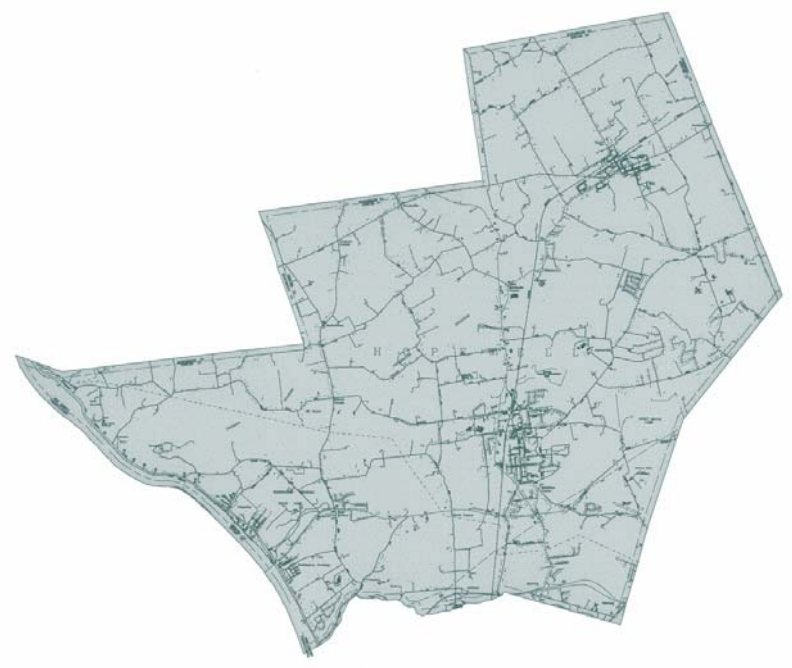
HOPEWELL TOWNSHIP

Recommendations for Wastewater Planning

November 8, 2004



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RECOMMENDATIONS
For
WASTEWATER PLANNING
Hopewell Township

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EXECUTIVE SUMMARY

Hopewell Township is required by the New Jersey Department of Environmental Protection to prepare and maintain a wastewater disposal master plan. This master plan is known as the Wastewater Management Plan and its contents regulate the locations and methods for wastewater disposal throughout the entire township. The Wastewater Management Plan is part of the 208 Area-Wide Water Quality Management Plan of Mercer County. The 208 Area-Wide Water Quality Management Plan of Mercer County was prepared as part of the Clean Water Act as promulgated by the federal government.

Hopewell Township's first wastewater management plan was approved for use by the New Jersey Department of Environmental Protection in 1988. This plan has been amended several times through a formal amendment process established by Mercer County and the New Jersey Department of Environmental Protection.

The most significant amendment to the wastewater management plan of Hopewell Township occurred in 1998. This amendment permitted Hopewell Township to provide public sewer service to the southeastern sector of the Township by connecting with wastewater facilities in the City of Trenton. This amendment included several established residential areas where small lots combined with groundwater and bedrock conditions were creating difficulties in managing septic systems, their primary method for wastewater disposal. This amendment, however, spurred significant controversy and, while approved for construction, was ultimately abandoned in 1999. The abandonment, however, came with a commitment by Hopewell Township to the residents of the residential areas that were petitioning for public sewers, that it would continue to review solutions for the stated septic system problems in these areas. This abandonment also came with a requirement by the New Jersey Department of Environmental Protection for Hopewell Township to undertake significant planning, zoning and environmental studies prior to any subsequent wastewater management plan approvals.

Since 1999, Hopewell Township has embarked upon an analysis and evaluation of the entire Township to determine what areas merit further consideration for alternatives to the current on-lot method of wastewater disposal. This effort has included reviews of various septic system alternatives, public sewers, impacts caused by public sewers, and financial impacts. *This document is a series of recommendations to Hopewell Township that represent guidance for changes to septic system design and management currently being practiced in Hopewell Township as well as guidance for defining public sewer areas.* These recommendations were requested by the Hopewell Township Committee in July 2004 and are intended for use in preparing an updated amendment to the Hopewell Township Wastewater Management Plan.

Septic System Recommendations

- It is recommended that alternative (experimental) septic system design technologies be permitted whenever authorized by NJDEP for new septic systems and as part of septic system repairs. Hopewell Township should adopt ordinances as required by NJDEP to provide assurances it needs to approve such technologies.

- It is recommended that every new septic system be registered with the Hopewell Township Health Department as part of a mandatory registration program. This program should require registration for new septic systems serving new homes as well as replacement septic systems. This recommendation requires the adoption of an ordinance that could be modeled from the existing similar program in neighboring Montgomery Township, Somerset County.

- There are many septic system owners in Hopewell that properly serve as their own Responsible Management Entity and who prudently maintain their septic systems. There are many septic system owners in Hopewell Township that are unaware or are uneducated about how septic systems work, how they should be

maintained and why maintenance is important. There are also many septic system owners in Hopewell Township that have been misinformed as to the long-term care and operations of their systems and the importance of the same. It is recommended that Hopewell Township enhance its existing homeowner awareness program on septic system ownership and maintenance. This enhancement could be coordinated with the Stony Brook Millstone Watershed Association which is seeking to assist Hopewell Township in educating the public on matters of non-point source pollution. Such cooperative efforts are encouraged by the NJDEP in its new stormwater management regulations

- Septic system repairs are not always reported. Yet, information concerning these repairs could be extremely useful in determining a particular course of action for a particular area that might be plagued with septic problems. Septic system repairs have, in some instances, been found to be critical improvements/enhancements to the long-term operation, maintenance and ultimate life of a septic system. It is recommended there be mandatory reporting of any and all septic repairs.

