD of septage could be added.

Grit removal and screening of the septage is necessary before addition to the STP, as may be pretreatment with chlorine, hydrogen peroxide or chemical conditioners. Measures to reduce problem levels of odor, foam, soluble BOD<sub>5</sub> and volatile suspended solids, or to increase the solids content of the septage, are outlined in Table III-2.

The septage can also be added directly into an anaerobic digester with sufficient excess capacity. Digesters containing mixtures of both sludge and septage have been found to treat septage with fewer operational problems than digesters treating septage alone. Dewatering the septage will increase the digester's capacity for septage additions. Septage often has relatively high concentrations of detergents which tend to inhibit the growth of the anaerobic biomass (due to the presence of boron). Therefore, care should be taken not to upset the biological efficiency of the anaerobic unit.

\*Adapted from Figure 6 in: I.A. Cooper and J.W. Rezek, "Septage Treatment and Disposal." Prepared for the EPA Technology Transfer Seminar Program on Small Wastewater Treatment Systems, 1977, p.30

FIGURE III-1  
SEPTAGE ADDITION TO ACTIVATED SLUDGE FACILITIES

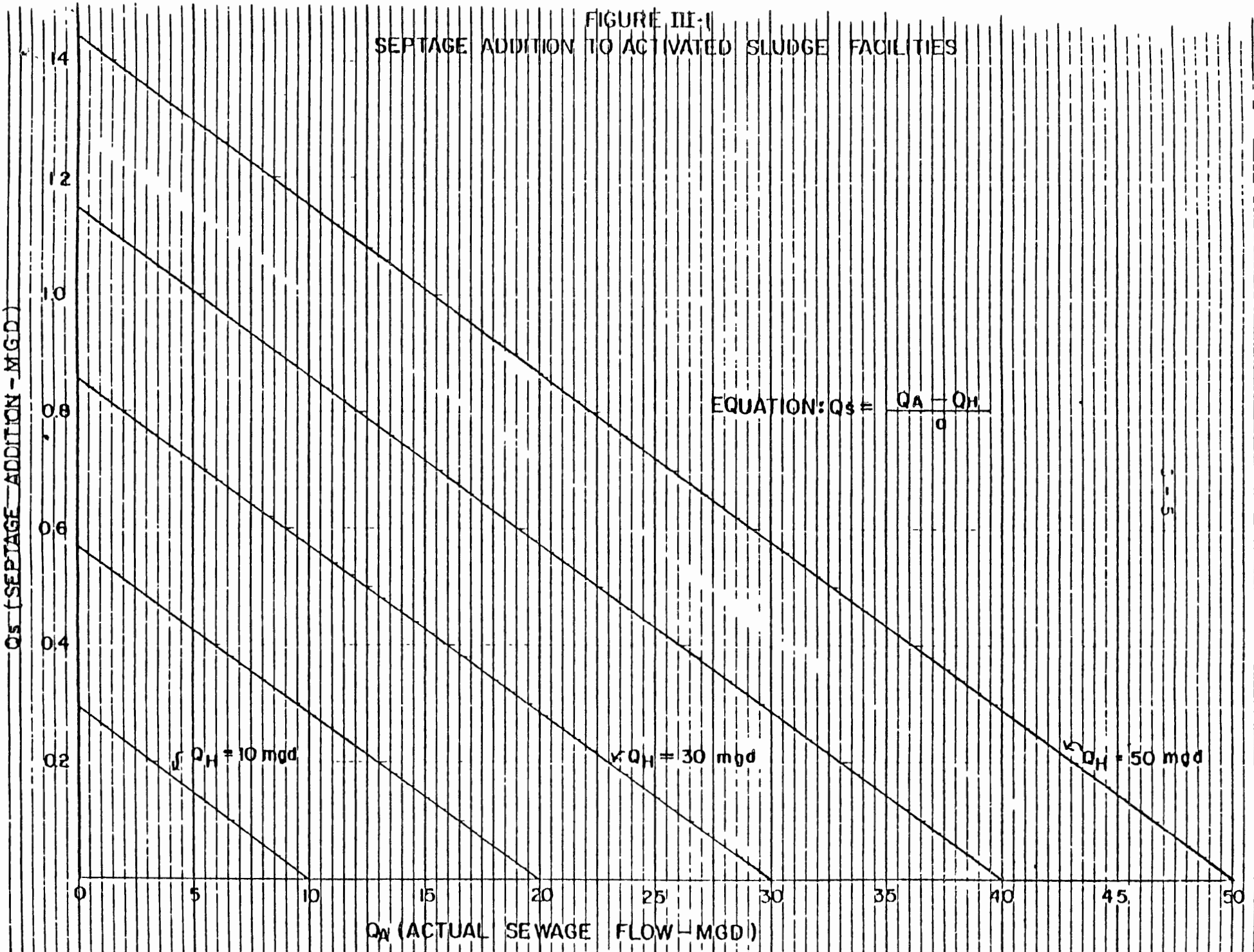


TABLE III-2

RECOMMENDED TREATMENT OF SEPTAGE TO MINIMIZE THE  
PROBLEM INDICATED\*

<u>Parameter</u>	<u>Degree of Control</u>	<u>Recommended Treatment</u>
Odor	Complete Elimination	1 to 3 days of aeration
Foam	Complete Elimination	More than 12 days of aeration
Soluble BOD <sub>5</sub>	Less than 20 mg/l remaining	20 days of aeration
Volatile Suspended Solids	40% Reduction	More than 30 days of aeration
Solids Concentration	20% cake solids	Addition of 2 to 4 percent (by dry solid weight) FeCl <sub>3</sub> or alum, and 3 days of sand bed drying, or 1 to 5 days of aeration and sand bed drying for 3 days

\*Adapted from: William J. Jewell, James B. Howley and Douglas R. Perrin, "Treatability of Septic Tank Sludge," in Water Pollution Control in Low Density Areas, William J. Jewell and Rita Swan, editors, Hanover, England, 1975, p. 473.

### 3.5 - Specialized Septage Treatment Facilities

Facilities have been designed to treat and stabilize septage alone. The degree of stabilization achieved by these facilities varies, owing to differences in treatment units and septage characteristics. Pilot studies are recommended for such facilities during the design stages to insure adequate stabilization of the septage. The effluent produced must be disposed of in conformance with State and Federal rules and regulations. In addition, such facilities must comply with the Sludge Quality Assurance Regulations of the Office of Sludge Management and Industrial Pretreatment.

The following subsections give a brief description of several different septage treatment alternatives.

#### 3.5.1 - Aerobic Treatment

A specialized aerobic septage facility should include, as a minimum, the following elements:

- 1) a covered receiving tank, equipped with a degritting and screening system, adequate mixing capabilities, washdown facilities, odor controls and a metering device to regulate the quantity of septage entering the aeration unit that follows. It is required that a covered building be constructed, equipped with an odor control and ventilation system, to house the receiving area in order to minimize odor and sanitation problems that may result from the operation of such a facility.
- 2) an aeration unit with a five-day (minimum) hydraulic detention time, and equipped with a foam-control system and a chemical coagulant addition system.

Generally, the longer the septage is aerated, the fewer the treatment problems that will be encountered. Septage treatment-associated problems such as excessive foaming and odors may be controlled by the methods listed in Table III-2.

#### 3.5.2 - Anaerobic-Aerobic Treatment

The University of Connecticut has investigated a two-phase anaerobic-aerobic septage treatment process. The initial degradation of the volatile solids is carried out in a high-rate heated anaerobic digester with a ten day detention time. Aerobic treatment is then performed in an open

oxidation ditch that is mechanically aerated for a period of 28 days, during which the soluble organics are degraded. The oxidation ditch is followed by a sand filter for final polishing of the effluent. BOD<sub>5</sub> reductions of 97% have been achieved by this treatment process. The solids that result can then be dewatered and disposed of in an appropriate manner (such as in land application programs).\*

### 3.5.3 - Thermophilic Composting

Several pilot studies have been performed to examine the feasibility of composting septage alone or in conjunction with municipal wastewater sludges. As a result of these studies, thermophilic composting appears to be a viable and economically attractive process for the treatment of septage.

The composting of septage may be accomplished by the same methods as used for sludge composting (including forced aeration-static pile or windrow methods). Due to the high moisture content of septage (usually about 96 - 98%), highly absorbent bulking materials must be utilized. Sawdust is the most commonly used bulking agent for septage composting, although other materials have been successfully substituted for a portion of the bulking agent requirement. The heat generated by the activity of the microorganisms is retained so that the temperature of the pile rises, often exceeding 70°C for extended periods of time, effectively pasteurizing the material.

A two-stage composting process has been used in South Tacoma and Vancouver in Washington State for the treatment of both septage alone and in conjunction with municipal sludge. The first stage involves forced aeration of the wastes in a closed aeration system at a pressure of 15 p.s.i. for 15 minutes. Aeration results in the oxidation of anaerobic gases, thereby controlling odors. The closed aeration system minimizes the chance of waste spillage and provides for better sanitary control than in open systems. Maceration and/or screening of the septage is recommended prior to aeration to reduce sludge settling. In the second stage, alternating layers of septage and a highly absorbent bulking material such as sawdust are constructed to a maximum height of 10 feet. The piles are mechanically aerated throughout the 1

\*John J. Kolega and Arthur W. Dewey, "Septage Disposal Practices." A Paper presented at the National Home Sewage Disposal Symposium, Chicago, Illinois, December 9-10, 1974, p.3.

to 3 month composting period. High temperatures are achieved through the biological activity of microorganisms, resulting in effective stabilization of the septage and good bacterial reductions.\*

A septage composting pilot project was carried out for the towns of Rehoboth, Seekonk and Swansea in Massachusetts. The project consisted of the construction of one compost pile per week for five weeks, made up of 1,000 gallons of septage and varying quantities of sawdust, woodchips and cow or horse manure. Temperatures within the piles achieved 55°C and above for a minimum period of one week, although two of the piles maintained 70°C and above for one week. Variations in the temperatures may have been due to either incomplete mixing of the materials or non-optimum carbon/nitrogen ratios (ranging from 40 to 90, although a C/N ratio of 35 is considered to be optimum for composting).

According to the recommendations made as a result of this pilot project, two alternatives exist for the operation of a financially self-sufficient facility in these towns. The first option would be for the sale of the compost product at market prices, with no charge for septage disposal. The second option would be for the free distribution of the compost product, but with a septage disposal fee of \$25 per 1,000 gallons.\*\*

The National Park Service has been operating a composting facility since 1976 to treat the sanitary wastes generated along the towpaths of the Chesapeake and Ohio Canal. The facility, located in Dargon, Maryland, uses the static pile forced aeration system as developed at the Agricultural Research Station in Beltsville.

A combination of sawdust, woodchips and previously composted material is used as the bulking agent. The chemical toilet sewage is pumped onto the mixture and allowed to sit for a period of time to permit absorption of the liquid. When the volume of sewage is low, the material is pumped into a holding tank until the tank is full, at which time a large compost pile is constructed (resulting in some time saving and better utilization of space).

\*Bruce B. Rennie, "The Lebo Process for Composting Municipal Sewage Sludge and Septic Tank Waste." A Technical Paper Presented at the 6th Annual Composting and Waste Recycling Conference, Portland, Oregon, May 12-14, 1976.

\*\*"Rehoboth, Seekonk, Swansea Massachusetts Septage Composting Project - Final Report." Prepared by Pio Lombardo and Associates, Boston, MA, July 12, 1977.

After the absorption period, the mixture is transported to a prepared mattress (that serves to protect the aeration pipes below) and allowed to compost. Oxygen and temperature levels are monitored 3-5 times per week to verify proper composting conditions (an oxygen balance of 5-15% and a minimum temperature of 55°C). The final product is then utilized as a mulch and topdressing material within the park itself.\*

### 3.6 - Land Application of Septage

Land application programs to dispose of septage by a Municipality must be approved by the Department prior to implementation. Septage that is to be land applied must be stabilized prior to utilization.

Land application programs for septage utilization must take into consideration the same items that are required for sludge application programs (as given in Chapter 2 of these Guidelines). The land application project proposal must be submitted to the Department and include the following:

1. A brief description of the operating method, including the means of applying and incorporating the septage into the soil.
2. Provisions for inclement weather operations.
3. All soil and site investigation requirements as given in Section 2.4, and provisions for minimizing runoff and erosion.
4. Proposed septage application rates and schedules, which should not exceed the annual nitrogen requirements of the vegetation or the cumulative heavy metals limits for the site (based on the information given in Section 2.9).
5. The type of vegetation or crop to be grown, and proposed use of the crop.
6. An adequate record-keeping system for the cumulative heavy metals applications and associated environmental effects.
7. Sufficient evidence that public participation has been elicited for the land application program.

\*J.C. Patterson and J.R. Short, "Composting - An Attractive and Economical Way to Recycle Urban-Produced Organic Materials." Published in: First Conference on Scientific Research in the National Park Proceedings, 1976.

8. An acceptable septage quality monitoring program. All analyses must be performed at an NJDEP-approved laboratory.

Public access must be restricted to these sites and the adjustment of the soil's pH to a minimum of 6.5 is necessary. Ground water and plant tissue monitoring requirements will be determined by the Department on a case-by-case basis, according to the site characteristics, proposed application rates, the vegetation to be grown, septage quality and management practices. In most cases, plant tissue monitoring will not be necessary. However, if the septage analysis shows an unusually high level of a particular heavy metal, monitoring may be required by the Department for that specific metal.

### 3.6.1 - Land Application of Septage by Private Contractors

201 areas must plan for the treatment and disposal of septage as well as sludge within their service areas (see Section 1.6). Until an acceptable Septage Management Plan is adopted, septage applications on land by contractors may be allowed by the Solid Waste Administration (SWA) on an interim, case-by-case basis. Such operations will require a SWA permit, which will be issued on a one-year renewable basis, and must be in conformance with the SWA guidelines as given in Section 3.6.2.

Stabilization of septage prior to land application is highly recommended by the Department and should be practiced wherever feasible. However, small-scale applications of non-stabilized septage to land may be approved by the SWA until the Septage Management Plan is implemented, at which time stabilization of the material will be mandatory.

Septage application rates should not exceed the annual nitrogen requirements of the vegetation or the cumulative heavy metals limits for the site (based on the information given in Section 2.9). Therefore, constituent analyses (for total solids, volatile solids, pH, TKN,  $\text{NH}_4\text{-N}$ ,  $\text{NO}_3\text{-N}$ , phosphorus, potassium, lead, zinc, copper, nickel and cadmium) of the septage is recommended by the Department in order to determine the maximum allowable annual application rate and to facilitate the maintenance of a record-keeping system for the cumulative heavy metals applications and associated environmental effects. Where testing of the septage is not feasible, the maximum annual volume limitations will be imposed by the SWA as follows:

62,500 gal/year on well-drained soils  
37,000 gal/year on moderately well-drained soils

However, Municipalities which will be responsible for the long-term disposal of septage within their service areas will be required to stabilize septage prior to utilization, perform constituent analyses and submit an acceptable septic tank clean-out management plan to the Department that is in conformance with the provisions of Section 1.6, and Chapters 2 and 3 of these Guidelines.

3.6.2 - Interim SWA Permit Requirements for the Land Application of Septage

See pages 3-13 through 3-21.



State of New Jersey  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
SOLID WASTE ADMINISTRATION  
TRENTON 08625

PEATRICE B TYLUTKI  
DIRECTOR

NOTICE TO POTENTIAL APPL CANTS  
FOR  
NEW OR EXPANDED SOLID WASTE FACILITIES

Attached are your solid waste facility application materials. Pursuant to Solid Waste Management Act amendments (P.L. 1975, c. 326), District Solid Waste Management Plans are now being prepared throughout the State. During this period of district planning, all pending and new applications for solid waste facilities are subject to the terms and provisions of the Solid Waste Management Act and will be considered in light of district planning.

Prior to preparing and submitting complete Engineering Designs and other application documents, you may wish to meet with representatives of the Solid Waste Administration to discuss the effect the current planning program may have upon your proposal's viability. The meeting request should be in writing and should include as much of the following information as possible.