Public Sewer Service Recommendations

- All existing areas served by public sewer service should remain designated as they are presently designated on the Wastewater Management Plan of Hopewell Township, unless otherwise recommended herein.

- Where possible, the boundaries of sewer service areas should terminate along physical features such as roadway centerlines, along restricted open spaces, or conservation easements. Physical features provide the clearest definition of boundary limits. Open space and conservation easement areas can be well defined by markings. These limits do not often change, and if they change, the change requires some form of public consideration/hearing.

- All areas that are the subject of new planning that result in development densities in excess of current zoning ordinances for single family lots with wells and septic systems, should be considered for public sewer service. In areas other than designated ELSA or SBRSA service areas, public sewer service could be provided by a Board of Public Utilities regulated Utility, operating under a Franchise Agreement with the Hopewell Township Committee. Wastewater franchise areas are public sewer service areas and must be designated on the Wastewater Management Plan.

Delaware River Watershed

- A 2000 Settlement Agreement with the Ewing Lawrence Sewerage Authority, obligates Hopewell Township to remove all ELSA sewer service areas that do not have contractual capacity within the ELSA Wastewater Treatment Facility, as of the date of the agreement.

- In order to comply with the settlement agreement it is recommended the area of Titusville be deleted from the ELSA sewer service area. Alternative systems should be considered as individual on-lot solutions to specific problems in the Titusville area. If an area-wide wastewater issue arises, then that specific problem should be reviewed and the feasibility of a solution for that specific problem be determined at that time. The settlement agreement requires the removal of the Titusville area from a sewer service area.

- It is recommended the ELSA sewer service area that presently exists between Ewing Township, New Jersey State Highway Route 31, Mercer County Route 546 and Lawrence Township remain a designated ELSA sewer service area. This sewer service area includes the Areas of Concern known as Brandon Road, Brandon Road East, Orchard Avenue, Pennington-Lawrenceville Road East, and Pennington Road on the east side of Route 31. There are also a limited number of lots fronting upon and located on the west side of Route 31 just north of

Interstate 95 that should also remain designated as ELSA sewer service area. Public water is required if public sewers are constructed in these areas in order to mitigate potential groundwater table impacts. The physical infrastructure required to provide both public water and public sewer exists within close proximity to these areas.

- The Areas of Concern known as Diverty Road and Indian Village should remain designated for public sewers discharging into the ELSA system. These areas are presently designated for public sewer service discharging to ELSA. Groundwater impacts, under all conditions, are expected with public sewer installation in Diverty Road and under drought conditions for Indian Village. Diverty Road is located within the franchise area of Trenton Water. Indian Village is not located within the franchise area of Trenton Water and an amendment to the franchise agreement to include Indian Village will be required to provide public water service to this area. Public water mains exist in close proximity to both areas.

- It is recommended that the Area of Concern known as the Ingleside area remain designated for individual on-site septic systems except that an area adjacent to the Pennington Circle should receive public sewers discharging to the ELSA system. This area is not presently designated for public sewer service. This recommendation is conditioned upon Hopewell Township providing the ability to use alternative technologies as a means of septic repair. If the use of alternative technologies is not permitted, this entire Area of Concern should be considered for public sewers. Providing public sewers to this area will not result in the need for public water.

Millstone/Raritan Watershed

- It is recommended that the Areas of Concern known as Morningside, Penn View Heights and Timberlane remain designated for individual on-site septic systems. This recommendation is conditioned upon Hopewell Township providing the ability to use alternative technologies as a means of septic repair. These areas are not presently designated as public sewer service areas. The construction of public sewers would result in impacts to groundwater in the Morningside and Penn View Heights areas during drought conditions and there are no anticipated groundwater impacts in the Timberlane area.

- The Area of Concern known as Tree Streets should remain as a designated SBRSA public sewer service area. This area is presently designated as an SBRSA public sewer service area. Public sewer installation in the Tree Streets area will not require the installation of public water.

- It is recommended the Area of Concern known as North Main Street receive public sewers. This area is not presently designated as a public sewer service area. Public water supply is not required to support public sewers in this area.

- Pennington Point West is an Area of Concern where there is ongoing planning for affordable housing. This area is not presently designated as a public sewer service area. Current zoning anticipates high density housing on this tract. If the ultimate density for this area exceeds that permitted by Hopewell Township ordinances for single family lots with wells and septic systems, public sewer service is recommended. In the absence of such density, this area should remain with wastewater disposal being provided by individual on-site septic systems, as presently exists. The high density development permitted by current ordinances for Pennington Point, requires the installation of public water.

- The Mount Rose Area of Concern should be designated for public sewer service by SBRSA. This area is not presently designated as a public sewer service area. Public sewer construction will require public water service to this area.

PART I - HISTORY

Identifying wastewater disposal needs for Hopewell Township has been a continual challenge for Hopewell Township since the 1960's. With an existing population using on-site wells and septic systems on various sized lots having geologic and soil characteristics that were not conducive to suitable long-term performance of on-site systems, the idea of public sewers in Hopewell Township arose. During the late 1960's and early 1970's there was an abundance of Federal and State funding for wastewater infrastructure construction. This, combined with regionalization of sewage treatment facilities being favored during that time period as a best management practice for wastewater disposal, helped spur detailed considerations for providing public sewers to several areas of Hopewell Township.

These considerations included debates over whether or not Hopewell Township should become part of regional wastewater programs in order to get sewer service to the most densely populated areas of the Township. It was ultimately decided that Hopewell Township would not seek public sewers, primarily due to extreme fear of the uncontrolled growth that public sewers would bring. There were several exceptions to this policy as follows:

- In the 1970's, the Ewing Lawrence Sewerage Authority (ELSA), the Township of Hopewell, and Pittman-Moore Inc, entered into an agreement to provide wastewater treatment to a small Research Facility located on Bear Tavern Road, which was limited to 100,000 gallons per day (gpd) of wastewater.

- As part of Ewing Lawrence Sewerage Authority's (ELSA) application for funding for upgrades to its treatment plant in the 1970's, the United States Environmental Protection Agency (USEPA) and the New Jersey Department of Environmental Protection (NJDEP) mandated that ELSA reserve 400,000 gpd to Hopewell Township for wastewater generated within the Delaware River watershed portion

of the Township. This funding approval came with the stipulation that there be no wastewater treatment plants permitted to discharge to surface water that drain into the Delaware River within Hopewell Township because of its location upstream of the Trenton Water plant intake. The 100,000 gpd serving Pittman-Moore was included in this 400,000 gpd reserve.

- During the late 1980's, Hopewell Township and K. Hovnanain Companies entered into negotiations with ELSA to provide wastewater treatment for an affordable housing development proposed within Hopewell Township. These negotiations made available the remaining 300,000 gpd within the ELSA plant that were designated for Hopewell Township. Wastewater resulting from this development would flow from Hopewell Township, through Ewing Township, and into the ELSA treatment facility.

- In 1982 a Wastewater Facilities Plan was prepared for the Hopewell Township Municipal Utilities Authority. This plan again identified several possible alternatives for providing public sewer service to portions of Hopewell Township where clusters of small lots with on-site septic systems and wells existed. The preferred alternative selected in 1982 was small community systems discharging to groundwater serving small core areas (Exhibit 1).

The Mercer County 208 Area-Wide Water Quality Management Plan (WQMP), dated 1987, identified certain developed portions of Hopewell Township for sewer service (Exhibit 2). These areas were consistent with the "core" areas recommended for sewer service by the Hopewell Township Municipal Utilities Authority (HTMUA) in 1982. The Mercer County 208 Area-Wide Water Quality Management Plan served as the only official document for wastewater planning in Hopewell Township prior to the creation and adoption of the Wastewater Management Plan (WMP) for Hopewell Township.