1. A general description of the type of facility to be proposed and its location.
2. The types of waste which will be accepted, the rate at which they will be accepted, and the planned total capacity (or life in years) of the facility.
3. If the facility will produce residues, or process only a portion of the wastes received, describe the types and amounts of materials which will require further processing or disposal and their expected disposition.
4. Define where you expect the waste to come from. Who will be served by the proposed facility

This pre-application meeting is, of course, optional and is intended to save you time and expense. Meeting requests should be directed to:

Solid Waste Administration  
Bureau of Technical Services  
32 East Hanover Street  
Trenton, New Jersey 08625

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION  
SOLID WASTE ADMINISTRATION  
P.O. BOX 2807, TRENTON, NJ 08625

SOLID WASTE FACILITY  
APPLICATION (

OFFICE USE ONLY

Date Received \_\_\_\_\_

Application Number \_\_\_\_\_

NAME OF APPLICANT: (Print) \_\_\_\_\_ Title \_\_\_\_\_

COMPANY OR TRADE NAME: \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_ TELEPHONE \_\_\_\_\_ - \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_

APPLICANT'S  FEDERAL EMPLOYER I.D. OR  SOCIAL SECURITY NO. \_\_\_\_\_

TYPE OF ORGANIZATION: (Check One) Proprietor  Partnership   
Incorporated  Municipality  County  State Government   
Federal Government  Other \_\_\_\_\_

CORPORATE OR PARTNERSHIP DATA (if any):

a. Registered in State of: \_\_\_\_\_ County of: \_\_\_\_\_  
b. Date of Filing \_\_\_\_\_  
c. Agent's Name: Last: \_\_\_\_\_ First: \_\_\_\_\_ M.I. \_\_\_\_\_  
Street Address \_\_\_\_\_ Telephone \_\_\_\_\_ - \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

PERSON TO HAVE PRIME ADMINISTRATIVE AUTHORITY

Name: Last \_\_\_\_\_ First \_\_\_\_\_ M.I. \_\_\_\_\_  
Telephone \_\_\_\_\_ - \_\_\_\_\_

APPLICATION FOR: (Check One)

- New Facility
- Expansion of Existing Facility No. \_\_\_\_\_
- Closure of Facility No. \_\_\_\_\_
- Disruption of Facility No. \_\_\_\_\_

Licensed Professional Engineer Responsible For Submitting The Attached Design:

Engineers Name \_\_\_\_\_  
Seal No. \_\_\_\_\_  
Engineering Firm's Name \_\_\_\_\_  
Address \_\_\_\_\_  
Telephone No. \_\_\_\_\_ - \_\_\_\_\_

FACILITY TYPE: (Separate Application for Each)

- A.  Sanitary Landfill B.  Incinerator C.  Compost D.  Chemical Processing & Treatment Facility  
 E.  Resource Recovery Facility F.  Transfer Station G.  Spreader H.  Baler  
 I.  Sludge J.  Disruption K.  Other

FACILITY NAME:

This Facility: (Check One)  is,  is not,  will be,  will not be under PUC regulation. PUC License No. (if any) \_\_\_\_\_

FACILITY LOCATION: (Attach Map)

Street Address \_\_\_\_\_  
 Municipality \_\_\_\_\_  
 County \_\_\_\_\_

Block No. \_\_\_\_\_ Lot \_\_\_\_\_

Block No. \_\_\_\_\_ Lot \_\_\_\_\_

Block No. \_\_\_\_\_ Lot \_\_\_\_\_

ESTIMATED FACILITY LIFE: \_\_\_\_\_ Years \_\_\_\_\_ Tons  
 IF EXPANSION ADDITIONAL LIFE \_\_\_\_\_ Years \_\_\_\_\_ Tons

FACILITY PROPERTY: (Check One)

- Leased (Attach copy of Lease)  
 Owned (Attach copy of Deed or Certificate of Ownership)  
 Owners Name (Last) \_\_\_\_\_ (First) \_\_\_\_\_ (MI) \_\_\_\_\_  
 Owners Address: Street \_\_\_\_\_  
 Municipality \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

WASTE TYPE: (Check all Types Requested for Acceptance at this Facility)

SOLIDS

10. Municipal (Household, Commercial and Institutional)  
 12. Dry Sewage Sludge  
 13. Bulky Waste  
 17. Hazardous Waste - Dry  
 19. Chemical Waste - Dry - Non Hazardous  
 23. Vegetative Waste  
 25. Animal and Food Processing Wastes  
 26. Oil Spill Clean-up Wastes  
 27. Industrial (Non-chemical)

SEPTAGE

73. Septic Tank Clean-out Wastes  
 74. Liquid Sewage Sludge

LIQUIDS

70. Waste Oil and Sludge  
 72. Bulk Liquid and Semi-Liquids  
 76. Hazardous Waste Liquids  
 77. Liquid Chemical Waste

I certify that the information contained herein and on all attachments are true to the best of my knowledge.

Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Name Typed \_\_\_\_\_ Title \_\_\_\_\_



Notes

1. U.S.G.S Quadrangle maps are available for \$2.00 each from the following office:

Department of Environmental Protection  
Bureau of Geology and Topography  
Map and Publication Sales Office  
P.O. Box 1390  
Trenton, New Jersey 08625  
(609) 292-2506

In order to determine which quadrangle map covers the farm in question, an index is available from the above office free of charge. In addition, county agriculture extension agents or municipal engineers may have this information available.

2. Soil Conservation Service information is available from county agricultural extension agents.

3. SITE CONDITIONS

1. Soils that fall within the following U.S. D.A. Textural Classes are generally suitable sandy loam, loam, sandy clay loam, silty clay loam, and silt loam. All others must be approved by the Department.
2. A minimum depth of four (4) feet to seasonal high water, bedrock, or other impermeable layer shall exist.
3. Existing slopes shall not exceed 6% unless application or management methods which reduce erosion (e.g., sub-surface injection) are utilized. In those cases slope shall not exceed 12%.
4. Soil pH shall be 6.5 or greater, and may be adjusted by the addition of lime or other suitable material.
5. The sludge disposal site shall not be located within:
  - (i) three hundred (300) feet of water supply wells,
  - (ii) two hundred (200) feet of surface water,
  - (iii) three hundred (300) feet of an occupied dwelling,
  - (iv) fifty (50) feet of property lines.
6. Specific soil characteristics should be evaluated according to the attached table based on information available in the Soil Conservation Service survey maps for each county. A site inspection by SWA or SCS personnel will be necessary to supplement this information.

## C. OPERATIONAL REQUIREMENTS

### General

1. Septage shall be spread in such a way as to minimize ponding and prevent runoff. All waste shall be mixed into or turned under the soil within 24 hours of application.
2. Septage shall not be spread during periods of rain or on ground which is saturated, frozen, or covered with snow. Exceptions to this rule must be approved by this Department prior to implementation.
3. The waste shall be spread as uniformly as possible without overlap. Rates of application shall not exceed those specified in the permit.
4. A cover crop must be grown on land to which septage has been applied. No root crops or any vegetables commonly eaten raw may be grown for at least three years after the final application. Direct contact between septage and the edible portion of the crop shall be prevented.

### Winter Operation

If sufficient and suitable storage capacity is not available, then special precautions must be taken so that runoff during periods of thaw does not occur. In general, the following methods would be acceptable

1. Direct application to the surface of frozen ground provided that the land does not exceed a 6% slope and a suitable downslope, buffer (large grassy area or berm) is provided.
2. Shallow contour trenches which can be filled in or plowed when soil conditions permit.
3. In no case should septage be applied on top of snow or ice.

### Application Rate

The maximum amount of septage that may be spread on one acre of well-drained soil in one year is 62,500 gallons. For moderately well-drained soil, this figure is 37,000 gallons per year.

### Monitoring

If the above operational requirements and site conditions are met, groundwater monitoring should not be required. If some of these conditions are not satisfied, or certain site characteristics warrant extra precautions, monitoring wells will be located by a SWA geologist.

Note on Application Rates

These numbers are taken from the "Maine Guidelines for Septic Tank Sludge Disposal on the Land", which offers the following background information

The nitrogen content of septic tank waste (approximately 3 pounds per one thousand gallons) and soil characteristics (water holding capacity, infiltration rate, slope, and permeability, etc.), vegetative consumption, evaporation, transpiration, rainfall patterns, and methods of application determine the maximum application rates of septic tank sludge to the surface of the land. Considering all of these variables, 2.3 inches of sludge (62,500 gallons) per acre per year was determined as the maximum application rate on a well-drained soil if surface and ground water quality are to be protected. There are approximately 500 lbs. of nitrogen in 62,500 gallons of septic tank sludge. The maximum application rate on a moderately well drained soil is 37,000 gallons of septic tank sludge per acre per year. There are approximately 300 lbs. of nitrogen in 37,000 gallons of septic tank sludge.

D. REPORTING AND FEES

Forms will be provided for daily record keeping of the amount of waste applied. These records must be submitted to the Solid Waste Administration on a monthly basis.

In addition to the initial fifty dollar filing fee (Section 4), a fifty dollar tipping fee will be due at the end of each quarter during which septage is deposited at the site.

E. PERMIT ISSUANCE

The permit will be issued to the person who is to have primary responsibility for meeting the requirements outlined in these guidelines and in N.J.A.C. 7 26-1 et seq. In general, this will be the hauler, however, specific circumstances may warrant the issuance of a single permit to both the hauler and the farmer/landowner, or to the farmer alone.

The permit will be applicable only for a specified area of ground (identified by lot and block numbers and by a plot plan) and will be limited only to disposal of domestic septic tank waste. In general, only one hauler will be permitted to use any one plot of land. Involvement of more than one will require regulation by the Board of Public Utilities.

TABLE

## Soil Limitations for Accepting Non-Toxic Biodegradable Solid and Liquid Waste for Nutrient Removal by Plants

Item Affecting Use	Degree of Soil Limitation <sup>1</sup>			Source
	Slight	Moderate	Severe	
Permeability of the most restricting layer between 60 inches and the Ap or similar surface horizon	Moderately rapid and moderate 0.6-6.0 in/hr	Rapid and moderately slow <sup>2</sup> 6-20 and 0.2-0.6 in/hr	Very rapid, slow and very slow greater than 20 and less than 0.2 in/hr	a
Infiltration Rate <sup>3</sup>	Very rapid, rapid, moderately rapid, and moderate, greater than 0.6 in/hr	Moderately slow 0.2-0.6 in/hr	Slow and very slow, less than 0.2 in/hr	a
Soil Drainage Class <sup>4</sup>	Well drained and moderately well drained	Somewhat excessively drained and somewhat poorly drained	Excessively drained, poorly drained and very poorly drained	a
Runoff <sup>5</sup>	None, very slow and slow	Medium	Rapid and very rapid	a
Flooding	None	Soils flooded only during non-growing season	Soils flooded during growing season	a
Available Water Holding Capacity from 0 to 60 inches or a limiting layer <sup>6</sup>				
Temporary Installation	Greater than 7.8 inches	3-7.8 inches	Less than 3 inches	a
Permanent Installation	Greater than 3 inches		Less than 3 inches	a
Slope				
Liquid sludge	0-2%	2-6%	6%	a
Dewatered sludge or compost	Less than 6%	6-12%	Greater than 12%	b

Depth to seasonal water table	Greater than 4 feet	2-4 feet	Less than 4 feet	b
Depth to bedrock	Greater than 4 feet	2-4 feet	Less than 2 feet	b

#### Notes

1. Ratings apply only during periods of year when ground is not frozen or snow covered
2. Assign severe limitation to moderately slowly permeable soils in which any horizon has an electrical conductivity of 8 millimhos or greater
3. These ratings are only applicable to liquid waste disposal systems
4. For class definition, see Soil Survey Manual, pp. 169-172
5. For class definition, see Soil Survey Manual, pp. 166-167
6. A limiting layer is a lithic or paralithic contact, fragipan or other horizons of low permeability.

#### Sources

- a) USDA - SCS
- b) Guidelines for the Application of Wastewater Sludge to Agricultural Land in Wisconsin. Technical Bulletin No. 82 Department of Natural Resources, Madison, Wisconsin.

## CHAPTER 4 - LANDFILLING

### 4.1 - General

Management techniques which recycle sludge and septage in a beneficial manner, such as land application projects, are strongly recommended by the Department. Landfilling of sanitary waste residues is not a resource recovery technique and is therefore less desirable than other means of residuals management. In addition, sewage sludge and septage have been found to greatly increase leachate production, gas generation and operational problems associated with the landfill. For these reasons, landfilling of these materials should be considered only as a last resort.

Sanitary landfilling of sludge and septage from treatment works (for which design of the project was initiated after May, 1977) is not acceptable unless it can be clearly demonstrated to the Department that, due to the characteristics of the material, ultimate disposal in a landfill is the only environmentally acceptable method of disposal. Disposal in these cases must be made into a secure (lined) landfill, and approval from the Solid Waste Administration must be obtained during the planning process. The proposed disposal project must be consistent with the District Solid Waste Management plan.

In the case of an on-site treatment plant - operated landfill for sludge, septage or ash disposal, or for storage of these materials on-site in excess of six months, conceptual approval of designs must be obtained from the Solid Waste Administration (SWA) by the consulting engineer and the Municipality prior to certification of the Step II grant by the Division of Water Resources. Final designs must be submitted in accordance with SWA requirements during Step II. The landfill/storage aspects of the project will be incorporated into the Treatment Works Approval and no further permit from the SWA will be required.

### 4.2 - Treatment of Sludge and Septage Prior to Landfill Disposal

Sludge and/or septage for disposal in a secure landfill must be treated before disposal to minimize gas and leachate production. Acceptable methods of stabilization prior to landfilling include digestion, composting, lime treatment or other treatment processes which significantly reduce the putrescible portion of the sludge and accomplish pathogen reduction to a degree comparable to or greater than anaerobic digestion.

#### 4.5 - Monitoring

For those cases in which landfilling is the only environmentally acceptable solution for sludge disposal and for which Municipalities propose to establish their own secure landfills, adequate monitoring must be provided to insure preservation of environmental quality. The monitoring program must be specifically designed for local conditions and include:

- a. Ground water observation wells (required by SWA for all new solid waste facilities) and testing for heavy metals, persistent organics, pathogens and nitrates (in order to detect failure of the landfill's lining as soon as possible).
- b. Where the surface water could be affected by runoff from the landfill, or leachate from the sludge, surface water monitoring should be implemented and tests for BOD, COD, dissolved solids and nitrogen be performed on a regularly scheduled program.

#### 4.6 - Landfilling of Compost

Due to the unique characteristics of composted sludge, the Solid Waste Administration has determined that compost may be disposed of in any landfill registered to accept municipal solid wastes that has an SWA - approved engineering design, providing the material has been composted at an NJDEP - approved sludge or septage composting facility. Disposal within a landfill does not take advantage of the resource recovery potential of the compost product and is therefore not recommended as an ultimate sludge management procedure. However, the utilization of compost as an amendment to the final cover layer of sanitary landfills to enhance vegetative growth and reduce topsoil requirements is recommended. Pending further investigation, the use of compost alone as final cover or as intermediate cover has not been approved by the Solid Waste Administration.

It is the goal of the Department to phase out the disposal of liquid sludge and septage in sanitary landfills. Municipalities which landfill their wastes in liquid form will be permitted to continue this practice only on an interim basis and in the future will be directed to implement sludge dewatering on a time scale consistent with the Statewide Sludge Management Plan currently under development.

Authorities with existing dewatering facilities must stabilize their sludge and dewater to a minimum of 15% solids prior to landfilling. Upon completion of the Statewide Sludge Management Plan and adoption of regulations for the implementation of this Plan, requirements for these facilities will be gradually upgraded to dewater to a minimum of 30% cake solids and achieve a minimum of 50% volatile solids reductions prior to landfilling.

Treatment works (for which design of the project was initiated after May 1977) are required to stabilize their sludge to accomplish 50% or greater reduction in volatile solids and to dewater to a minimum of 30% cake solids concentrations prior to landfilling. These standards will be incorporated into their Treatment Works Approval.

#### 4.3 - Operation

Sanitary landfills accepting sludge and/or septage which has been stabilized and dewatered as per Section 4.2 of these Guidelines (including on-site facilities established by the Municipality) must be operated in accordance with the Rules of the Bureau of Solid Waste Management (N.J.A.C. 7:26-1 et seq.).

Transportation of the material to the landfill must be done in an approved manner to prevent spillage or leakage of the waste. Sewage sludge or septage may not be intermixed with other wastes of a chemical or industrial nature for haulage or disposal in the sanitary landfill. Trucks which transport waste to an off-site landfill for disposal must be registered with the SWA.

#### 4.4 - Ground and Surface Water Protection

It is the policy of the Department that "no new sanitary landfill shall be conducted, nor shall an existing landfill continue to be conducted, where the solid waste...or leachate... impairs the quality of the surface or ground waters of this State." Further, the landfill shall in no way aggravate the quality of ground and surface waters which presently fail to meet established standards. As previously mentioned, to minimize the possibility of ground water contamination, disposal of sanitary waste residues must be made in a lined landfill. Proper design, operation and maintenance of the leachate and storm water collection and discharge systems, as well as proper grading of working faces and completed sites, will minimize the possibility of surface water contamination.

APPENDIX II

Delineation of '201 agencies'  
Septage Management Planning  
Responsibilities



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES

P O BOX 2809, C11729

TRENTON, NEW JERSEY 08625

FEB 03 1970

TO. 201 Facilities Planning Areas

The attached Program Guidance Document was jointly prepared by the Division of Water Resources and Solid Waste Administration. It delineates respective planning and implementation responsibilities for 201 Facilities Planning Areas and Solid Waste Management Districts with respect to sludge and septage management.

This document will constitute the Department of Environmental Protection's operating policy. Serious objections to the Program Guidance Document should be referred to my Office, within thirty (30) days, for consideration.

Very truly yours,

  
Jeff Zelikson, P.E.  
Acting Director

Attachment



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF WATER RESOURCES  
P O BOX 2809  
TRENTON NEW JERSEY 08625

February 8, 1979

PROGRAM GUIDANCE DOCUMENT

TO: District Solid Waste Planning Groups and 201 Facilities Planning Areas

RE: Planning for Sewage Sludge and Septage Utilization/Disposal

The responsibility for the planning for the utilization/disposal of septage and sewage sludge has been delegated to the State's Solid Waste Management Districts and to the 201 planning agencies. The New Jersey Solid Waste Management Act has designated each county and the Hackensack Meadowlands Development Commission as a Solid Waste Management District (SWMD). As a result of the Water Pollution Control Act (P.L. 92-500) and the Clean Water Act (P.L. 95-217) construction grant monies have been allocated to 201 facilities planning agencies for the planning, design, and construction of wastewater treatment systems, which includes planning and constructing facilities for the proper utilization/disposal of sludge and septage. There is an obvious need to coordinate the efforts of the local agencies, and to clearly define their respective areas of responsibility, so as to avoid unnecessary duplication of effort. In order to achieve these goals, the Division of Water Resources and the Solid Waste Administration have agreed that the policy stated below will apply to all Solid Waste Management Districts and all present and future designated 201 planning agencies.

1. The planning, design, and construction of permanent septage and sewage sludge treatment facilities to serve delineated 201 areas are the responsibility of the 201 planning agencies. The ultimate disposal/utilization of the sewage sludge and septage residue is also the responsibility of the 201 planning agencies and must be dealt with in their facilities plans. Such plans must conform to the Department's Guidelines for the Preparation of 201 Sludge Management Plans. The measures proposed by the 201 planning agencies to deal with sewage sludge and septage should be included, whenever possible, in the county solid waste plans. Coordination between the SWMD's and the 201 planning agencies is essential.

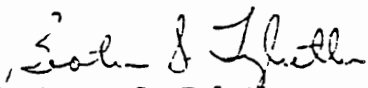
Prior to the approval by the Division of Water Resources of any facilities plan, the 201 planning agency must submit proof of having solicited the comments and reviews of the appropriate SWMD. On its own part, the Solid Waste Management District must adopt as part of its solid waste management plan sludge and septage management guidelines which are no less stringent than those adopted by the Department of Environmental Protection. Comments from the SWMD in response to a 201 planning agency request for review will be due within thirty (30) days of receipt of such request. Copies of these comments should be forwarded by the SWMD to the Division of Water Resources (Attn: Office of Sludge Management and Industrial Pretreatment) and the Solid Waste Administration. Failure by the SWMD to respond in writing within the allocated period will be considered proof of concurrence with the submitted facilities plan.


In areas where a legally formed 201 planning agency has not been created, the SWMD is responsible for planning for septage treatment and disposal after consultation with the 208 areawide planning agency. The SWMD should consider the creation of new 201 planning agencies for the development and implementation of long-term septage facilities where such agencies do not already exist.

2. The Department will have the ultimate responsibility for approving 201 facilities plans and district solid waste management plans.
3. 201 facilities plans should be included in the district solid waste management plans. Until permanent facilities are constructed by the 201 agencies, the SWMD's remain responsible for developing environmentally acceptable means of disposing of septage. Planning and implementing these interim measures will be the sole responsibility of the SWMD's and the Solid Waste Administration. As with permanent solutions, these interim measures must conform to the Department's rules and regulations for the environmentally sound disposal/utilization of septic tank clean-outs. Considerable flexibility and cooperation between 201 planning agencies and solid waste districts is essential so as to develop specific solutions to particular district septage control problems. Such interim solutions may range from septage acceptance at existing sewage treatment plants with adequate capacity, to interim treatment or storage, and may require capital expenditure by the districts or their designees.

4. Nothing in this document shall preclude Solid Waste Management Districts from reaching separate agreements with 201 planning agencies to serve areas outside the designated 201 planning area or to provide interim solutions prior to the construction of permanent facilities.
5. This joint policy statement becomes effective on
6. The Division of Water Resources and the Solid Waste Administration may, from time to time, issue further clarification of this policy.

Very truly yours,

  
Beatrice S. Tylutki  
Director  
Solid Waste Administration

  
Jeff Zelikson, P.E.  
Acting Director  
Division of Water Resources



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES

P. O. BOX CN-029  
TRENTON, NEW JERSEY 08625

Arnold Schiffman  
Director

NOV 1 1979

Program Guidance Document

TO: 201 Facilities Planning Areas

RE: Planning for Sewage Sludge and Septage Utilization/Disposal:  
Additional Requirements

This is in reference to the Program Guidance Document dated February 8, 1979 concerning the responsibility of the 201 Planning Areas for the treatment and disposal of septage generated in the Planning Areas.

As stated in the Program Guidance Document, "the planning, design and construction of permanent septage and sewage sludge facilities to serve delineated 201 Planning Agencies" are the responsibilities of the 201 Planning Agencies. The planning aspects for septage disposal in the 201 planning areas must be comprehensively addressed in all Sludge Management plans. Such Plans must conform to the Department's "Guidelines for the Preparation of Sludge Management Plans" which were issued by the Division of Water Resources (Office of Sludge Management and Industrial Pretreatment) in September of 1979. Chapter III of the Guidelines specifically deal with the technical aspects and requirements for the stabilization, treatment and disposal of septage.

For the purpose of properly evaluating the cost effectiveness of various alternatives for the treatment, disposal and/or utilization of septage, it will be necessary for the 201 agencies to consider the following:

- (a) retaining existing structures such as storage tanks, digestors, etc. and converting them to septage treatment facilities,
- (b) rennovating existing package plants in the service areas for the purposes of pretreating the septage, and
- (c) constructing new facilities for the treatment of septage.

In addition, it will be necessary for 201 agencies to consider the regionalization aspects of septage treatment whenever possible and feasible.

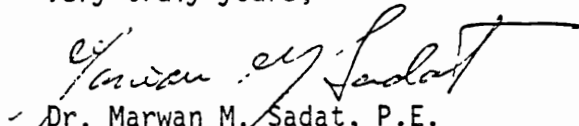
The Office of Sludge Management and Industrial Pretreatment is currently preparing a Statewide Septage Management Plan which will include the requirements of this document and which will specifically deal with septage generation and disposal throughout the State.

The 201 agencies, in those areas which have a demonstrated need for the treatment and disposal of the septage in the service area and which have not already initiated or completed a Sludge Management Plan, should begin to develop the necessary program for the planning, design and construction of septage facilities. These agencies should contact the Construction Grants Administration (292-0950) for guidance on the availability of 201 funds for this purpose.

After the publication of the Statewide 208 Septage Management Plan, it is the intention of the DEP to request from EPA that NPDES Permits be modified at reissuance time to include such compliance schedules as would be deemed necessary to conform to the Statewide Septage Management Plan.

Please feel free to call this Office for any further clarification of this document.

Very truly yours,

  
Dr. Marwan M. Sadat, P.E.  
Program Director  
Office of Sludge Management  
and Industrial Pretreatment

APPENDIX III

Office of Sludge Management  
and Industrial Pretreatment's  
Septage Program's Data Base

APPENDIX III

- I Table entitled  
Planning Areas for Sewage Treatment--September 1979.
- II Table entitled  
Septage Program/Plans Identified--September 1979.
- III Table entitled  
Septage Volume by County--August 1979.
- IV Table entitled  
Sewage Treatment Facilities in New Jersey--September 1979.
- V Map entitled  
New Jersey 201 Facility Planning Areas--June 1979.

Data is available from these attachments organized as follows:

- I. a) All municipalities listed according to 201 Facilities Planning Area and 208 Planning Area.
- b) Number of unsewered houses in each municipality and 201 area based on census data and staff survey.
- c) Septage volume for each 201 area assuming 1000 gal/3 year per unsewered house.
- d) Population in each municipality and 201 area based on census data and New Jersey official projections.
- II. e) Summary of septage volume by planning areas including statewide total.
- f) Indication of planning being done for sludge and septage handling for each planning area.
- g) Volume of septage included in management plans for each 208 area including statewide totals.
- III. h) Septage volume by county estimated for 208 plans, hauled according to Solid Waste Administration records, and generated by unsewered homes.

- i) Treatment works capacity available for accepting septage.
- IV j) NPDES numbers and plant names of all sewage treatment facilities in New Jersey except industrial arranged according to 201 facility planning areas. Plants listed are municipal unless otherwise stated.
- V k) Visual of 201 planning areas in New Jersey to match table entitled "Planning Areas for Sewage Treatment."

In summary, of the seventy-eight (78) 201 Facilities Planning Areas identified in New Jersey, forty-three (43) are planning for septage treatment and fifty-eight (58) for sludge disposal. There are currently no disposal plans for 42.188 MG/year septage waste of the total 138.777 MG/yr being generated in New Jersey (30.4% unplanned).

I. PLANNING AREAS FOR SEWAGE TREATMENT

## PLANNING AREAS FOR SEWAGE TREATMENT

	Population * (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
I. Northeast 208 Area			
1. Wanaque Valley Regional Sewerage Authority			
Ringwood Borough	13,385	3,644	
Wanaque Borough	9,262	1,416	
West Milford Township (½ area)	<u>10,864</u>	<u>3,018</u>	
	33,511	8,078	<u>2.693</u>
2. Northwest Bergen County Utilities Authority			
Allendale Borough	6,142	1,359	
Franklin Lakes Borough	8,174	1,993	
Ho-Ho-Kus Borough	4,168	686	
Mahwah Township	12,819	3,580	
Midland Park Borough	7,681	1,727	
Ramsey Borough	12,183	1,701	
Saddle River Borough	2,583	733	
Upper Saddle River Borough	8,380	2,152	
Waldwick Borough	11,679	2,217	
Wykoff Township	<u>15,727</u>	<u>2,500</u>	
	89,536	18,648	<u>6.216</u>
3. Bergen County Utilities Authority			
Alpine Borough	1,550	395	
Bergenfield Borough	26,450	63	
Bogota Borough	8,279	6	
Carlstadt Borough	6,225	14	
Cliffside Park Borough (½ area)	11,366	22	
Closter Borough	8,367	2,456	
Cresskill Borough	7,848	77	
Demarest Borough	5,035	1,814	

\* "Population Estimates for New Jersey - Official State Estimate", Dept. of Labor and Industry, Office of Demographic and Economic Analysis, Provisional Estimates for 1978 are used, June 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Dumont Borough	18,559	7	
East Rutherford Borough (Most 4/5)	6,358	28	
Emerson Borough	7,940	76	
Englewood City	23,015	29	
Englewood Cliffs Borough	6,137	76	
Fairview Borough	10,278	-	
Fort Lee Borough (Most)	35,147	68	
Hackensack City	36,635	65	
Harrington Park Borough	4,811	1,306	
Hasbrouck Heights Borough	12,438	19	
Haworth Borough	3,636	1,029	
Hillsdale Borough	11,277	260	
Leonia Borough	8,053	-	
Little Ferry Borough	9,272	14	
Maywood Borough	10,077	22	
Montvale Borough	7,456	1,938	
Moonachie Borough	2,868	20	
New Milford Borough	17,360	26	
Northvale Borough	5,154	1,356	
Norwood Borough	4,489	1,166	
Old Tappan Borough	4,154	1,104	
Oradell Borough	8,650	32	
Palisades Park Borough	13,083	36	
Paramus Borough	27,509	1,572	
Park Ridge Borough	8,925	1,928	
Ridgefield Borough	10,460	8	
Ridgefield Park Village	12,933	-	
Ridgewood Township	25,500	392	
River Edge Borough	11,643	6	
River Vale Township	9,489	2,351	
Rochelle Park Township	5,755	6	
Rockleigh Borough	272	49	
Teaneck Township	39,427	73	
Tenafly Borough	13,827	90	

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Teterboro Borough	22	-	
Washington Township	10,295	2,577	
Westwood Borough	10,269	427	
Woodcliff Lake Borough	5,746	1,046	
Wood-Ridge Borough	<u>8,007</u>	<u>14</u>	
	542,404	24,063	<u>8.021</u>
4. Pequannock River Basin Regional Sewerage Authority			
Bloomington Borough	8,212	743	
Butler Borough	7,744	270	
Kinnelon Borough	8,180	2,143	
Riverdale Borough (½ area)	1,318	390	
West Milford Township (½ Area)	<u>10,864</u>	<u>3,018</u>	
	36,318	6,564	<u>2.188</u>
5. Pompton Lakes Municipal Utilities Authority			
Oakland Borough	13,656		
Pompton Lakes Borough	11,288	32	
Riverdale Borough (½ area)	<u>1,319</u>	<u>390</u>	
	26,263	4,110	<u>1.370</u>
7. Rockaway Valley Regional Sewerage Authority			
Boonton Town	8,788	634	
Boonton Township	3,065	849	
Denville Township	13,873	1,881	
Dover Town	14,465	99	
Jefferson Township (2/3 Area)	10,205	2,993	
Mine Hill Township	3,429	1,016	
Randolph Township (3/4 area)	<u>13,843</u>	<u>2,250</u>	

September, 1971

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Rockaway Borough	6,648	52	
Rockaway Township	19,775	3,324	
Roxbury Township (½ area)	8,902	1,805	
Victory Gardens Borough	1,208	-	
Wharton Borough	<u>5,758</u>	<u>96</u>	
	110,159	14,999	<u>5.000</u>
8. Parsippany - Troy Hills			
East Hanover Township (Most)	9,429	2,334	
Montville Township	13,673	2,425	
Mountain Lakes Borough	4,403	10	
Parsippany - Troy Hills Township	<u>49,943</u>	<u>137</u>	
	77,448	4,906	<u>1.635</u>
9. Pequannock - Lincoln Park & Fairfield Sewer Authority			
Fairfield Borough	7,770	1,422	
Lincoln Park Borough	8,578	1,800	
Pequannock Township	<u>13,966</u>	<u>3,136</u>	
	30,314	6,358	<u>2.119</u>
10. Wayne Township			
Wayne Township	48,485	2,471	0.824
11. Totowa - West Patterson			
Totowa Borough	11,552	96	
West Paterson Borough	<u>11,020</u>	<u>367</u>	
	22,572	463	<u>0.154</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
12. Passaic Valley Sewerage Commission			
Clifton City	77,867	203	
East Newark Borough	1,873	-	
East Rutherford Borough (1/5 Area)	1,590	6	
Elmwood Park Borough	19,216	14	
Fair Lawn Borough	35,059	64	
Garfield City	27,744	459	
Glen Rock Borough	11,857	124	
Haledon Borough	6,309	73	
Harrison Town	11,606	11	
Hawthorne Borough	18,584	389	
Kearny Town (½ area)	18,205	9	
Lodi Borough	24,119	110	
North Arlington - Lyndhurst Joint Meeting			
Lyndhurst Township	20,641	20	
North Arlington Borough	16,725	29	
North Haledon Borough	7,621	2,211	
Nutley Town	29,929	7	
Passaic City	50,811	67	
Paterson City	153,786	288	
Prospect Park Borough	4,837	13	
Rutherford Borough	19,288	13	
Saddle Brook Township	14,673	33	
Second River Joint Meeting			
Belleville Town	36,100	18	
Bloomfield Town	49,724	53	
East Orange City (Most)	70,301	49	

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Glen Ridge Borough	8,019	-	
Montclair Town	39,972	43	
Newark City	313,573	638	
Orange City (2/3 area)	19,637	37	
South Hackensack Township	2,243	56	
Wallington Borough	<u>10,181</u>	<u>-</u>	
	1,122,090	5,037	<u>1.679</u>
13. Edgewater			
Edgewater Borough	4,908	100	
Cliffside Park Borough (½ Area)	11,367	32	
Fort Lee (Small Part)	-	-	
	<u>16,275</u>	<u>132</u>	<u>0.043</u>
14. Caldwell Sewer Authority			
Caldwell Borough	7,908	25	
Essex Fells Borough	2,451	6	
North Caldwell Borough	6,751	317	
Roseland Borough	4,888	5	
West Caldwell Borough	<u>11,425</u>	<u>115</u>	
	33,423	468	<u>0.156</u>
15. Peckman River Study Group			
Cedar Grove Township	12,416	33	
Little Falls Township	12,093	107	
Verona Borough	<u>14,526</u>	<u>28</u>	
	39,035	168	<u>0.056</u>
18. Hudson County Sewerage Authority			
Jersey City	227,521	254	
Kearny (½ area)	18,205	9	
North Bergen Township	45,569	76	
Secaucus Town	<u>13,600</u>	<u>334</u>	