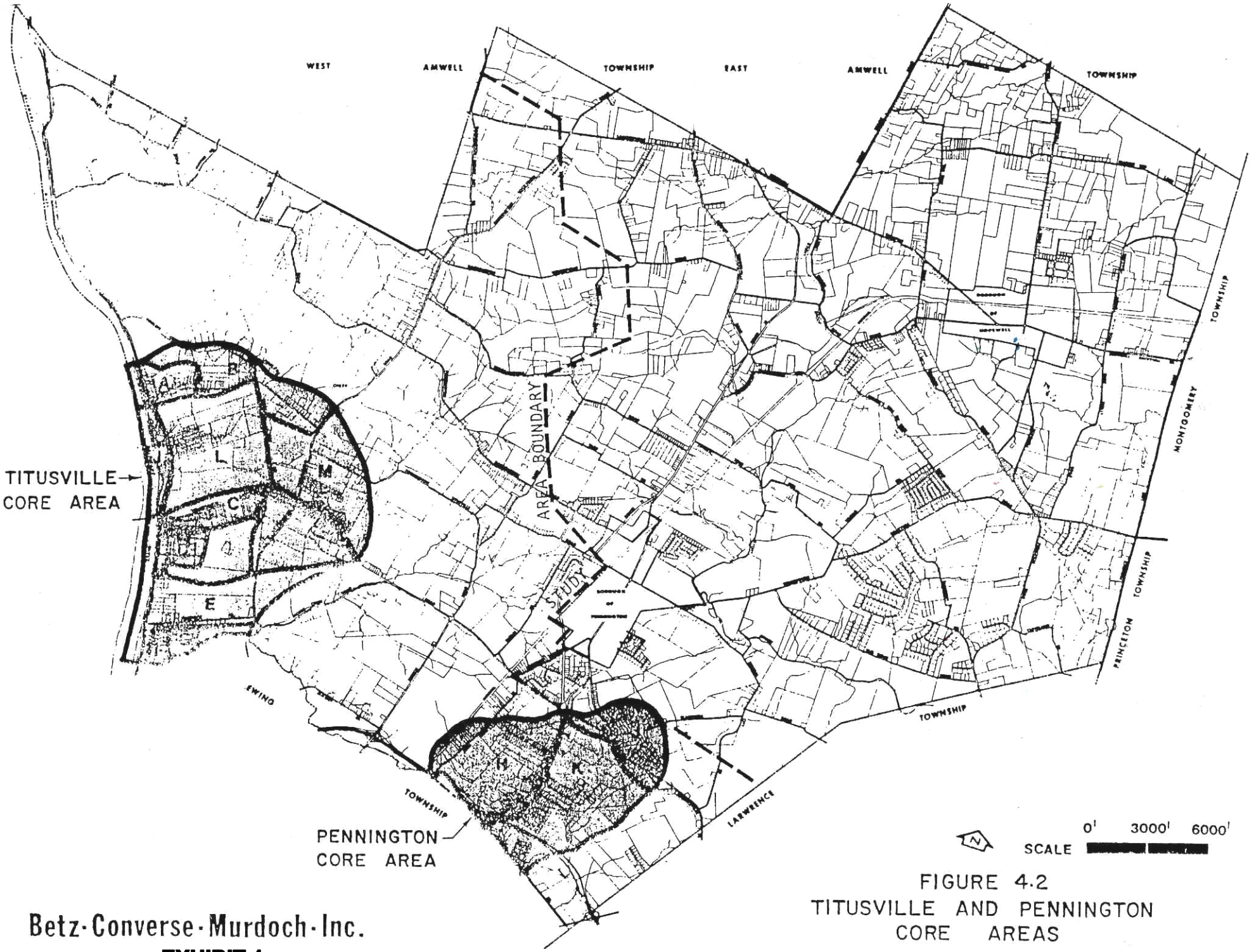

FIGURE 4.2
TITUSVILLE AND PENNINGTON
CORE AREAS

Betz·Converse·Murdoch·Inc.

EXHIBIT 1
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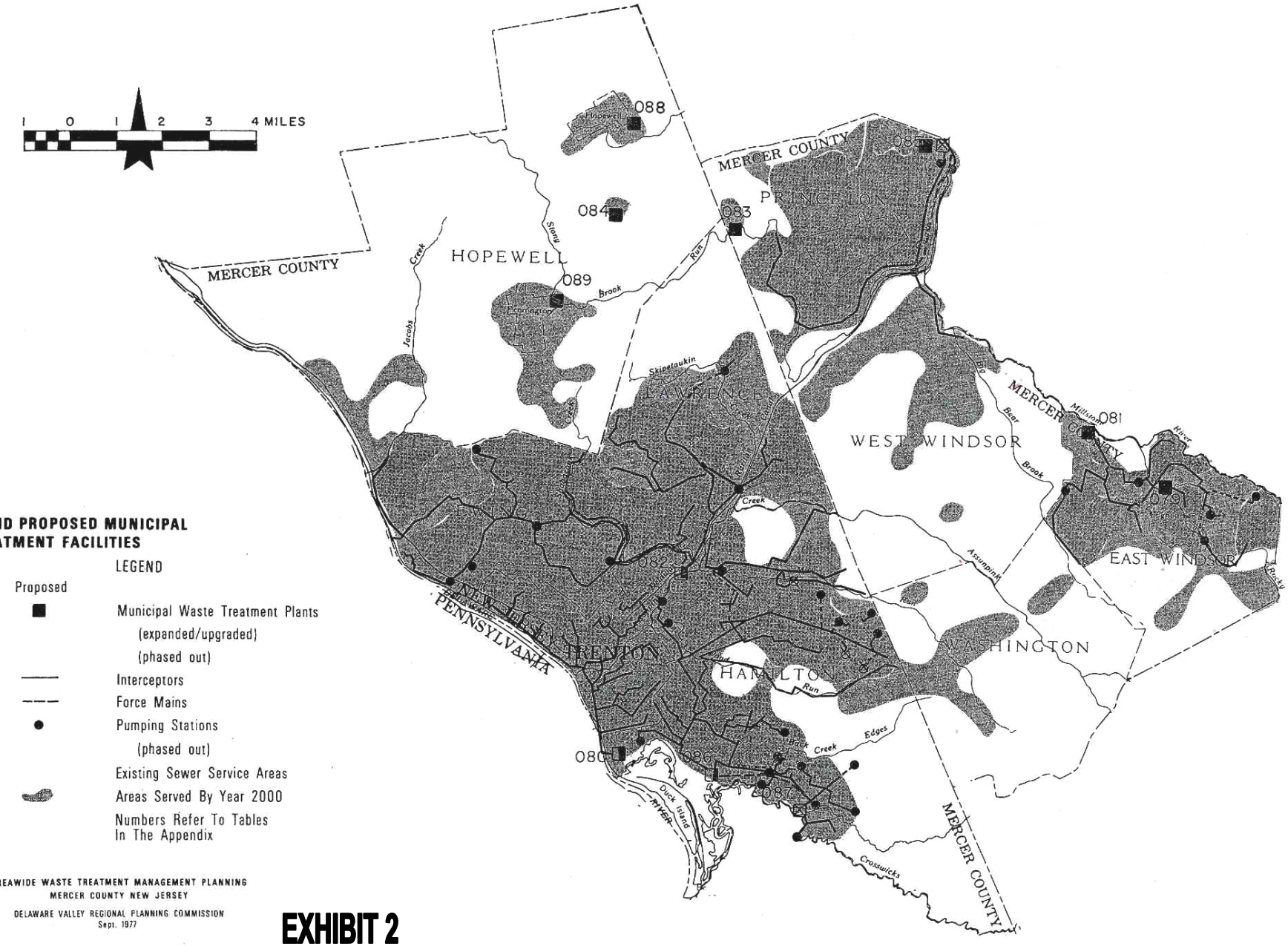

PLATE 4-1

EXISTING AND PROPOSED MUNICIPAL WASTE TREATMENT FACILITIES

LEGEND

Existing	Proposed	
■	■	Municipal Waste Treatment Plants
◨		(expanded/upgraded)
⊠		(phased out)
——	——	Interceptors
- - -	- - -	Force Mains
●	●	Pumping Stations
⊗		(phased out)
		Existing Sewer Service Areas
		Areas Served By Year 2000
		Numbers Refer To Tables In The Appendix