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Bayonne City	68,999	70	
Guttenberg Town	7,144	5	
Hoboken City	40,571	49	
Union City	51,277	115	
Weehawken Township	11,752	32	
West New York Town	<u>37,662</u>	<u>55</u>	
	522,300	999	<u>0.333</u>
19. Whippany River Basin Study Commission			
East Hanover Township (Tiny Part)	-	-	
Hanover Township	11,379	90	
Mendham Borough (½ area)	2,593	186	
Mendham Township (½ area)	2,122	543	
Morris Plains Borough	5,312	0	
Morristown Town	16,704	34	
Morris Township (3/4 Area)	<u>13,854</u>	<u>1,808</u>	
	51,964	2,561	<u>0.854</u>
20. Livingston - Florham Park			
Florham Park Borough	9,268	89	
Livingston Township	<u>29,180</u>	<u>6</u>	
	38,448	95	<u>0.032</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
21. Essex & Union County Joint Meeting			
East Orange City (Little part)	-	-	
Elizabeth City	102,645	117	
Hillside Township	21,662	8	
Irvington Town	55,253	29	
Maplewood Township	22,972	4	
Millburn Township	20,152	76	
Roselle Park Borough (½ Area)	6,649	-	
South Orange Village	16,109	6	
Summit City	22,056	24	
Union Township	49,480	52	
West Orange Town	41,015	224	
Orange City	<u>9,818</u>	<u>18</u>	
	574,611	558	<u>0.186</u>
22. Upper Passaic River Basin Study committee			
Berkeley Heights Township	13,080	40	
Bernards Township	13,676	1,286	
Bernardsville Borough (½ Area)	3,318	482	
Far Hills Borough (1/3 Area)	258	46	
Harding Township	3,239	989	
Madison - Chatham Joint Meeting			
Chatham Borough	9,094	33	
Chatham Township	8,660	425	
Madison Borough	16,132	203	
Morris Township (½ Area)	4,618	603	
New Providence Borough	13,231	61	
Passaic Township	7,160	600	
Warren Township (3/4 area)	<u>7,680</u>	<u>1,407</u>	
	100,146	6,175	<u>2.058</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
U04 Undesignated in Morris County			
Chester Borough	1,370	396	
Chester Township	4,713	1,248	
Mendham Township (½ area)	2,123	543	
Washington Township (1/3 area)	3,180	728	
Randolph Township (½ area)	4,615	750	
Mendham Borough (½ area)	2,593	187	
Tewksbury Township (1/3 area)	1,289	386	
	<u>19,883</u>	<u>4,238</u>	<u>1.413</u>
23. Rahway Valley Sewerage Authority			
Clark Township	17,610	45	
Cranford Township	25,748	7	
Garwood Borough	4,856	6	
Kenilworth Borough	8,522	36	
Mountainside Borough	7,104	104	
Rahway City	27,576	4	
Roselle Park Borough (½ Area)	6,650	-	
Scotch Plains Township	21,551	336	
Springfield Township	14,688	7	
Westfield Town	32,024	88	
Winfield Township	1,962	-	
	<u>168,291</u>	<u>633</u>	<u>0.211</u>
24. Linden Roselle Sewerage Authority			
Linden City	38,392	22	
Roselle Borough	21,424	7	
	<u>60,816</u>	<u>29</u>	<u>0.010</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
II. Sussex 208 Area			
25. Pohuck Basin			
Vernon Township (5/8 area))	7,942	1,921	0.640
26. Lower Wallkill Basin			
Wantage Township	6,628	1,845	
Sussex Borough	2,474	77	
Frankford Township (½ area)	1,960	508	
Vernon Township (½ area)	3,177	769	
Hardyston Township (1/6 area)	753	195	
Lafayette Township (1/6 area)	279	85	
	<u>15,271</u>	<u>3,479</u>	<u>1.160</u>
27. Upper Wallkill Basin			
Hamburg Borough	2,162	694	
Franklin Borough	4,637	929	
Ogdensburg Borough	2,834	767	
Sparta Township (2/3 area)	8,909	2,420	
Hardyston (2/3 area)	3,012	781	
Lafayette Township (1/6 area)	279	84	
	<u>21,833</u>	<u>5,675</u>	<u>1.892</u>
28. Pequest Basin			
Green Township	2,253	592	
Andover Borough	962	289	
Andover Township (2/3 area)	2,700	688	
Fredon (½ area)	1,014	277	
	<u>6,929</u>	<u>1,846</u>	<u>0.615</u>

	Population (1978 Estimate)	1979 houses Unsewered .	Septage Volume at 1000 gal/3yr in MG/yr
29. Paulinskill Basin			
Andover Township (1/3 area)	1,350	344	
Stillwater Townhsip	2,863	1,210	
Hampton Township	2,890	652	
Newton Town	8,579	239	
Lafayette Township (2/3 area)	1,117	339	
Sparta (1/3 area)	4,454	1,208	
Frankford Township (½ area)	1,961	509	
Fredon Township (½ area)	1,014	276	
Branchville Borough	<u>1,039</u>	<u>373</u>	
	25,267	5,150	<u>1.717</u>
U01 Undesignated in Sussex County			
Walpack Township	418	255	
Sandyston Township	1,591	589	
Montaque Township	<u>1,923</u>	<u>518</u>	
	3,932	1,362	<u>0.454</u>
U02 Undesignated in Sussex County			
Vernon Township (1/8 area)	1,589	384	
Hardyston Township (1/6 area)	<u>753</u>	<u>195</u>	
	2,342	579	<u>0.193</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
III. Upper Raritan 208 Area			
30. North Hunterdon 10			
High Bridge Borough	3,351	127	
Clinton Town	2,124	65	
Clinton Township (1/3 area)	2,309	578	
Union Township	3,771	677	
Bloomsbury Borough	873	268	
Bethlehem Township	2,329	584	
Hampton Borough	1,557	466	
Glen Gardner Borough	898	211	
Lebanon Township	5,214	1,648	
Califon Borough	1,182	372	
Franklin Township (1/2 area)	622	179	
	<u>28,162</u>	<u>5,175</u>	<u>1.725</u>
31. Mount Olive/Washington Township			
Mount Olive Township	18,913	2,669	
Washington Township (2/3 area)	6,360	1,456	
Roxbury Township (1/2 area)	8,903	1,805	
	<u>34,176</u>	<u>5,930</u>	<u>1.977</u>
33. Rockaway Creek			
Readington Township (1/2 area)	2,393	605	
Tewksbury Township (2/3 area)	2,578	772	
Lebanon Borough	951	382	
Clinton Township (1/3 area)	2,309	578	
	<u>8,231</u>	<u>2,337</u>	<u>0.779</u>

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
<b>U06 Undesignated in Hunterdon County</b>			
Alexandria Township	2,615	792	
Kingwood Township	2,532	813	
Delaware Township (½ area)	1,846	526	
West Amwell Twp. (½ area)	1,205	360	
Milford Borough	1,443	222	
Holland Township	4,319	1,222	
Frenchtown Borough	1,543	20	
Franklin Township (¼ area)	1,245	359	
	<u>16,748</u>	<u>4,314</u>	<u>1.438</u>
<b>U05 Undesignated in Hunterdon County</b>			
Readington Township (½ area)	4,786	1,210	
Clinton Township (1/3 area)	2,309	578	
	<u>7,095</u>	<u>1,788</u>	<u>0.596</u>
<b>34. Middle South Branch</b>			
East Amwell Township	3,171	940	
Raritan Township	8,083	2,204	
Flemington Borough	4,391	54	
Delaware Township (½ area)	923	263	
Readington Township (½ area)	2,394	605	
Franklin Township (½ area)	623	180	
	<u>19,585</u>	<u>4,246</u>	<u>1.415</u>
<b>35. Upper Raritan Watershed</b>			
Bedminster Township	2,816	982	
Peapack & Gladstone	1,998	194	
Far Hills (2/3 area)	515	93	
Bernardsville (½ area)	3,318	483	
Branchburg Township	6,801	1,463	
Bridgewater Township	32,549	3,564	
Raritan Borough	6,145	91	

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Somerville Borough	13,444	12	
Hillsborough (½ area)	8,721	1,245	
Warren Township (¼ area)	2,560	469	
	<u>78,867</u>	<u>8,596</u>	<u>2.865</u>
36. Manville Borough			
Manville	11,987	24	0.008
U07 Undesignated in Somerset County			
Hillsborough Twp. (½ area)	8,722	1,245	
Millstone Borough	586	168	
Montgomery Township	7,429	1,591	
Rocky Hill Borough	874	251	
Franklin Township	7,795	684	
	<u>25,406</u>	<u>3,939</u>	<u>1.313</u>
IV. Upper Delaware 208 Area			
37. Pequest River Sewerage Authority			
Belvidere Town	2,679	915	
White Township (2/3 area)	1,921	679	
Oxford Township	2,007	540	
Hope Township	1,432	524	
Liberty Township	1,419	464	
Frelinghuysen (½ area)	623	182	
	<u>10,081</u>	<u>3,304</u>	<u>1.101</u>
38. Pohatcong Creek Sewerage Authority			
Washington Borough	6,664	106	
Washington Township	3,866	1,202	
Mansfield Township	5,206	892	
	<u>15,736</u>	<u>2,200</u>	<u>0.733</u>

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
39. Paulins Kill Sewerage Authority			
Blairstown Township	3,383	997	0.332
40. Lopatcong Creek Sewerage Authority			
Harmony Township	2,443	681	
Franklin Township	2,315	778	
Greenwich Township	1,603	479	
Lopatcong Township	4,692	350	
Phillipsburg Township	17,719	200	
Pohatcong Township	3,928	530	
Alpha Borough	<u>2,718</u>	<u>368</u>	
	35,418	3,386	<u>1.128</u>
41. Musconetcong Sewerage Authority			
Byram Township	7,623	1,417	
Hopatcong Borough	13,687	4,226	
Mount Arlington Borough	3,804	1,130	
Netcong Borough	3,477	61	
Stanhope Borough	4,358	408	
Jefferson Township (1/3 area)	<u>5,103</u>	<u>1,496</u>	
	38,052	8,738	<u>2.913</u>
42. Lambertville Sewerage Authority			
Lambertville City	4,189	259	
West Amwell Township (½ area)	1,205	360	
Stockton Borough	670	224	
Delaware (¼ area)	<u>924</u>	<u>263</u>	
	6,988	1,106	<u>0.369</u>

September, 1975

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
U03 Undesignated in Warren County			
Knowlton Township	1,997	736	
Pahaquarry Township	56	54	
Hardwick Township	751	295	
Frelinghuysen (½ area)	623	182	
Allamuchy Township	2,009	360	
Independence Township	2,794	744	
Hackettstown Town	<u>10,194</u>	<u>1,279</u>	
	18,424	3,650	<u>1.217</u>
U13 Undesignated in Warren County			
White Township (⅓ area)	960	340	0.113
V. Mercer 208 Area			
43. Stony Brook Regional Sewerage Authority			
Hopewell Borough	2,191	721	
Hopewell Township (½ area)	5,298	1,312	
Pennington Borough	2,349	746	
Princeton Sewer Operating Committee			
Princeton Borough	12,970	10	
Princeton Township	14,123	409	
West Windsor Township (2/3 area)	<u>5,187</u>	<u>1,191</u>	
	42,118	4,589	<u>1.530</u>
44. Ewing-Lawrence Sewerage Authority			
Ewing Township	34,926	353	
Hopewell Township (½ area)	5,298	1,511	
Lawrence Township	<u>20,923</u>	<u>637</u>	
	61,147	2,501	<u>0.834</u>
45. Trenton City Sewer Authority			
Trenton City	96,359	175	0.058

September, 1975

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
46. Hamilton Township Municipal Utilities Authority			
Hamilton Township	83,076	1,197	
Washington Township (Most)	3,767	1,093	
West Windsor Township (1/3 area)	<u>2,594</u>	<u>596</u>	
	89,437	2,886	<u>0.962</u>
VI. Middlesex or Lower Raritan 208 Area			
57. Upper Millstone Sewerage Authority			
Cranbury Township	2,254	690	
East Windsor Township	22,708	540	
Hightstown Borough	5,398	109	
Millstone Township (½ area)	1,576	404	
Monroe Township (1/3 area)	<u>4,306</u>	<u>561</u>	
	36,242	2,304	<u>0.768</u>
59. Middlesex County Sewerage Authority			
Bound Brook Borough	9,514	966	
Carteret Borough	21,194	41	
Dunellen Borough	6,547	13	
East Brunswick Township	37,851	999	
Edison	66,317	1,162	
Fanwood	8,325	13	
Franklin Township (3/4 area)	23,384	2,050	
Green Brook Township	4,457	242	
Helmetta Borough	900	238	
Highland Park Borough	13,366	21	
Jamesburg Borough	4,993	78	
Metuchen Borough	14,467	26	
Middlesex Borough	14,049	43	
Milltown Borough	6,874	58	
Monroe Township (2/3 area)	8,611	1,121	
New Brunswick City	43,315	120	

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
North Brunswick Township	19,134	455	
North Plainfield Borough	7,429	12	
Old Bridge Township	50,827	203	
Perth Amboy City	35,146	41	
Piscataway Township	39,544	1,299	
Plainfield City	43,398	94	
Sayreville Borough	31,696	203	
South Amboy City	8,822	24	
South Bound Brook Borough	4,471	35	
South Brunswick Township	16,905	1,328	
South Plainfield Borough	20,729	747	
South River Borough	14,757	18	
Spotswood Borough	8,239	48	
Watchung Borough	5,293	997	
Woodbridge Borough	<u>95,180</u>	<u>366</u>	
	685,734	13,056	<u>4.352</u>
<b>U08 Undesignated in Middlesex County</b>			
Plainsboro	5,082	532	0.177
<b>VII. Tri-County 208 Area</b>			
<b>61. Northern Burlington County Regional Sewerage Authority</b>			
Mansfield Township	2,744	785	
Chesterfield Township	3,505	658	
Bordentown City	4,677	49	
Bordentown Township	7,542	318	
Fieldsboro Borough	592	156	
North Hanover Township	9,506	771	
New Hanover Township	14,594	150	
Plumsted Township (2/3 area)	3,209	1,033	
Wrightstown	<u>2,772</u>	<u>59</u>	
	49,141	3,979	<u>1.328</u>
<b>62. Florence Township</b>	8,738	292	0.097

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
<b>63. Burlington City and Township</b>			
Burlington Township	11,405	556	
Burlington City	<u>11,630</u>	<u>8</u>	
	23,035	564	<u>0.188</u>
<b>64. Mount Holly Sewerage Authority</b>			
Westampton Township (2/3 area)	2,181	107	
Eastampton Township	3,169	367	
Mount Holly Township	12,679	73	
Hainesport Township	2,771	879	
Lumberton Township	<u>4,826</u>	<u>521</u>	
	25,626	2,027	<u>0.676</u>
<b>65. Willingboro Municipal Utilities Authority</b>			
Willingboro Township	42,272	56	
Delanco Township	3,908	27	
Edgewater Park	9,329	285	
Beverly City	3,149	27	
Westampton Township (1/3 area)	<u>1,090</u>	<u>93</u>	
	59,745	488	<u>0.163</u>
<b>66. Delran Sewerage Authority</b>			
Delran Township	16,644	144	
Riverside Township	<u>7,881</u>	<u>5</u>	
	24,525	149	<u>0.049</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
67. Cinnaminson Sewerage Authority			
Cinnaminson Township	17,450	229	
Palmyra Borough	7,629	19	
Riverton Borough	<u>2,994</u>	<u>15</u>	
	28,073	263	0.088
68. Moorestown Township			
Morrestown Township	15,449	351	
Maple Shade Township	<u>22,224</u>	<u>180</u>	
	37,673	531	0.177
69. Mount Laurel Township	15,537	1,646	0.548
70. Evesham Municipal Utilities Authority			
Evesham Township	19,466	734	
Medford Township	15,095	1,235	
Medford Lakes Borough	<u>6,807</u>	<u>30</u>	
	41,368	1,999	0.666
71. Pemberton Township Municipal Utilities Authority			
Pemberton Borough	1,482	23	
Pemberton Township (½ area)	<u>14,064</u>	<u>2,435</u>	
	15,546	2,458	0.819

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
U11 Undesignated in Burlington County			
Bass River Township	1,069	426	
Washington Township	706	300	
Woodland Township	2,299	284	
Tabernacle Township	4,141	833	
Shamong Township	3,163	596	
Southampton Township	9,949	1,945	
Springfield Township	2,352	666	
Pemberton Township (½ area)	<u>14,064</u>	<u>2,435</u>	
	37,743	7,485	<u>2.495</u>
72. Camden County Municipal Utilities Authority			
Audubon Borough	9,768	18	
Audubon Park Borough	1,326	-	
Barrington Borough	7,742	6	
Bellmawr Borough	14,415	6	
Berlin Borough	5,514	116	
Berlin Township	6,075	1,525	
Brooklawn Borough	2,583	24	
Camden City	86,322	483	
Cherry Hill Township	68,291	860	
Chesilhurst Borough	1,488	432	
Clementon Borough	6,562	125	
Collingswood Borough	15,886	-	
Gibbsboro Borough	2,471	305	
Gloucester City	13,392	36	
Gloucester Township	39,475	1,098	
Haddonfield Borough	12,088	70	
Haddon Heights Borough	8,799	13	
Haddon Township	16,955	23	

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Hi-Nella Borough	1,077	-	
Laurel Springs Borough	3,091	66	
Lawnside Borough	3,267	32	
Lindenwold Borough	18,433	208	
Magnolia Borough	5,602	19	
Merchantville Borough	4,053	-	
Mount Ephraim Borough	5,049	-	
Oaklyn Borough	4,122	27	
- Pennsauken Township	34,713	231	
Pine Hill Borough	8,241	1,831	
Pine Valley Borough	22	-	
Runnemeade Borough	9,426	157	
Somerdale Borough	6,667	34	
Stratford Borough	8,774	7	
Tavistock Borough	12	-	
Voorhees Township	12,261	1,238	
Waterford Township	6,331	1,501	
Winslow Township	18,554	4,076	
Wood-Lynne Borough	<u>2,775</u>	-	
	462,196	<u>14,567</u>	<u>4.856</u>

73. Gloucester County Utilities Authority

Clayton Borough	5,874	344
Glassboro Borough	15,130	417
National Park Borough	3,565	45
Paulsboro Borough	7,226	60
Pitman Borough	9,443	80
Swedesboro Borough	2,267	97
Wenonah Borough	2,355	47
Westville Borough	4,823	23
Woodbury City	11,214	59
Woodbury Heights Borough	3,458	108