AREAWIDE WASTE TREATMENT MANAGEMENT PLANNING
MERCER COUNTY NEW JERSEY

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
Sept. 1977

EXHIBIT 2
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Consistency with a Wastewater Management Plan is required for approvals for wetlands and other watershed based activities. Hopewell Township's first Wastewater Management Plan was prepared in 1989 in accordance with the provisions of the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq. and the Statewide Water Quality Management Planning rules (N.J.A.C. 7:15)[1]. Preparation of this plan was required by NJDEP in order to obtain the construction permits for a reconfiguration of the Princeton Farms wastewater treatment plant[2]. This reconstruction relocated the discharge location from a nearby tributary to Honey Brook into the Stony Brook Regional Sewerage Authority Treatment Facility located on Aunt Molly Road in Hopewell Township. This reconfiguration concluded a debate by the Township that ended with a policy decision that Hopewell Township was no longer desirous of owning and operating sewage treatment facilities.

There have been several amendments to the original wastewater management plan. The most significant and controversial of the amendments was in 1998 when Hopewell Township sought approval to provide public sewer service to approximately 8% of its land area adjacent to the Ewing Township boundary. This Wastewater Management Plan amendment was initiated on the basis that the City of Trenton's wastewater treatment facility had adequate and immediate treatment capacity for Hopewell Township. This amendment was approved by the New Jersey Department of Environmental Protection on September 8, 1998. Included in the approval letter from the Department, were certain stipulations. These stipulations ultimately became the framework for future planning in Hopewell Township and are described in the following excerpt:

[1] All wastewater disposal methods, and the areas where those methods are in use or where those methods may be used in Hopewell Township, must be identified on the Wastewater Management Plan. This document serves as the master plan for all wastewater planning and disposal in Hopewell Township.

[2] Princeton Farms was Hopewell Township's only owned and operated sewer collection system and treatment plant that was acquired through developer default. The system required major upgrades to satisfy NJDEP permitting criteria.

"The following provisos are incorporated into this amendment in order to minimize secondary impacts that could be associated with development consistent with current zoning as well as to advance protection of water resources from the effects of nonpoint pollution throughout the Township. These provisos are also included in the loan agreements to be executed by the New Jersey Environmental Infrastructure Trust and the Department:

Sewer connections beyond the residential units and commercial square footage identified in the "New Jersey Infrastructure Financing Program Environmental Appraisal Table 2" dated August 19, 1998 and any changes to the sewer service area and/or the specific development identity (zoning, residential/commercial units and flows) will not be allowed without the approval of the Office of Environmental Planning and an amendment to the Mercer County Water Quality Management Plan. Any such changes, as referenced above, shall also be consistent with the State Development and Redevelopment Plan, which shall include, but not be limited to, the development of an Open Space Preservation Plan within the context of the Master Plan Cross-Acceptance process and in coordination with the development of a Town Center designation. In order for the Department to consider any change, Hopewell Township must demonstrate that any proposed density increase is a result of transfer of development potential from elsewhere in the Township. Such transfers would be based on a re-evaluation and correction of zoning to be compatible with preserving water quality and recharge.

No wastewater treatment services will be provided to environmentally constrained areas, except where development requiring wastewater treatment facilities is specifically permitted by the Department.

Hopewell Township shall revise and implement their current stormwater ordinance within six months of the date of execution of the Loan Agreements. The development of the revised stormwater ordinance shall be coordinated with and approved by the Office of Environmental Planning and must meet current Department of Environmental Protection and Department of Community Affairs standards with respect to post-construction stormwater flows applied to all forms of development. The ordinance must include provisions to protect the integrity of stream channels, reduce potential flooding and

nonpoint source pollution problems, reduce soil erosion and maintain natural drainageways.

Hopewell Township shall coordinate with the Delaware River Keeper Network, the Delaware River Basin Commission, the Stony Brook Millstone Watershed Association, Mercer County, the MSM Regional Council, and the Townships oif Ewing and Lawrence in conjunction with the Office of Environmental Planning, to develop a watershed-based storm water management plan within two years of the date of execution of the Loan Agreements. Upon the Department's approval of the watershed-based stormwater management plan, the recommendations shall be incorporated within the Township's stormwater ordinance, and shall include provisions to limit impervious cover and encourage groundwater recharge."

In March 1999, the Hopewell Township Committee terminated its contract for wastewater service with the City of Trenton, invalidating the September 8, 1998 Wastewater Management Plan approval. On May 20, 1999, Lance Miller, Director of the New Jersey Department of Environmental Protection, Division of Watershed Management authored a letter that included the following stipulation:

"As you know, the Department of Environmental Protection (Department) formally adopted the subject Wastewater Management Plan (WMP), that was based upon the construction of the Trenton pipeline, on September 8, 1998. Consequently, if there is no reasonable expectation that the Trenton pipeline proposal can be implemented in accordance with the adopted WMP, then Hopewell Township, as the wastewater management planning agency, must propose and submit an appropriate WMP amendment reflecting this change in circumstance to Mercer County, the designated planning agency, and the Department.

Such an amendment shall also contain comprehensive proposals that address the planning needs and the outstanding planning issues for all of Hopewell Township and shall consolidate or be integrated with other upcoming or planned WMP amendments in Hopewell Township (such as for the township's Stony Brook Regional Sewerage Authority service districts) in order to avoid the need for multiple amendment reviews and public hearings by Mercer County and the Department.