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Deptford Township	25,414	3,114	
East Greenwich Township	3,786	915	
Elk Township	3,091	923	
Franklin Township	10,755	2,916	
Greenwich Township	5,826	120	
Harrison Township	3,115	675	
Logan Township	2,412	545	
Mantua Township	10,432	1,871	
Monroe Township	20,721	3,192	
South Harrison Township	1,353	284	
Washington Township	25,825	1,541	
West Deptford Township	19,187	1,710	
Woolwich Township	<u>1,146</u>	<u>310</u>	
	199,418	19,403	<u>6.468</u>

VIII. Monmouth County 208 Area

74. Bayshore Regional Sewerage Authority

Hazlet Township	23,150	0	
Holmdel Township	8,222	1,502	
Keansburg Borough	9,947	81	
Keyport Borough	6,970	124	
Matawan Borough	9,653	0	
Aberdeen Township	18,879	617	
Union Beach Borough	<u>6,270</u>	<u>0</u>	
	83,091	2,324	<u>0.775</u>

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
75. Middletown Township Sewerage Authority			
Middletown Township	60,264	2,973	0.991
76. Atlantic Highlands - Highlands Sewerage Authority			
Atlantic Highlands Borough	5,098	266	
Highlands Borough	4,695	39	
	<u>9,793</u>	<u>305</u>	<u>0.102</u>
77. Northeast Monmouth Regional Sewerage Authority			
Eatontown Borough	12,365	25	
Fair Haven Borough	5,871	5	
Little Silver Borough	5,854	1	
West Long Branch Borough	7,158	5	
Monmouth Beach Borough	3,466	5	
Oceanport Borough	5,648	5	
Red Bank Borough	12,114	6	
Rumson Borough	7,510	225	
Sea Bright Borough	2,055	1	
Shrewsbury Borough	3,079	5	
Shrewsbury Township	1,244	0	
Tinton Falls Borough (½ area)	4,060	75	
Sandy Hook Borough	-	-	
	<u>70,424</u>	<u>358</u>	<u>0.119</u>
78. Long Branch Sewerage Authority			
Long Branch City	31,430	0	0

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
79. Ocean Township Sewer Authority			
Allenhurst Borough	914	-	
Asbury Park City	14,351	32	
Deal Borough	2,336	-	
Interlaken Borough	1,094	-	
Loch Arbour Village	392	8	
Ocean Township	<u>24,634</u>	<u>488</u>	
	43,721	528	<u>0.176</u>
80. Neptune Township Sewerage Authority			
Avon-By-the-Sea Borough	2,235	-	
Bradley Beach Borough	4,319	0	
Neptune City Borough	5,819	0	
Neptune Township	27,542	20	
Wall Township (½ area)	4,687	739	
Tinton Falls Borough (½ area)	<u>4,060</u>	<u>75</u>	
	48,662	834	<u>0.278</u>
81. South Monmouth Regional Sewerage Authority			
Belmar Borough	5,820	23	
Brielle Borough	3,983	30	
Manasquan Borough	5,282	39	
Sea Girt Borough	2,187	6	
South Belmar Borough	1,438	-	
Spring Lake Borough	3,926	-	
Spring Lake Heights Borough	6,014	50	
Wall Township (½ area)	<u>9,374</u>	<u>1,478</u>	
	38,024	1,626	<u>0.542</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
82. Manasquan River Regional Sewerage Authority			
Farmingdale Borough	1,536	364	
Freehold Borough	11,055	160	
Freehold Township (1/2 area)	9,129	730	
Howell Township (2/3 area)	18,913	4,102	
Wall Township (1/4 area)	<u>4,688</u>	<u>740</u>	
	45,321	6,096	<u>2.032</u>
83. Western Monmouth Utilities Authority			
Englishtown Borough	1,087	406	
Freehold Township (1/4 area)	4,564	365	
Manalapan Township	17,776	1,375	
Marlboro Township	<u>15,629</u>	<u>2,000</u>	
	39,056	4,146	<u>1.382</u>
84. Allentown Borough Study			
Allentown Borough	2,105	84	
Upper Freehold Township (1/2 area)	<u>2,761</u>	<u>815</u>	
	4,866	899	<u>0.300</u>
85. Roosevelt Municipal Sewerage Authority			
Roosevelt Borough	866	20	.007
U09 Undesignated in Monmouth County			
Colts Neck	7,183	1,790	0.597
U10 Undesignated in Monmouth County			
Millstone Township (1/2 area)	1,576	405	
Upper Freehold Township (1/2 area)	<u>1,381</u>	<u>408</u>	
	2,957	813	<u>0.271</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
IX. Ocean County 208 Aea			
87. Northern District			
Bay Head Borough	1,265	77	
Brick Township	53,148	14,433	
Howell Township (1/3 area)	9,456	2,020	
Lakewood Township	34,686	2,614	
Point Pleasant Beach Borough	5,629	56	
Point Pleasant Borough	17,693	6,043	
Freehold Township (1/4 area)	4,565	365	
Jackson Township (1/2 area)	6,191	902	
	<u>133,815</u>	<u>28,510</u>	<u>9.503</u>
88. Central District			
Beach Haven Borough	1,836	-	
Beachwood Borough	7,447	2,305	
Berkeley Township	17,838	1,703	
Dover Township	64,518	12,318	
Island Heights Borough	1,517	14	
Jackson Township (3/4 area)	18,571	2,706	
Lacey Township (7/8 area)	11,609	4,498	
Lakehurst Borough	3,799	45	
Manchester Township (2/3 area)	15,511	2,331	
Ocean Gate Borough	1,466	619	
Ocean Township	4,345	1,196	
Pine Beach Borough	1,607	667	
South Toms River Borough	4,056	1,083	
Barnegat Township (1/3 area)	2,514	368	
Lavellette Borough	2,321	-	
Mantoloking Borough	477	173	
Seaside Heights Borough	1,642	-	
Seaside Park Borough	2,266	13	
	<u>164,646</u>	<u>30,500</u>	<u>10.167</u>

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
<b>89. Southern District</b>			
Barnegat Light Borough	809	574	
Eagleswood Township	1,009	414	
Harvey Cedars Borough	406	306	
Little Egg Harbor Township	7,562	714	
Beach Haven Borough	1,836	--	
Barnegat Township (1/3 area)	2,513	368	
Long Beach Township	4,292	1,205	
Ship Bottom Borough	1,525	6	
Stafford Township (3/4 area)	7,052	794	
Surf City Borough	1,761	-	
Tuckerton Borough	<u>3,525</u>	<u>850</u>	
	32,320	5,231	<u>1.744</u>
<b>U11 Undesignated in Ocean County</b>			
Plumstead Township (1/3 area)	1,605	516	
Manchester Township (1/3 area)	7,775	1,165	
Lacey Township (1/8 area)	1,658	643	
Barnegat Township (1/3 area)	2,514	369	
Stafford Township (1/2 area)	<u>2,351</u>	<u>265</u>	
	15,883	2,958	<u>0.986</u>
<b>X. Atlantic County 208 Area</b>			
<b>90. Coastal Region</b>			
Absecon City	7,029	0	
Atlantic City	41,767	0	
Brigantine City	8,488	0	
Egg Harbor Township (1/2 area)	9,701	1,900	
Galloway Township	10,866	3,196	
Linwood City	6,614	0	

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Longport Borough	1,708	-	
Margate City	10,688	0	
Northfield City	8,013	0	
Pleasantville City	14,067	0	
Somers Point City	9,879	0	
Ventnor City	11,501	0	
Port Republic City	846	329	
	<u>139,167</u>	<u>5,425</u>	<u>1.808</u>
91. Lower Great Egg Harbor River Region			
Corbin City	303	138	
Estelle Manor City	787	184	
Egg Harbor Township (½ area)	7,701	1,900	
Weymouth City	1,233	373	
Hamilton Township	9,511	1,671	
	<u>19,535</u>	<u>4,266</u>	<u>1.422</u>
92. Upper Great Egg Harbor River Region			
Hammonton Town	12,094	1,150	
Mullica Township	3,884	1,252	
Egg Harbor City	4,534	0	
Buena Vista Borough	5,302	1,602	
Buena Borough	3,235	0	
Folsom Borough	2,233	525	
	<u>31,282</u>	<u>4,529</u>	<u>1.510</u>
XI. Lower Delaware 208 Area			
93. Salem County Sewerage Authority			
Penns Grove Borough	5,271	5	
Salem City	7,039	58	
Carneys Point Township	7,740	514	
	<u>20,050</u>	<u>577</u>	<u>0.192</u>

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
94. Woodstown Borough	3,245	109	0.036
96. Pennsville Sewerage Authority	14,307	965	0.322
U12 Undesignated in Salem County			
Elmer Borough	1,591	577	
Alloway Township	2,536	771	
Elsinboro Township	1,086	445	
Lower Alloways Creek Township	1,441	440	
Mannington Township	1,880	657	
Oldmans Township	2,029	658	
Pilesgrove Township	2,890	815	
Pittsgrove Township	5,363	1,479	
Quinton Township	2,696	856	
Upper Pittsgrove Township	<u>3,319</u>	<u>992</u>	
	24,831	7,690	<u>2.563</u>
95. Cumberland County Sewerage Authority			
Bridgeton City	19,541	205	
Commercial Township	3,807	1,260	
Deerfield Township	2,627	687	
Downe Township	1,896	577	
Fairfield Township	5,484	1,503	
Greenwich Township	981	357	
Hopewell Township	3,960	1,071	
Landis Sewer Authority			
Vineland City	52,569	6,085	

September, 1979

	Population (1978 Estimate)	1979 houses Unsewered	Septage Volume at 1000 gal/3yr in MG/yr
Lawrence Township	2,263	671	
Maurice River Township	4,670	1,442	
Millville City	24,241	1,891	
Shiloh Borough	574	224	
Stow Creek Township	1,185	357	
Upper Deerfield	6,398	1,496	
Newfield Borough	579	509	
	<u>130,775</u>	<u>18,355</u>	<u>6.112</u>

XII. Cape May County 208 Area

98. Cape May County

Avalon Borough	2,141	-	
Cape May City	4,529	5	
Cape May Point Borough	342	15	
North Wildwood City	4,753	-	
Ocean City	12,695	25	
Sea Isle City	2,725	332	
Stone Harbor City	1,341	-	
West Cape May Borough	1,147	152	
West Wildwood Borough	348	-	
Wildwood City	4,035	25	
Wildwood Crest Borough	3,928	13	
Woodbine Borough	2,807	397	
Dennis Township	3,508	1,116	
Lower Township	16,454	7,233	
Middle Township	10,449	3,542	
Upper Township	5,778	1,600	
	<u>76,980</u>	<u>14,455</u>	<u>4.818</u>

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II. SEPTAGE PROGRAM/PLANS IDENTIFIED

## Septage Program/Plans Identified

		1979 unsewered houses	septage volume MG/yr	sludge plans	septage plans
I.	Northeast 208 Area				
1.	Wanaque Valley Regional S.A.	8,078	2.693	x	x
2.	Northwest Bergen Utilities A.	18,648	6.216	x	x
3.	Bergen County Utilities A.	24,063	8.021	x	-
4.	Pequannock River Basin Regional S.A.	6,564	2.188	x	x
5.	Pompton Lakes MUA	4,110	1.370	x	-
7.	Rockaway Valley Regional S.A.	14,999	5.000	x	x
8.	Parsippany-Troy Hills	4,906	1.635	x	x
9.	Pequannock-Lincoln Park & Fairfield S.A.	6,358	2.119	x	x
10.	Wayne Twp.	2,471	0.824	x	-
11.	Totowa - West Paterson	463	0.154	x	x
12.	Passaic Valley Sewerage Commission	5,037	1.679	x	-
13.	Edgewater	132	0.043	x	-
14.	Caldwell Sewer Authority	468	0.156	x	-
15.	Peckman River Study Group	168	0.056	x	-
18.	Hudson County S.A.	999	0.333	x	-
19.	Whippany River Basin SC	2,561	0.854	x	-
20.	Livingston - Florham Park	95	0.032	x	x
21.	Essex & Union County Joint Meeting	558	0.186	x	-
22.	Upper Passaic River Basin Study Commission	6,175	2.058	x	-
23.	Rahway Valley Sewerage Authority	633	0.211	x	-
24.	Linden - Roselle S.A.	29	0.010	x	-
U04.	Undesignated in Morris County	4,238	1.413	-	-
			37.251	21	8
			20.037 planned for		
			17.214 unplanned		

## Septage Program/Plans Identified

	1979 unsewered houses	septage volume MG/yr	sludge plans	septage plans	
<b>II. Sussex 208 Area</b>					
25.	Pochuck Basin	1,921	0.640	x	x
26.	Lower Wallkill Basin	3,479	1.160	x	x
27.	Upper Wallkill Basin	5,675	1.892	-	x
28.	Pequest Basin	1,846	0.615	-	x
29.	Paulinskill Basin	5,150	1.717	-	x
U01	Undesignated in Sussex County	1,362	0.454	-	(x)
U02	Undesignated in Sussex County	579	0.193	-	(x)
			6.671	2	5
					(in one regiona plan)
			6.671 planned for no unplanned		
<b>III. Upper Raritan 208 Area</b>					
30.	North Hunterdon 10	5,175	1.725	x	x
31.	Mt. Olive/Washington Twp.	5,930	1.977	x	-
33.	Rockaway Creek	2,337	0.779	x	x
34.	Middle South Branch	4,246	1.415	-	-
35.	Upper Raritan Watershed	8,596	2.865	-	-
36.	Boro of Manville	24	.008	x	-
U06	Undesignated in Hunterdon County	4,314	1.438	-	-
U07	Undesignated in Somerset County	3,939	1.313	-	-
U05	Undesignated in Hunterdon County	1,788	0.596	-	-
			12.116	4	2
			5.085 planned for 7.031 unplanned		

## Septage Program/Plans Identified

		1979 unsewered houses	septage volume MG/yr	sludge plans	septage plans
IV.	Upper Delaware 208 Area				
37.	Pequest River S.A.	3,304	1.101	x	-
38.	Pohatcong Creek S.A.	2,200	0.733	-	-
39.	Paulinskill S.A.	997	0.332	x	-
40.	Lopatcong Creek S.A.	3,386	1.128	-	-
41.	Musconetcong S.A.	8,738	2.913	x	x
42.	Lambertville S.A.	1,106	0.369	x	x
U13	Undesignated in Warren County	3,650	1.217	-	-
			7.793	4	2
			3.168 planned for		
			4.625 unplanned		
V.	Mercer 208 Area				
43.	Stony Brook Regional S.A.	4,589	1.530	x	x
44.	Ewing - Lawrence S.A.	2,501	0.834	x	x
45.	Trenton City S.A.	175	0.058	x	x
46.	Hamilton Twp. MUA	2,886	0.962	x	x
			3.384		
			3.384 planned for	4	4
			no unplanned		
VI.	Middlesex (Lower Raritan 208)				
57.	Upper Millstone Sewerage Authority	2,304	0.768	x	x
59.	Middlesex County S.A.	13,056	4.352	x	x
U08	Undesignated in Middlesex County	532	0.177	-	-
			5.297	2	2
			5.297 planned for		
			no unplanned		

## Septage Program/Plans Identified

		1979 unsewered houses	septage volume MG/yr	sludge plans	septage plans
<b>VII. Tri-County 208 Area</b>					
61.	Northern Burlington County R.S.A.	3,979	1.328	x	x
62.	Florence Twp.	292	0.097	-	-
63.	Burlington City & Twp.	564	0.188	x	x
64.	Mt. Holly Sewerage Authority	2,027	0.676	x	-
65.	Willingboro M.U.A.	488	.163	x	-
66.	Delran Sewerage Authority	149	0.049	-	-
67.	Cinnaminson S.A.	263	0.088	-	-
68.	Moorestown Twp.	531	0.177	x	x
69.	Mount Laurel Twp.	1,646	0.548	x	-
70.	Evesham MUA	1,999	0.666	-	-
71.	Pemberton Twp. MUA	2,458	0.819	-	-
U11	Undesignated in Burlington County	7,485	2.495	-	-
72.	Camden County MUA	14,567	4.856	x	x
73.	Gloucester County	19,403	6.468	x	x
			18.618	8	5
			14.404 planned for		
			4.214 unplanned		
<b>VIII. Monmouth 208 Area</b>					
74.	Bayshore Regional SA	2,324	0.775	-	-
75.	Middletown Twp. SA	2,973	0.991	x	x
76.	Atlantic Highlands - Highlands SA	305	0.102	x	-
77.	Northeast Monmouth Regional SA	358	0.119	x	-
78.	Long Branch Sewerage Authority	0	0.000	x	-
79.	Ocean Township S.A.	528	0.176	x	x
80.	Neptune Township S.A.	834	0.278	x	x
81.	South Monmouth Regional S.A.	1,626	0.542	x	-
82.	Manasquan Regional S.A.	6,096	2.032	x	x
83.	Western Monmouth S.A.	4,146	1.382	x	x