Finally, said amendment must also include an alternative planning proposal to address properties with failing septic systems in the Ingleside and Morningside sections of Hopewell Township (that are identified as Trenton service area in the adopted WMP in order to provide sewers for these sections) and the proposed planning disposition of the Ewing-Lawrence Sewerage Authority service area in the Titusville and Washington Crossing sections of the township as discussed in the Department's September 8, 1998 adoption."

In 2000, Hopewell Township entered into a settlement agreement settling a lawsuit on sewer rate structure between the Ewing Lawrence Sewerage Authority, the Brandon Farms Property Owners Association and itself. This order mandated that Hopewell Township undertake revision of its wastewater management plan to delete any designated ELSA sewer service areas that did not have an associated contract for sewer service. This wastewater management plan revision was withheld pending completion of Hopewell Township planning efforts, then underway, to address issues raised in the 1999 NJDEP letter.

In order to advance an amendment of its wastewater management plan, Hopewell Township was compelled to consider the comprehensive criteria that were outlined by NJDEP in its 1999 letter. These criteria have since been satisfied through an extensive process that included:

Hopewell Township Master Plan: A comprehensive revision to the Hopewell Township Master Plan was undertaken. The most critical element to this master Plan, the land use element, was revised in 2002 and the complementing land use ordinances were also adopted in 2002. The changes prescribed by this comprehensive revision were underwritten by a detailed evaluation of Hopewell Township's groundwater resources. This evaluation was summarized in a report by M^2 Associates, Inc. dated March 2, 2001, entitled "Evaluation of Groundwater Resources of Hopewell Township, Mercer County, New Jersey". Other elements of the Master Plan such as recreation and circulation continue to be reviewed and revised as required. However, revision of

the most important element as it relates to long term planning and development related affects, has been completed.

Land Use Zoning Revisions: Land Use Zoning was implemented to coincide with the land use element of the Master Plan. This zoning has been the subject of ongoing legal challenges since its adoption in 2002.

Hopewell Township also enlisted the Stony Brook-Millstone Watershed Association (SBMWSA) to conduct a peer review of its planning policies and ordinances as part of its SBMWSA Municipal Assessment Project. The Municipal Assessment Project is intended to assist municipalities in developing additional proactive measures to ensure that natural resources are preserved and the necessary regulatory structure established. In March 2002, SBMWSA published a document entitled "**T**aking the **N**ext **S**tep: Hopewell Township Municipal Assessment." This document underscored the SBMWSA's statement that the protection and health of a watershed relies a great deal on the land use laws and policies that govern development. In this assessment, the SBMWSA recommended:

- Adopting a septic system monitoring policy/ordinance for residential systems to detect failing septic systems. The Township should assess alternatives for failing septic systems.
- Continuing to distribute and revise educational information concerning septic system maintenance. Include information on who to contact in the Township if the resident has problems or questions. This is a critical first step in a long-term Township septic system management plan.
- Regularly scheduling educational programs on septic system upkeep.
- Adopting an ordinance requiring regular pumpouts and upgrades or expansions when a house is expanded or altered.
- Applying for a Smart Growth grant for community septic systems, retrofitting the current failing systems.

- Providing incentives, and perhaps financial assistance, for septic system maintenance.

Septic System Considerations: Prior to the 1998 WMP approval, Hopewell Township had received petitions from several neighborhoods for public sewer service. In the 1998 WMP amendment, Hopewell Township relied upon research on septic systems conducted for the Hopewell Township Municipal Utilities Authority in the 1970's and 1980's. Following termination of its contract with the City of Trenton:

- Hopewell Township contracted with the firm Cerenzio and Panaro, P.C. who issued a document entitled Wastewater Needs Analysis/Feasibility Study, Phase 1 Report on September 27, 2000. The purpose of this document was to review septic system failures in Hopewell Township and advise the Township if any specific areas should be considered for public sewer service. This report concluded that certain "Areas of Concern" should be further evaluated. These "Areas of Concern" included Mt. Rose, Timberlane, Ingleside, Diverty Road and Morningside.

- In April 2001, the results of a follow-up investigation into the costs of providing localized and regionalized wastewater disposal alternatives to the Areas of Concern, entitled "Feasibility Analysis for Selected Wastewater Alternatives Serving Areas of Concern", was presented by Van Cleef Engineering Associates. This analysis included additional Areas of Concern known as Penn View Heights, Tree Streets, Indian Village, Orchard Avenue and Brandon Road. These additional areas were added to the original Areas of Concern because they too were developed areas in close proximity to the original Areas of Concern and exhibited similar characteristics to the original Areas of Concern.

- Following the issuance of the two aforementioned reports, the Hopewell Township Committee formed an advisory committee that conducted public

meetings with each of the designated Areas of Concern[3]. Each neighborhood was surveyed to determine if any particular sewer option would be favored over another. Consensus was mixed with a general indication that the public sewer option should be pursued if costs could be kept to a minimum.

- An evaluation of environmental consequences of providing public sewer to the Areas of Concern was then commissioned by the Hopewell Township Committee. While awaiting this report, the Township reorganized the sewer advisory committee and began researching alternative septic system technologies and septic system management initiatives as an alternative to providing public sewers. It was during this time period that an assessment prepared by M^2 Associates, Inc. entitled "Assessment of Groundwater Quality and Quantity Impacts from Sewer Area Expansion in Hopewell Township, Mercer County, New Jersey", was released. This assessment identified that installing public sewers would eliminate groundwater recharge being provided by septic systems in the Areas of Concern and could impact groundwater resources in some of the Areas of Concern by creating a groundwater export (depletion) condition.

- Following the release of the M^2 Associates, Inc. assessment, an extensive effort was made by the sewer advisory committee to consider septic system management as a viable alternative to public sewers. This idea involved Hopewell Township as a Responsible Management Entity and was presented to the public at a special public presentation on May 18, 2004. This public presentation was attended by over 900 people and resulted in a clear demonstration that septic system management by the municipality would <u>not</u> be acceptable.

[3] Included Areas of Concern identified by both Cerenzio and Panaro and Van Cleef Engineering Associates.

In July 2004, the Hopewell Township Committee dissolved its wastewater advisory committee and solicited recommendations for wastewater management planning from its Township Engineer.

PART II - SEPTIC SYSTEMS

Septic systems play a vital role in Hopewell Township's environment. Septic systems discharge into the aquifer and they help provide critical recharge for the Township's major source of drinking water. Preserving this resource is critical.

The quality of wastewater leaving a septic system and discharging into the aquifer and the longevity of septic systems is directly related to design and maintenance. Both residential and commercial septic systems are maintained by individual property owners in Hopewell Township, unless otherwise obligated by NJDEP permit. Guidance for maintenance has been offered by the Hopewell Township Board of Health and the Hopewell Township Health Department through information and training seminars. Although not mandatory, these seminars have been well attended.

Records of maintenance are the responsibility of the individual property owner. Hopewell Township maintains records of individual repairs or replacements as required under NJAC 7:9A. The data included in septic system repair records is limited and its accessibility requires ongoing maintenance and is dependent upon resource allocation.

New septic system construction requires permits from the Health Department. Typically, new septic systems in Hopewell Township are soil replacement type septic systems, which provide a 4-foot vertical separation between the underlying water table or bedrock, and the bottom of the septic system. This technology, whether it is utilized on a 20,000 square foot lot or on a 10 acre lot, may require a major vertical alteration of the existing ground surface, or "mounding". Alternative technologies are available for new septic system construction, however, such technologies may require additional maintenance when compared with the more common conventional, and soil replacement systems. The additional maintenance and the need to insure this maintenance, has been recognized by the New Jersey Department of Environmental Protection (NJDEP) as being cause for regulation and oversight. This regulatory

oversight imposes long-term maintenance obligations as well as an approval process that is lengthy and costly:

> ***7:9A-3.11 Experimental systems***
> *The Department encourages the development and use of new technologies which may improve the treatment of sanitary sewage prior to discharge or allow environmentally safe disposal of sanitary sewage in areas where standard sewage disposal systems might not function adequately. Where the design, location, construction or installation of the system or any of its components does not conform to this chapter, the administrative authority shall direct the applicant to apply to the Department for a treatment works approval. Depending upon volume and quality of the wastewater discharged, a NJPDES permit may also be required.*

For these reasons, alternative technologies are not routinely selected for use unless they are the only available solution. As a result, there are only a few properties that have employed such alternative technologies in Hopewell Township to date.

Part of any wastewater planning effort is to understand existing conditions. A comprehensive understanding of exactly what the existing conditions in Hopewell Township are, has eluded all who have asked the question. There are several factors that contribute to this "elusiveness":

- The lack of available records that document routine repairs and pumping history. While the Township has records of major repairs and replacements, routine repairs that may provide long-term benefits and extend the life of the system, have not been recorded. Not knowing how many repairs occur annually, not knowing what type of repairs have been made, and not having the ability to monitor the effects of repairs, prevents the understanding of any benefit those repairs might have had over a long period of time.

- There are septic systems in need of repair that have not been reported. Generally, a property owner will not voluntarily report visible signs of septic failure to the Township due to the possibility that replacement of the system will be mandatory. Replacement costs can exceed $30,000 and this high cost serves as incentive to not report malfunctioning systems.

- Septic system inspection professionals may be over-conservative in evaluation techniques due to their great degree of liability. Many septic systems that might otherwise enjoy extended life through some limited maintenance and repair, are classified as "failing" and are forced to be replaced. This typically prevails at the time of resale[4].

These factors weigh very heavily against having *available* information to use in determining how septic systems are working in Hopewell Township.

In order to understand how septic systems function, it is necessary to make site visits and, in some instances, perform site soil evaluations. However, such visits and inspections are expensive and are considered invasive. Additionally, if a failure is encountered during a site inspection, there is no immunity offered to avoid having the investigator report the failure. Therefore, receiving permission for such inspection has not been easy to come by. Such inspections were conducted in the early 1980's by BCM, Inc. working for the former Hopewell Township Municipal Utilities Authority.

The inability to have detailed site information leaves the Township to use other information such as published soil surveys that are only meant for general planning purposes[5]. It is extremely difficult to make detailed evaluations that involve major capital expenditures or make major decisions for future outcomes based upon such general planning documents.

In 2004, the Hopewell Township Wastewater Advisory Committee attempted to understand septic systems in Hopewell Township without great success. Its efforts included solicitation of information regarding septic system repair experiences by interviewing septic system repair contractors that work or have worked in Hopewell Township. It was felt these contractors would understand what types of repairs are

[4] 57% of all septic system permits between 1994 and 2000 were associated with resale.
[5] The Mercer County Soil Survey was prepared based upon fieldwork conducted between 1950 and 1965.

typically made and what benefits have resulted from repairs. The information received indicated that *it is* possible, in some instances, to make repairs to extend the life of a septic system. It was noted in the interviews that needed repairs go unnoticed for long periods of time, and that septic systems in Hopewell Township are maintained on an as needed basis.