## Septage Program/Plans Identified

		1979 unsewered houses	septage volume MG/yr	sludge plans	septage plans
84.	Allentown Boro.	899	0.300	-	-
85.	Roosevelt Municipal S.A.	20	.007	-	-
U09	Undesignated in Monmouth County	1,790	0.597	-	-
U10	Undesignated in Monmouth County	813	0.271	-	-
			7.572	9	6
			5.622 planned for		
			1.950 unplanned		
IX.	Ocean County 208 Area				
87.	Northern District	28,510	9.503	x	x
88.	Central District	30,500	10.167	x	x
89.	Southern District	5,231	1.744	x	x
U11	Undesignated in Ocean County	2,958	0.986	-	-
			22.400	3	3
			21.414 planned for		
			.986 unplanned		
X.	Atlantic County 208 Area				
90.	Atlantic Coastal Region	5,425	1.808	x	x
91.	Lower Great Egg Harbor River Basin	4,266	1.422	x	x
92.	Upper Great Egg Harbor & Mullica River Region	4,529	1.510	x	x
			4.740	3	3
			4.740 planned for		
			no unplanned		
XI.	Lower Delaware 208 Area				
93.	Salem County S.A.	577	0.192	x	x
94	Woodstown Brough	109	0.036	x	x

September 1979

Septage Program/Plans Identified

		1979 unsewered houses	septage volume MG/yr	sludge plans	septage plans
95.	Cumberland County S.A.	18,355	6.112	x	x
96	Pennsville Sewerage Authority	965	0.322	x	x
U12	Undesignated in Salem County	7,690	2.563	-	-
			9.225	4	4
			6.662 planned for		
			2.563 unplanned		
XII.	Cape May County 208 Area				
98.	Cape May County	14,455	4.818	x	x
			4.818	1	1
			4.818 planned for		
			no unplanned		
			139.885	65	45
			101.302 planned for		
			38.583 unplanned		

III. SEPTAGE VOLUME BY COUNTY

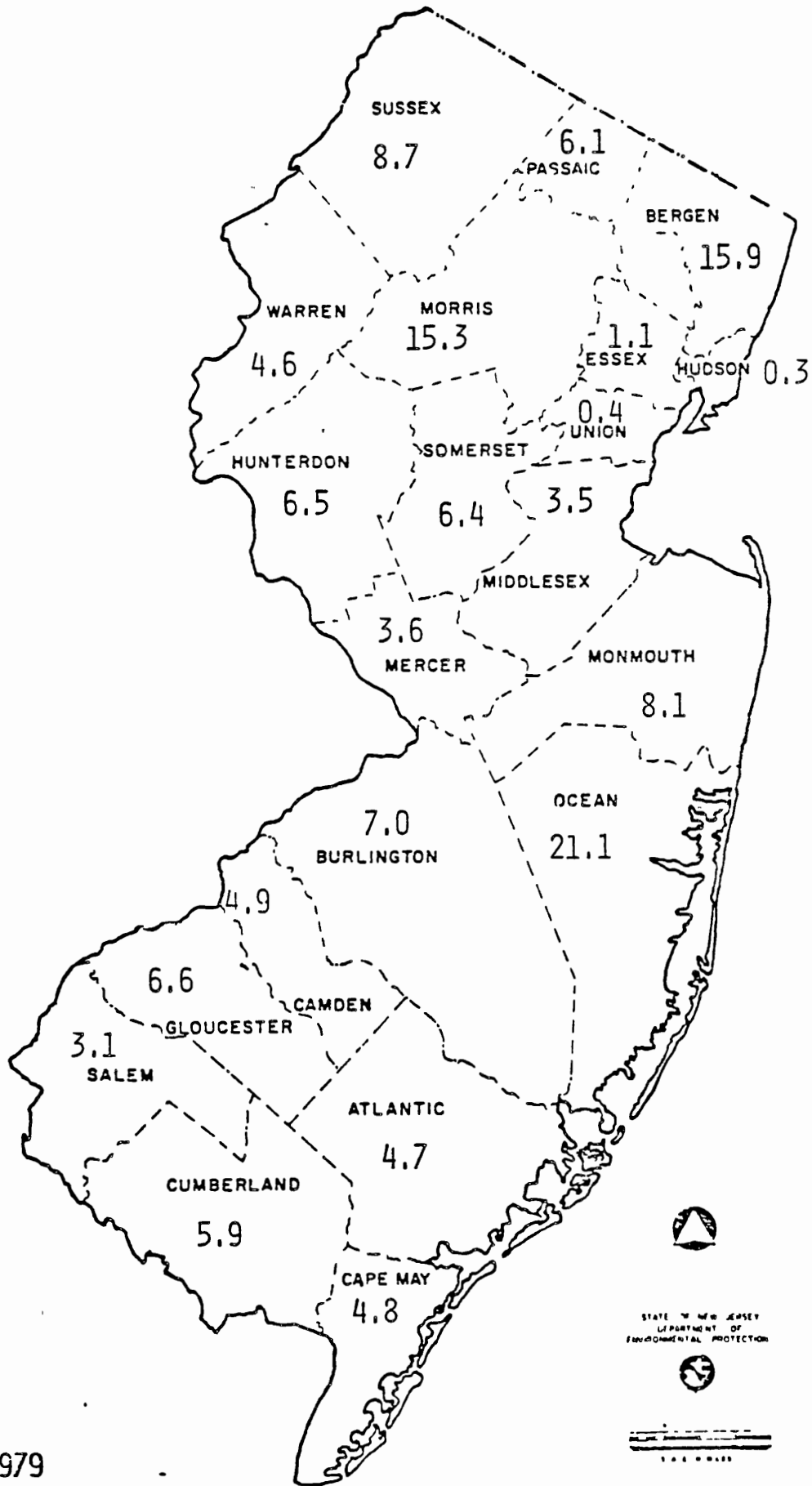
NOTE: VISUAL ADDED

Septage Volume by County

<u>County</u>	Estimates for 208 Plans in <u>MG/yr</u>	Solid Waste Admin. Septage Hauled in <u>MG/yr</u>	Septage Generated 1979 in <u>MG/yr</u>	Available Capacity POTW in <u>MG/yr</u>
Atlantic	600	9.200	4.740	15.340
Bergen	1.500	.435	15.936	13.910
Burlington	6.600	5.234	6.949	4.550
Camden	-	4.761	4.856	33.085
Cape May	1.000	4.578	4.818	9.425
Cumberland	.350	4.162	5.942	8.255
Essex	-	1.062	1 053	5.655
Gloucester	6.700	2.543	6.637	-
Hudson	-	12 589	.340	64 155
Hunterdon	4.000	-	6.450	0 845
Mercer	2 300	.901	3.600	11 245
Middlesex	-	3.416	3.477	57.395
Monmouth	5.000	8.021	8 109	18 915
Morris	5 700	.218	15.335	13.455
Ocean	7.300	14.672	21.129	21.320
Passaic	2.300	.300	6.052	-
Salem	3.000	3.900	3.114	-
Somerset	8.600	2.425	6.377	3.575
Sussex	7.200	4.154	8.689	-
Union	-	-	.357	46.085
Warren	<u>4 400</u>	<u>.047</u>	<u>4.626</u>	<u>2 210</u>
All 21 Counties	66.550	82.618	138.586	329 420

O:ss/OSMIP

# SEPTAGE VOLUME BY COUNTY (IN MGY)



AUGUST 1979

STATE OF NEW JERSEY  
DEPARTMENT OF  
ENVIRONMENTAL PROTECTION



IV. SEWAGE TREATMENT FACILITIES IN NEW JERSEY

V. 201 FACILITY PLANNING AREAS

September 1979

SEWAGE TREATMENT FACILITIES IN NEW JERSEY

	<u>NPDES</u>	<u>Treatment Plant Name</u>
I. Northeast 208 Area		
1. Wanaque Valley Regional Sewerage Authority		
	0028541	Birch Hill Park Disposal Co. Inc.
	0901300	Peter Cooper School
	0029432	Robert Erskine School
	0901202	Macopin School
	0901229	Marshall Hill Elementary School
	0026981	Milford Manor Nursing Home STP
	0027677	Olde Milford Sewage Plant
	0027201	Reflection Lakes Garden Apt. Inc.
	0027006	Ringwood Boro SA-Ringwood Acres
	0021741	Wanaque MUA-Haskell STP
	0030261	Wanaque Boro SA-Meadowbrook STP
	0027669	West Milford MUA Awosting STP
	0026174	West Milford MUA-Crescent Park STP
	0029572	West Milford MUA-Highview STP
	0030201	Camp Vacamas Assoc. of NJ (state)
	0029351	Ringwood Shopping Plaza (Commercial)
	0024414	West Milford Shopping Center (Commercial)
2. Northwest Bergen County Utilities Authority		
	0023906	Mahwah Twp Blue Hills Development
	0024813	Northwest Bergen County Sewer Authority
	0024082	Ramapo State College Sewage Treatment Facility
	0023884	Regency Park Apts.

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<u>NPDES</u>	<u>Treatment Plant Name</u>
0023141	Society Hills
0028827	Apple Ridge Country Club (Commercial)
0028886	Chans Hawaii (Commercial)
0023931	Hearthstone at Mahwah (Commercial)
0028851	Holiday Inn-Rand Motel Corp (Commercial)
0900923	Mahwah Ridge (Commercial)
0024198	The Mall & Starview Gradens (Commercial)
0023892	Nu-Car Carriers, Inc. (Commercial)
0027235	The Okonite Company (Commercial)
0900940	Realty Syndicate Inc. (Commercial)
0026573	Swiss Chalet (Commercial)
0021245	Tri Corner Realty Corp (Commercial)
0026441	Urban Farms Shopping Center Inc. (Commercial)
3. Bergen County Utilites Authority	
0020028	Bergen County Sewer Authority
0020591	Edgewater Sewage Treatment Plant
0021791	Village of Ridgewood
0025186	Wood-Ridge SA
4. Pequannock River Basin Regional Sewerage Authority	
0030244	Boro of Butler Water Treatment Plant
0022039	Butler Bloomingdale STP
0022276	Kinnelon Twp-Stony Brook School
0022284	Kinnelon High School
0024457	Our Lady of the Magnificat

September 1979

	<u>NPDES</u>	<u>Treatment Plant Name</u>
5. Pompton Lakes Municipal Utilities Authority		
	0030384	Manito School
	0023698	Pompton Lakes Boro MUA
	0021253	Ramapo-Indian Hills High School
	0021342	Skyview-Hi Brook Treatment Plant
7. Rockaway Valley Regional Sewerage Authority		
	0026867	High Ridge Sewer
	0021091	Jefferson Board of Ed Sr High & Middle School
	0026603	Randolph High School
	0022349	Rockaway Valley Regional Sewerage Authority
	0022675	Twp of Roxbury-Ajax Terr STP
	0022683	Twp of Roxbury-Skyview Plant
	0022802	White Meadow Lake Property Owners Association
	0900931	Capaken White & Blitt (Commercial)
	0900788	Johnson Manufacturing Corp. (Commercial)
	0030961	Sun Valley Swim Club (Commercial)
8. Parsippany - Troy Hills		
	0030759	Brook Valley Treatment Plant
	0030236	Hanover Park Regional High School
	0021181	Montville Bd of Ed-Cedar Hill School
	0024431	Montville Twp MUA-Forest Park
	0030767	Norrlund Estates Treatment Plant
	0024970	Parsippany-Troy Hills Treatment Plant
	0027294	Mountain Lakes Club Inc. (Federal)

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	<u>NPDES</u>	<u>Treatment Plant Name</u>
9. Pequannock-Lincoln Park & Fairfield Sewer Authority		
	0022136	Beaver Brook Gardens Treatment Plant
	0030198	Fairfield Boro-Cottage Park STP
	0020974	Fairfield Boro-Deer Park STP
	0026344	Lincoln Park STP
	0022926	Pequannock Township
	0022934	Pequannock Township-Greenvview Plant
	0027723	Lincoln Park Intermediate Care Center (Commercial)
10. Wayne Township		
	0026549	Pompton Lakes Nursing Convalescent Home
	0026841	Sheffield Hills Treatment Plant
	0028002	Wayne Twp Mountain View Plant #1
	0028975	Top Restaurant Inc. T/A Howard Johnsons (Commercial)
11. Totowa-West Patterson		
	0025607	Passaic Valley Water Commission
	0022071	Totowa Boro-Riverview STP
	0022080	Totowa Boro-West End STP
	0022098	Boro of West Paterson
	0021261	North Jersey Training School (State)
12. Passaic Valley Sewerage Commission		
	0023043	Belden Gardens
	0023078	Cory Estates I
	0023051	Cory Estates II
	0023671	Boro of Fair Lawn
	0023060	Hilltop Gardens

	<u>NPDES</u>	<u>Treatment Plant Name</u>
	0022756	Joint Meeting-Rutherford, East Rutherford
	0025291	N. Arlington-Lyndhurst Jt. Meet- ing STP
	0022462	N. Haledon Bd of Ed-High Moun- tain School
	0021016	Passaic Valley Sewerage Commissioners
	0023914	Consolidated Rial Corp (Commercial)
	0026590	Midmonmouth Industrial Park Inc. (Commercial)
	0023876	Prime Equities Inc. (Commercial)
14. Caldwell Sewer Authority		
	0020427	Caldwell Wastewater Treatment Plant
15. Peckman River Study Group		
	0025330	Twp of Cedar Grove STP
	0024732	Township of Little Falls
	0024490	Boro of Verona STP
	0021687	Essex County Hospital Center (State)
18. Hudson County Sewerage Authority		
	0025836	Bayonne STP
	0026085	City of Hoboken
	0023566	Hudson County-Meadowview Hospital
	0027014	Jersey City SA-East Side Plant
	0027022	Jersey City SA-West Side Plant
	0900893	Kearny Post Office-Meadowlands
	0022161	Kearny Town STP
	0029076	North Bergen DPW-Central STP
	0029092	North Bergen DPW-Northern STP
	0029084	North Bergen DPW-Woodcliff STP

September 1979

<u>NPDES</u>	<u>Treatment Plant Name</u>
0025038	Town of Secaucus
0025321	West New York STP
0026930	Secaucus Motor Vehicle In- spection Station (State)
0020257	U.S. Military Ocean Terminal (Federal)
0027251	Clipper Express Co. STP (Commercial)
0028584	Gilbert Industrial Park (Commercial)
0028410	Howard Johnson Company (Commercial)
0900869	Jeryl Industries Inc. (Commercial)
0020508	Sears Roebuck Co. (Commercial)
19. Whippany River Basin Study Commission	
0026689	Greystone Park Psychiatric Hospital
0024902	Hanover Treatment Plant
0021334	Mendham Boro-India Brook STP
0024911	Morris Twp-Butterworth STP
0024929	Morris Twp-Woodland STP
0025496	Morristown Sewage Plant
0022993	National Council BSA
0026751	St. Mary's Abbey Delbarton School
0026654	Sisters of Charity of St. Elizabeth
20. Livingston-Florham Park	
0025518	Florham Park Sewerage Authority
0024511	Twp of Livingston Water Pollution Control Plant
0023302	Exxon Research & Engineering Co. (Commercial)

	<u>NPDES</u>	<u>Treatment Plant Name</u>
21. Essex & Union County Joint Meeting	0024741	Joint Meeting of Essex & Union Counties
	0021636	New Providence Wastewater Disposal Plant
	0001848	Commonwealth Water Co.- Canoe Brook
22. Upper Passaic River Basin Study Committee	0027961	Berkeley Heights Water Pollution Control Plant
	0020290	Twp of Chatham Main Plant
	0020281	Chatham Twp-Park Central STP
	0022845	Harrison Brook-Bernards Twp SA
	0024937	Madison Chatham Joint Meeting
	0024465	Twp of Passaic
	0023761	Warren Twp SA-Brady Farms
	0022489	Warren Twp SA-Stage II STP
	0023752	Warren Twp SA-Stage 3 STP
	0022497	Warren Twp SA-Stage 4 STP
	0029912	NJ Dept. of Transportation Rest Area (State)
Undesignated in Morris County	0029386	Two Bridges WTP
	0900362	Chester Country Diner (Commercial)
	0026824	Chester Shopping Center (Commercial)
	0900346	Chester Springs Shopping Center (Commercial)

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	<u>NPDES</u>	<u>Treatment Plant Name</u>
23. Rahway Valley Sewerage Authority		
	0024643	Rahway Valley Sewerage Authority
24. Linden Roselle Sewerage Authority		
	0024953	Linden Roselle Sewerage Authority WPCP
	0022225	Supermarket Services Inc. (Commercial)
	0025429	Turtle & Hughes, Inc. (Commercial)
II. Sussex 208 Area		
25. Pohuck Basin		
	0021814	Great Gorge Ski Area
	0023841	Vernon High School Sewage Plant
	0023949	Vernon Valley Rec Assn-Great Gorge STP
	0023027	Vernon Valley Rec Assn-Vernon Valley STP
26. Lower Wallkill Basin		
	0027367	Carlton Village Public Sewage TP
	0031585	High Point Regional H.S., Board of Education
	0021857	Sussex Borough
	0026701	Sussex County Dept. Civil Defense
	0022063	Sussex County Service Center
	0029041	Wantage Development Co. Sussex Arms
	0900745	4H Camps Beemerville-Rutgers State Univ. (State)

	<u>NPDES</u>	<u>Treatment Plant Name</u>
27. Upper Wallkill Basin		
	0022055	Franklin Boro-Hemlock Jct STP
	0020885	Plastoid Corp
28. Pequest Basin		
	0900249	Andover Nursing Home
	0900265	Ascot Garden Apartments
	0023132	Saint Pauls Abbey
29. Paulinskill Basin		
	0027065	Alpine Sewage Plant
	0020419	Andover Reg. Bd. of Education
	0028894	Kittatinny Reg. Bd. of Education
	0020184	Newton Municipal
	0027057	Plaza Sewage Treatment Plant
	0027049	Pope John XXIII Regional H.S. Sewage Plant
	0027073	Sparta High Sewage Plant
	0027081	Sussex Co. Vo-Tec High School
	0024163	Big N Shopping Center- Kennedy Cans Co. (Commercial)
Undesignated in Sussex County		
	0900982	Annandale Work Farm (State)
III. Upper Raritan 208 Area		
30. North Hunterdon 10		
	0028509	Roelack Inc. T/A Timberline Homes
	0024091	Union Twp Board of Education
	0023094	Union Oil Garden State Truck Plaza (Commercial)

	<u>NPDES</u>	<u>Treatment Plant Name</u>
31. Mount Olive/Washington Township		
	0900184	Mt. Olive Complex-Eagle Rock Village
	0020702	Mt. Olive High School-Board of Education
	0021954	Mount Olive Township
	0900206	Oakwood Sewage Treatment Plant
	0023493	Schooleys Mountain Sewer Plant
33. Rockaway Creek		
	0020389	Clinton Wastewater Treatment Plant
	0022144	Glen Gardner Center for Geriatrics
	0028363	North Hunterdon High School
	0026697	Readington Twp. Bd. of Education
	0022781	Valley Road Sewerage Co.-McCann Mill
	0028487	Youth Correctional Institution-Boys (State)
	0028452	A.M. Best Co. (Commercial)
Undesignated in Hunterdon County		
	0900818	Alexandria Twp Bd. of Ed.-Alexandria School
	0027553	Alexandria Twp Bd. of Ed. Lester Wilson
	0029831	Frenchtown STP
	0023311	Kingwood Twp. Bd. of Ed.
	0021890	Milford Sewer Utility
	0023001	Salvation Army-Camp Tecumseh

	<u>NPDES</u>	<u>Treatment Plant Name</u>
34. Middle South Branch		
	0027561	Delaware Twp MUA
	0028436	Flemington Boro Sewer Treatment Plant
	0022047	Raritan Twp MUA
35. Upper Raritan Watershed		
	0028495	Township of Bedminster
	0026387	Boro of Bernardsville STP
	0020362	Branchburg Twp-Central High School
	0020338	Branchburg Twp-Fox Hollow
	0020354	Branchburg Twp-Neshanic Station
	0029823	Bridgewater Twp Bd. of Ed.- Valley School
	0026506	Boro of Far Hills
	0021881	Boro of Peapack Gladstone STP
	0020991	St. Bernards School STP
	0024864	Somerset Raritan Valley SA
	0022772	Valley Road Sewerage Co.- Fieldhedge STP
	0022764	Valley Road Sewerage Co. River Road STP
	0021083	Lyons Hospital Sewage Plant (State)
	0032298	NJ Dept. of Transportation Rest Area (State)
	0026930	NJSHD Garage-Maintenance Complex (State)
	0020656	Public Buildings Service GSA Depot (Federal)
	0020036	Veterans Administration Supply Depot (Federal)
	0027227	J.K. Cowperthwaite (Commercial)

<u>NPDES</u>	<u>Treatment Plant Name</u>
0021865	Fiddler's Elbow CC Rey-wood Corp (Commercial)
0027324	Somerset County Shopping Center (Commercial)
0028673	Whitehouse Estates Inc. A & P (Commercial)
36. Manville Borough	
0028762	Borough of Manville
Undesignated in Somerset County	
0023663	Carrier Foundation
0028703	Hunt & Augustine-Beden Brook Plant
0026891	Twp of Montgomery Treatment Plant #1
0026905	Montgomery Twp Treatment Plant #2
0026913	Montgomery Twp Treatment Plant #3
0023124	Montgomery Twp Bd. of Education
0022390	NJ Neuropsychiatric Inst. Sewage Plant (State)
0027090	The Bedens Brook Club (Commercial)
IV. Upper Delaware 208 Area	
37. Pequest River Sewerage Authority	
0900486	Liberty Twp Board of Education
0029149	Van Buren Associates White Meadow Apts.
0026557	Warren County Courthouse
0022713	Paul's Country Diner (Commercial)
38. Pohatcong Creek Sewerage Authority	
0021369	HMIA Water Pollution Control Plant

September 1979

	<u>NPDES</u>	<u>Treatment Plant Name</u>
	0020711	Warren County Technical School
	0021113	Boro of Washington
39. Paulins Kill Sewerage Authority		
	0022101	Blair Academy Treatment Plant
	0031046	North Warren Reg H.S. STP
40. Lopatcong Creek Sewerage Authority		
	0024716	Phillipsburg WTP
41. Musconetcong Sewerage Authority		
	0022632	Byram Township Board of Education
	0028304	Holiday Inn Sewage Treatment Plant
	0021156	Jefferson Twp Board of Education Consolidated School
	0021105	Jefferson Twp Board of Education Authur Stanlick
	0026352	Mt. Arlington Board of Education Edith Decker School
	0026212	Mt Arlington Sanitation Corp
	0027821	Musconetcong Sewerage Authority
	0026239	Our Lady of the Lake Rectory Parish
42. Lambertville Sewerage Authority		
	0020915	Lambertville Treatment Plant
	0029891	Governor's Antique Market (Commerci
Undesignated in Warren County		
	0028592	Diamond Hill Sewage Plant
	0020605	Pequest Sewer Company
	0029807	NJSHD Garage Maintenance Complex (State)

September 1979

	<u>NPDES</u>	<u>Treatment Plant Name</u>
V. Mercer 208 Area		
43. Stony Brook Regional Sewerage Authority		
	0027715	Mercer County Correction Center
	0023205	Princeton Seminary Sewage Plant
	0020796	Princeton Sewer Operating Committee
	0023221	Saint Joseph's Preparatory Seminary
	0031119	Stony Brook RSA
	0900761	W Windsor Plainsboro Regional School District
	0023485	L. C. Bowers (Commercial)
	0022560	Colonial Construction of Princeton Inc. (Commercial)
	0028282	EMR Photoelectric (Commercial)
	0021822	Holiday Inn Motor Lodge at Princeton (Commercial)
	0021750	Kooltronic Inc. (Commercial)
	0024104	Lincoln Property Utility Company (Commercial)
	0901008	Plasma Physics Lab G-Site (Commercial)
	0901245	Princeton Industrial Properties (Commercial)
44. Ewing-Lawrence Sewerage Authority		
	0022110	Education Testing Service
	0024759	Ewing Lawrence WWTP
	0023779	Mercer County Airport
45. Trenton City Sewer Authority		
	0020923	Trenton Sewage Treatment Plant

	<u>NPDES</u>	<u>Treatment Plant Name</u>
46. Hamilton Township Municipal Utilities Authority		
	0026301	Independence Avenue Wastewater Plant
	0022551	Jefferson Park Treatment Plant
	0026395	Mercer Mobile Homes-Robbinsville
	0031461	Sharon Arms-Sewage Plant
	0026310	Yardville Groveville Wastewater Plant
	0020737	NJ Turnpike Authority Service Area 6-S & 6-N (State)
VI. Middlesex or Lower Raritan 208 Area		
57. Upper Millstone Sewerage Authority		
	0023787	East Windsor MUA WWTP
	0029475	Hightstown Boro STP
	0020729	NJ Turnpike Authority Service Area 7-S (State)
59. Middlesex County Sewerage Authority		
	0024571	Carteret STP
	0022128	Forsgate Sanitation Monroe Township MUA
	0023574	Jamesburg Boro STP
	0020141	Middlesex County Sewerage Authority
	0022471	Old Bridge Twp SA Lawrence Harbor
	0023213	City of Perth Amboy
	0020541	South Amboy STP
	0022241	South Brunswick Twp- Board of Education
	0021547	South Brunswick Twp- Kingston STP
	0020401	Woodbridge Twp-Keasbey STP

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<u>NPDES</u>	<u>Treatment Plant Name</u>
0020397	Woodbridge Twp Sewaren STP
0028479	Jamesburg Training School (State)
0020761	NJ Turnpike Authority Service Area 1-S & 1-N (State)
0022616	Rutgers University-Busch Campus (State)
0028835	Raritan Arsenal (Federal)
0031356	Flag Post Motor Lodge (Commercial)
0026999	Franklin Shopping Center Inc. (Commercial)
0023159	Hamiltonian Fidelity (Commercial)
0026727	Rustic Manor (Commercial)
0001015	Union Steel Corp. (Commercial)

VII. Tri-County 208 Area

61. Northern Burlington County  
Regional Sewerage Authority

0028649	City of Bordentown
0024678	Bordentown City Disposal Plant
0024139	Bordentown Township-Laurel STP
0024121	Bordentown Twp-Mile Hollow STP
0027464	Hanover Mobile Home Park
0021407	New Egypt School
0022381	North Burlington County Regional School District
0027596	Spartan Village Mobile Home Park
0022985	Wrightstown MUA
0027375	State of NJ Johnson Training Center (State)
0026719	Youth Correctional Institution (State)
0022578	McGuire AFB (Federal)
0027511	California Villa Mobile Home Park (Commercial)

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	<u>NPDES</u>	<u>Treatment Plant Name</u>
62. Florence Township		
	0023701	Florence Twp STP
63. Burlington City and Township		
	0021695	Burlington Township
	0021709	Burlington Twp Cental Ave STP
	0024660	Common Council of the City of Burlington
64. Mount Holly Sewerage Authority		
	0024015	Mt Holly STP
65. Willingboro Municipal Utilities Authority		
	0027481	Beverly Sewerage Authority
	0023361	Willingboro MUA
66. Delran Sewerage Authority		
	0023507	Delran Sewage Treatment Authority
	0022519	Riverside Sewage Plant
67. Cinnaminson Sewerage Authority		
	0024007	Cinnaminson Sewerage Authority
	0024449	Palmyra Sewage Treatment Plant
	0021610	Riverton Sewage Treatment Plant
68. Moorestown Township		
	0028738	Maple Shade Twp-Linwood Ave STP
	0028746	Maple Shade Twp-Main Street STP
	0024996	Moorestown Township

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	<u>NPDES</u>	<u>Treatment Plant Name</u>
69. Mount Laurel Township		
	0025178	Interim STP
	0023981	Ramblewood STP
	0023990	Rancocas STP
	0020745	NJ Turnpike Authority Service Area 4-N (State)
70. Evesham Municipal Utilities Authority		
	0024031	Evesham Twp-Woodstream STP
	0024040	Evesham Twp-Woodstream STP
	0029203	Kings Grant Sewerage Corp STP
	0026832	Medford Water Pollution Control Plant
	0021326	Boro of Medford Lakes Sewerage Plant
71. Pemberton Township Municipal Utilities Authority		
	0023035	Hilltop Trailer Court Brown Mills
	0021733	Pemberton Boro Contact Aeration Plant
	0022438	Pemberton Twp High School #1 STP
	0024821	Pemberton Twp MUA
	0031011	Pemberton Twp High School #2 STP
	0027383	Sunbury Village Sewer Company
Undesignated in Burlington County		
	0021768	New Lisbon State School
	0900389	Round Valley Recreation Area (State)
	0023175	Round Valley School STP Clinton Township
	0023736	Southampton Sewerage Co.
	0900664	Fawn Lake Village Mobile Home Park (Commercial)

	<u>NPDES</u>	<u>Treatment Plant Name</u>
72. Camden County Municipal Utilities Authority	0028665	Mobile Estates of Southampton Inc. (Commercial)
	0021962	Ancora Psychiatric Hospital (State)
	0025119	Ashland STP
	0022446	Audobon STP
	0024481	Baldwin Run Plant
	0025046	Barclay Sewerage Treatment Plant
	0026875	Barrington Sewer Utility
	0026743	Bellmawr Sewerage Authority
	0026972	Berlin Boro Sewerage Treatment Plant
	0026476	Blackwood Activated Sludge
	0022748	Boro of Brooklawn
	0029840	Camden County Board of Freeholders STP
	0024627	Camden County Public Safety Academy
	0031615	Camden County Vo-Tech School STP
	0026182	Camden Main Sewage Treatment Plant
	0026492	Catalina Hills
	0026468	Chews Landing Activated Sludge
	0028959	Chews Landing Bio-Surf RBR
	0020320	Clementon STP
	0025526	Collingswood STP
0029564	Boro of Collingswood Water Treatment	

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<u>NPDES</u>	<u>Treatment Plant Name</u>
0025127	Colwick STP
0025062	Cooper River Sewerage Treatment Plant
0023817	Mt Ephraim TP
0026361	Gibbsboro Sewerage Corp
0026620	Gloucester City STP
0021229	Haddon Heights STP
0024830	Haddon Twp-Coles Mill Rd STP
0024503	Haddonfield Wastewater Treatment Plant
0025071	Kingston Sewerage TP
0020621	Lawnside Sewer Utility Dept
0026409	Lindenwold Utilities Authority Municipal
0021431	Magnolia STP
0026484	Mardale Manor
0025003	Boro of Oaklyn STP
0025054	Old Orchard Sewerage Treatment Plant
0025089	Pennsauken Creek STP
0025348	Runnemedede S.A.
0021652	Somerdale Sewer Plant
0025097	Stafford STP
0022624	Stratford Sewerage Authority
0022411	Voorhees Twp - Ashland
0022403	Voorhees Twp - Osage
0021440	West Collingswood Heights
0900958	Winslow Sanitary Corp
0025101	Woodcrest STP
0022012	Woodlynne

	<u>NPDES</u>	<u>Treatment Plant Name</u>
73. Gloucester County Utilities Authority		
	0030368	E Greenwich Sewerage Corp
	0900567	Friendly Village of Williamstown
	0024686	Gloucester County S.A.
	0030333	Greenwich Twp STP
	0027545	Logan Twp MUA
	0020532	Mullica Hill
	0021792	Struthers-Dunn Inc (Commercial)
	0022021	Boro of Swedesboro
VIII Monmouth County 208 Area		
74. Bayshore Regional Sewerage Authority		
	0022535	ATMUA Cliffwood STP
	0022829	ATMUA River Gardens STP
	0022543	ATMUA Strathmore STP
	0024708	Bayshore Regional Sewerage Authority
	0027031	Holmdel Twp Board of Education
	0025453	West Keansburg Water Co.
	0027529	Holmdel Nursing and Holmdel Canvalessent (Commercial)
	0900826	Petal Inc (Commercial)
	0900443	Prudential Insurance Co. of America (Commercial)
75. Middletown Township Sewerage Authority		
	0026433	Christian Brothers Academy
	0022314	Gateway National Rec Area - Sandy Hook (Federal)
	0025356	Middletown Sewer Authority
	0024694	Monmouth County Bayshore Outfall Authority

	<u>NPDES</u>	<u>Treatment Plant Name</u>
76. Atlantic Highlands - Highlands Sewerage Authority	0025402	Atlantic Highlands STP
	0026204	Borough of Highlands
77. Northeast Monmouth Regional Sewerage Authority	0026735	Northeast Monmouth Regional Sewerage Authority
78. Long Branch Sewerage Authority	0024783	Long Branch Sewerage Authority
79. Ocean Township Sewer Authority	0025241	City of Asbury Park STP
	0023191	Boro of Deal STP
	0024520	Twp of Ocean S.A.
80. Neptune Township Sewerage Authority	0020931	Avon by the Sea STP
	0021059	Boro of Bradley Beach
	0021041	Boro of Bradley Beach
	0024881	Neptune Twp STP #1 Pennsylvania Ave
	0024872	Neptune Twp STP #2 Old Corlies Ave
	0021075	Neptune City STP Laird Ave
	0022233	Ocean Grove Camp Meeting assn
81. South Monmouth Regional Sewerage Authority	0022357	Boro of Spring Lake Heights
	0024562	South Monmouth RSA
	0021148	NJ Highway Authority-Garden State Parkway (State)
	0900044	NJ National Guard Training Center (State)
	0022977	State of New Jersey (State)

	<u>NPDES</u>	<u>Treatment Plant Name</u>
82. Manasquan River Regional Sewerage Authority	0020133	Adelphia Sewer Co.
	0026638	Farmingdale Garden Apartments
	0026565	Boro of Freehold
	0029190	Freehold Boro Water TP
	0021644	Freehold Regional Board of Education
	0027766	Freehold Sewer Co-Stonehurst Dev.
	0027120	Twp of Freehold
	0020311	Maxim Sewerage Corp
	0028240	Silvermede Mobile Home Park
	0026956	Winding Brook Mobile Homes
	0021008	Wynnewood Sewerage Utilities Co.
	0023167	Cricket Restaurant (Commercial)
	0026417	I. Rockeach and Sons, Inc (Commercial)
	0026646	The Windmill Club Association (Commercial)
83. Western Monmouth Utilities Authority	0023728	Western Monmouth Utilities Authority
	0026816	Wickatunk Village
	0022586	State of New Jersey (State)
	0031763	Viviani Corporation (Commercial)
84. Allentown Borough Study	0020206	Allentown Water Pollution Control Plant
85. Roosevelt Municipal Sewerage Authority	0022918	Boro of Roosevelt

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	<u>NPDES</u>	<u>Treatment Plant Name</u>
Undesignated in Monmouth County		
	0023540	Naval Weapons Station Earle (Federal)
	0031771	Colts Neck Inn (Commercial)
IX Ocean County 208 Area		
87. Northern District		
	0900281	Brick Twp Board of Ed-Veterans Memorial School
	0900303	Brick Twp Housing Authority Forge Pond Apts.
	0026964	Lavellette Sewer Dept.
	0028142	Ocean County SA Northern Treatment Plant
	0026611	Point Pleasant Board of Education
	0031542	Point Pleasant Boro Board of Ed.
	0023370	Boro of Seaside Heights
	0027316	Boro of Seaside Park
	0022951	South Seaside Park STP
	0021067	Brick Playa Inc (Commercial)
	0900028	Kennedy Mall-Milza Realty (Commercial)
88. Central District		
	0022942	Berkeley Shores Plant STP
	0022969	Clanning Creek STP
	0900508	Crestwood Village STP No. 1
	0900516	Crestwood Village STP No. 2
	0024775	Dover Sewerage Authority
	0021423	Indianola Sewage Company
	0022896	Island Heights Sewerage Treatment Plant
	0026263	Jackson Twp MUA-Great Adventure STP
	0020583	Jackson Twp MUA-Harmony STP
	0029513	Jackson Twp MUA-Jr & Sr High School

	<u>NPDES</u>	<u>Treatment Plant Name</u>
	0900842	Jackson Twp MUA-Maple Glen Mobile Park
	0027952	Boro of Lakehurst
	0900541	Manchester Twp Coard of Education
	0027791	Ocean Twp MUA-Skippers Cove
	0026808	NJDEP Bureau of Parks (State)
	0021130	NJ Highway Authority Garden State Parkway (State)
	0900681	BLT Utility Company (Commercial)
	0900460	Jackson Estates (Commercial)
	0900524	Leisure Technology Corp (Commercial)
	0031267	Oak Tree Mobile Home Park (Commercial)
	0900877	United Mobile Homes (Commercial)
89. Southern District		
	0026018	Ocean County SA Southern Treatment Plant
X Atlantic County 208 Area		
90. Coastal Region		
	0024473	Atlantic County Sewerage Authority
	0027189	NJ Highway Authority Atlantic City (State)
	0020800	DOT FAA NAFEC (Federal)
	0027308	Seaview County Club (Commercial)
	0900320	Timberhill Corp (Commercial)
91. Lower Great Egg Harbor River Region		
	0021211	Atlantic City Race Course
	0021393	Hamilton Twp MUA
	0028550	Rerebaz T/A Zaberers Restaurant (Commercial)

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	<u>NPDES</u>	<u>Treatment Plant Name</u>
92. Upper Great Egg Harbor River Region		
	0021717	Boro of Buena MUA
	0024589	City of Egg Harbor City
	0025160	Hammonton Waste Treatment Plant
	0026522	NJ Exp Authority-Hammonton Facility (State)
	0026531	NJ Exp Authority Weymouth Facility (State)
XI Lower Delaware 208 Area		
93. Salem County Sewerage Authority		
	0024023	Penns Grove Sewerage Authority
	0021598	Pennsville Sewerage Authority
	0024856	City of Salem STP
	0028797	Salem Co Vo-Tech School
	0021601	Upper Penns Neck Twp SA Carney's Point
	0022250	Woodstown Sewerage Authority
	0900648	Harding Woods Inc. (Commercial)
Undesignated in Salem County		
	0024635	Pedricktown, STP
	0900621	Arthur P Schalick High School
	0021946	Fort Dix-Franklin Lakes Housing Sta (Federal)
	0021938	Fort Dix-Livingston Housing Sta (Federal)
	0022306	Fort Dix-Oldbridge Housing STP (Federal)

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	<u>NPDES</u>	<u>Treatment Plant Name</u>
95. Cumberland County Sewerage Authority		
	0024651	Cumberland County SA
	0025364	Landis Sewerage Authority
	0024147	Seabrook STP
	0024848	City of Vineland Water Sewer Utility
	0021989	State Prison Leesburg (State)
	0900729	Cumberland Mall Associates (Commercial)
Millville City Sewerage Authority		
	0900702	Fairview Manor Park
	0029467	Millville STP
XII Cape May County 208 Area		
98. Cape May County		
	0021385	Boro of Avalon Water and Sewage Utility
	0020371	City of Cape May STP
	0026786	Cape May Board of Freeholders
	0029297	Delaware River and Bay Authority
	0027499	Delaware River and Bay Authority
	0027197	Garden Lake Corp
	0023809	Twp of Lower MUA (CM)
	0028037	Middle Twp Sewerage District #1
	0023515	North Wildwood STP
	0023281	Ocean City Third St STP
	0027286	Ocean City 4th St STP
	0023680	Sea Isle City STP
	0024538	Shawcrest Mobile Home Park
	0026581	Stone Harbor Sewer Treatment Plant
	0022811	Wildwood Wastewater Treatment Plant

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<u>NPDES</u>	<u>Treatment Plant Name</u>
0027171	Wildwood Crest STP
0021121	NJ Highway Authority Garden State Parkway (State)
0021172	Woodbine State School (State)

# NEW JERSEY 201 FACILITY PLANNING AREAS

## LEGEND

COUNTIES  
TOTAL NUMBER-21

COUNTY SEATS •

UNINCORPORATED  
COUNTY SEATS

MUNICIPALITIES  
TOTAL NUMBER-567

Types And Number Indicated By Lettering Styles

CITIES  
TOWNS  
BOROS

## KEY

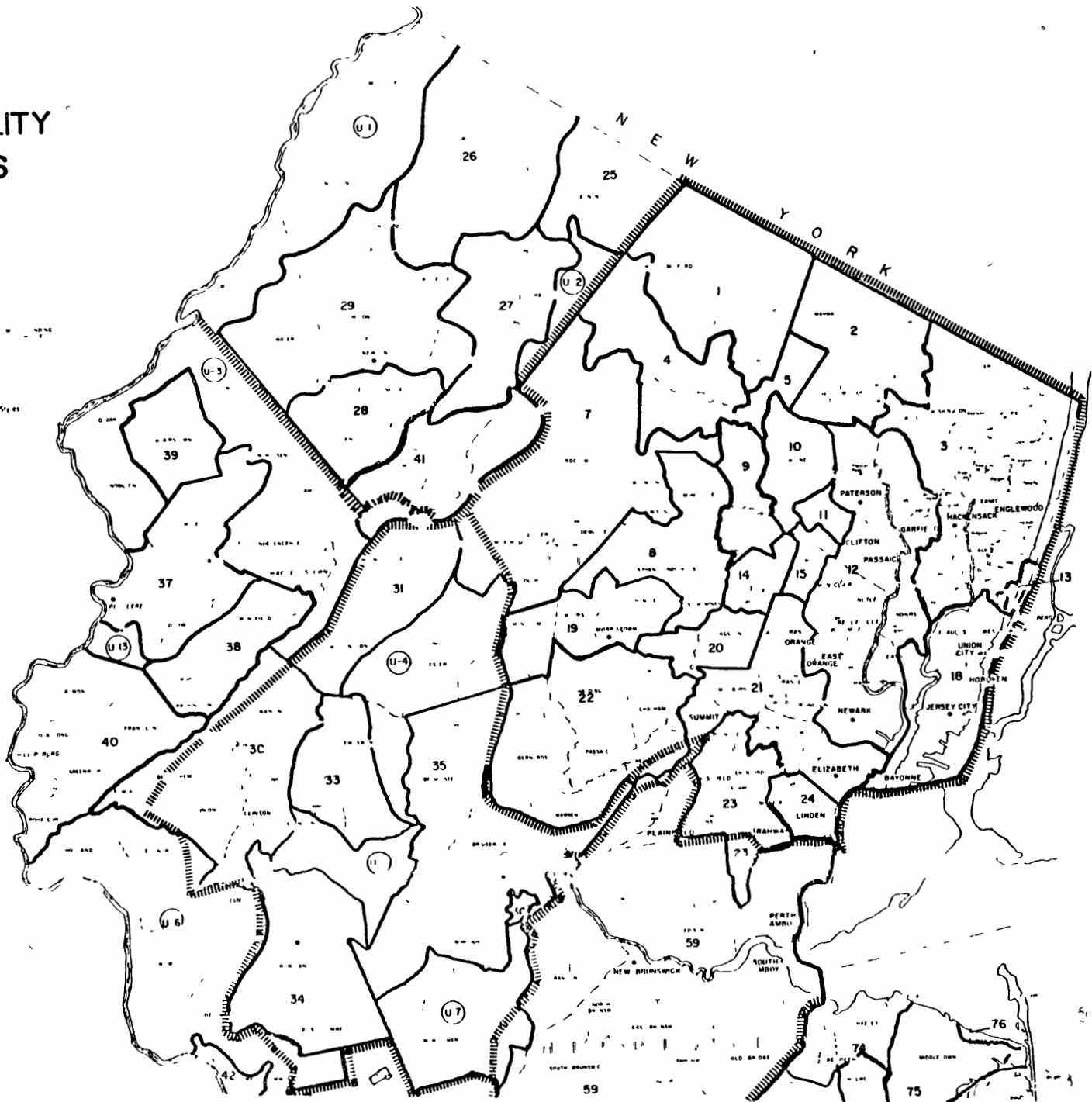
AREAWIDE PLANNING BOUNDARIES (208) 

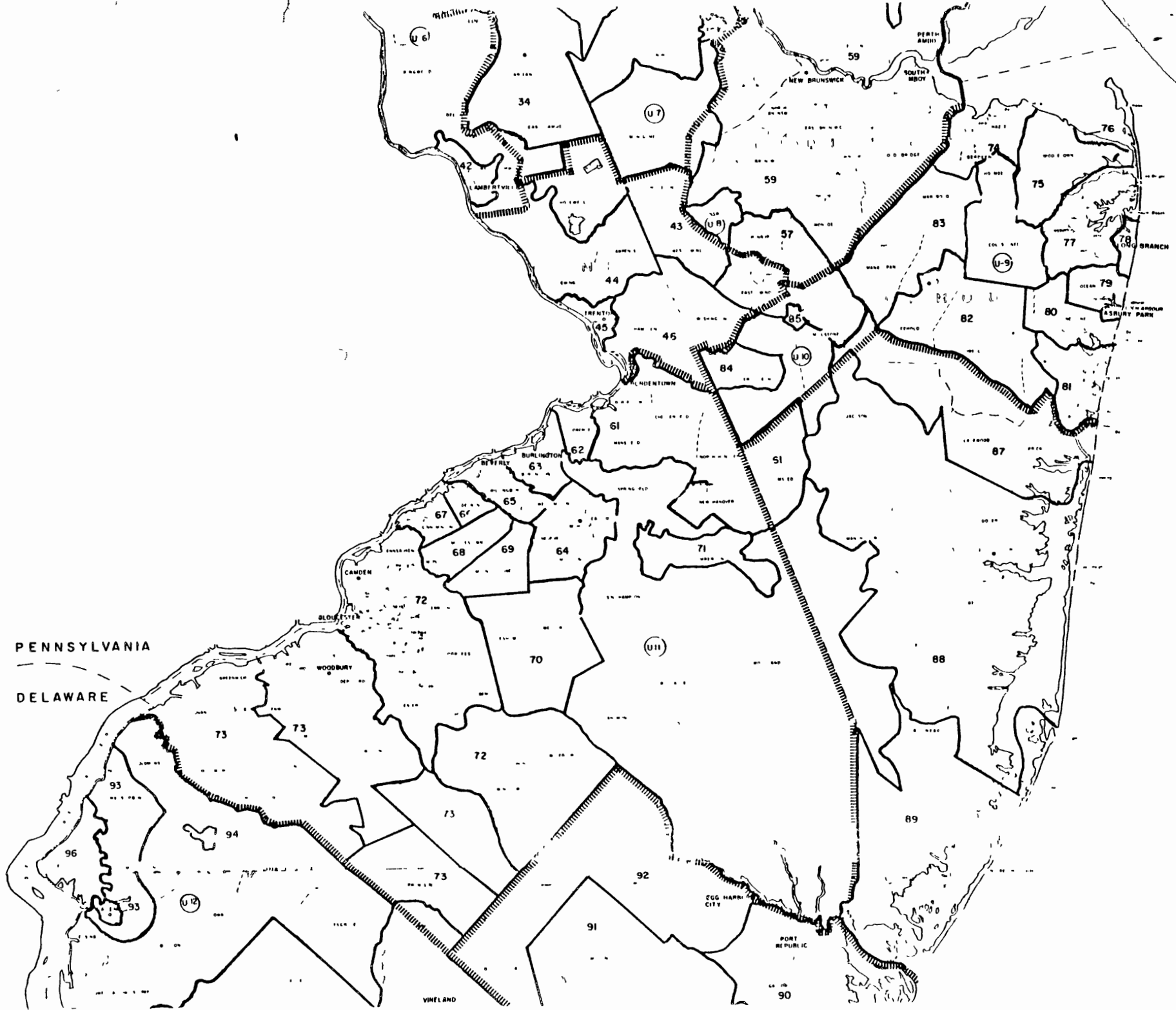
FACILITY PLANNING BOUNDARIES (201) 

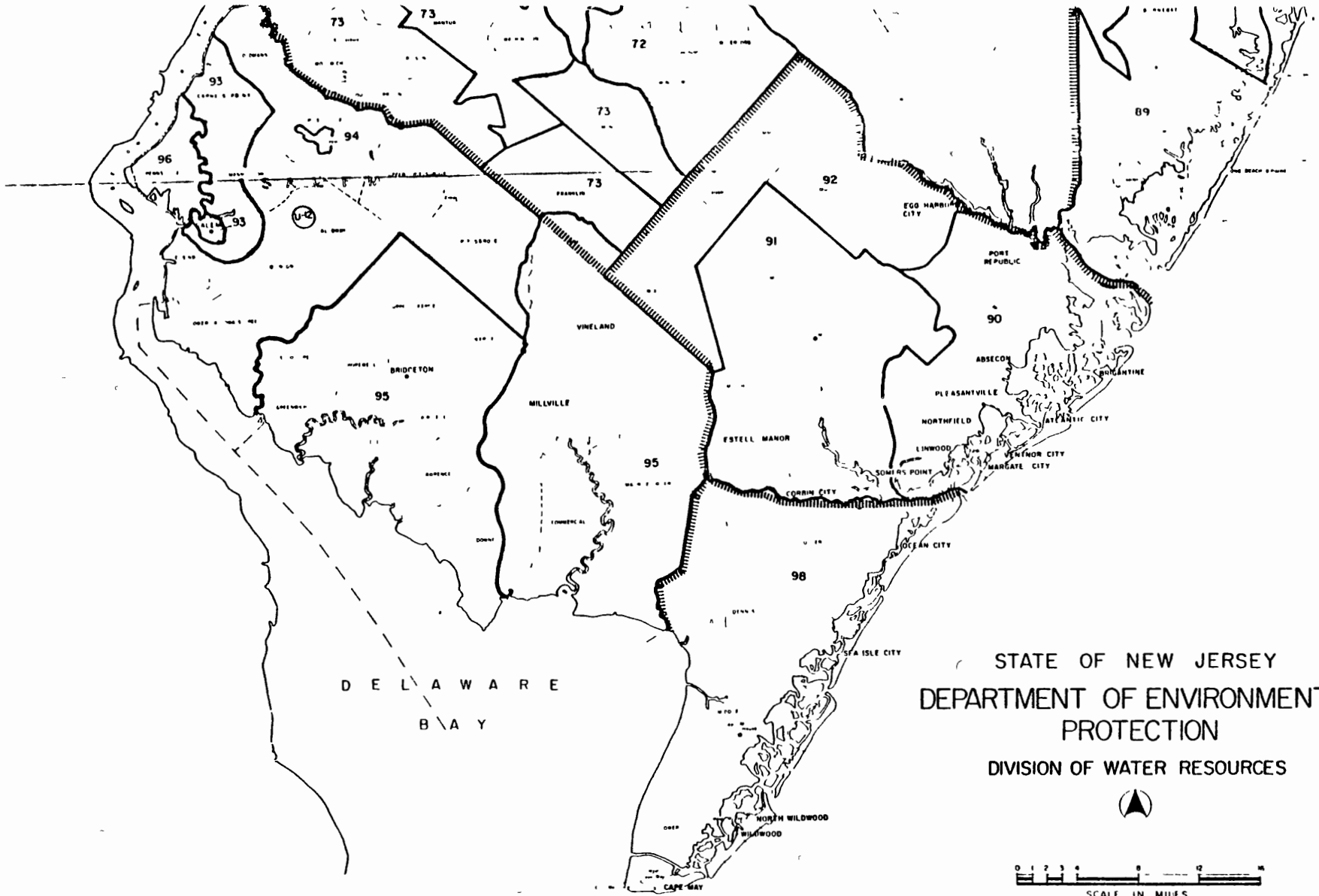
UNDESIGNATED AREAS 

DESIGNATED 201 PLANNING AREAS  
(See list OSMIP 201-98 Office of Sludge  
Management & Industrial Pre-Treatment)

PLANNING AREAS AS OF JUNE, 1979  
REVISED OCTOBER 1979

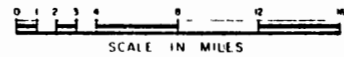






DELAWARE  
BAY

STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION  
DIVISION OF WATER RESOURCES



JAN 1976  
REVISED FROM POLITICAL SUBDIVISIONS OF NEW JERSEY DEP. OF COMMUNITY  
AFFAIRS PER 19 8  
by TK (OSMIP)