Maintaining septic systems is absolutely critical to prolonging their life. The responsibility for maintenance may be by an individual homeowner, by Hopewell Township or by some other public agency. In 1999, the Hopewell Township Committee debated the introduction of an Ordinance that would mandate septic system registration and offered the beginnings of a tracking mechanism for long term septic system maintenance and management. This ordinance, however, was never introduced due to lack of support.

In May 2004, the Hopewell Township Committee hosted a public presentation on an alternative to maintenance by individual homeowners; maintenance by Hopewell Township as the "Responsible Management Entity" or a Level 4 Program. The public comment received at this meeting overwhelmingly indicated that such a Program would NOT be acceptable to the residents of Hopewell Township. However, the audience was very interested in learning about their septic systems, what alternatives they had to managing their own septic systems, and about how they could prolong the life of their septic systems.

RECOMMENDATIONS

There are several phases of the septic system life cycle, which are design, construction and maintenance. Recommendations are offered for each of these phases:

A. Design

It is recommended that alternative (experimental) septic system technologies be permitted whenever authorized by NJDEP for new septic systems and as part of septic system repairs. Hopewell Township should adopt ordinances as required by NJDEP to provide assurance it needs to approve such technologies.

Alternative technologies offer higher levels of treatment than conventional septic system technology. They also require higher levels of maintenance and operating costs. However, because Hopewell Township has limited availability of public sewer, the ability to implement alternative technologies should be considered and encouraged. These technologies may not work in some instances, but may serve to improve the quality of wastewater from individual homes in other instances with proper long term operation and maintenance.

Septic system designs presently advanced through the permitting process in Hopewell Township are primarily conventional septic systems with soil replacement and mounding as required to accommodate site specific conditions. There are a variety of alternatives to the conventional septic system design that are permitted and are in use throughout the continental United States and beyond. In many instances these technologies are considered “alternative” or “experimental” technologies. The New Jersey Department of Environmental Protection who underwrites the regulations for such septic system designs and is the final authority for permitting of alternative technologies.

The NJDEP authorization process for alternative technologies include requirements for each manufacturer of alternative technology to prove its ability to satisfy NJDEP wastewater treatment criteria. The NJDEP authorization process also requires assurance from the municipality in which the technology is proposed, that adequate long-term care and maintenance of an alternative

system will be provided. These assurances must be set forth in a municipal ordinance. An example of the content of such an ordinance was provided by NJDEP to Hopewell Township and is included as Appendix A. The Hopewell Township Committee considered introducing an ordinance setting forth maintenance criteria as required by NJDEP in 1999, however, this ordinance was never introduced due to lack of support.

B. Permitting and Construction

It is recommended that every new septic system be registered with the Hopewell Township Health Department as part of a mandatory registration program. This program should require registration for new septic systems serving new homes as well as replacement septic systems. This recommendation requires the adoption of an ordinance that could be modeled from a similar existing program in neighboring Montgomery Township, Somerset County. The data required as part of this registration should include the type, size and manufacture of all system components; engineering data for the underlying soil strata; underlying geologic information; well or septic effluent quality test results. This information should use common recording formats and should be logged into the Township's GIS data base.

Since septic system construction is as important as long-term care and maintenance of the system, it is recommended the Township consider a mandatory septic system contractor registration program[6]. In the past, Hopewell Township has been fortunate to have a consistent base of knowledgeable septic system contractors working within the community. However, market conditions continue to change and contractors from a wide cross section are now constructing septic systems. The legality of such a program would need to be researched. Ideally such a program would include a mandatory educational

[6] This program would prevent non-registered and potentially inexperienced contractors from performing work on septic systems in Hopewell Township.

process provided by the Hopewell Township Health Department that would include information on past experiences in the Township (e.g. experiences with the variety of geologic and subsurface soil conditions, experiences with the variety of types of failures that have occurred). It would also include with any operational conditions of the Health Department such as knowledge of Developer Construction Agreements, trucking routes, soils sampling procedures, etc.. Such educational efforts could occur in the depths of winter when contractors are typically slow and this process would not interfere with earning capabilities. A process such as this might improve staff efficiency by saving time currently devoted to individualized education through permitting and inspection.

C. Ownership/Maintenance

Having researched years of information regarding septic failures, soil conditions, resale, repair and the Responsible Management Entity, several very apparent facts have surfaced. There are many repairs in Hopewell Township for which there are no records and thus, no ability to monitor the long-term effectiveness of those repairs. There are many septic system owners in Hopewell that properly serve as their own Responsible Management Entity and who prudently maintain their septic systems. There are many septic system owners in Hopewell Township that are unaware or are uneducated about how septic systems work, how they should be maintained and why maintenance is important. There are also many septic system owners in Hopewell Township that have been misinformed as to the long-term care and operations of their systems and the importance of the same.

Finally, during a public hearing conducted in the Spring of 2004, it was made clear that Hopewell Township residents did *not* want Hopewell Township as a stakeholder in the ownership and/or maintenance of their septic systems. During the aforementioned hearing, it was also made clear that Hopewell Township residents *were* interested in being educated on all of the options

regarding ownership and maintenance of septic systems. This was evidenced by the two hours of silence during the presentations on these topics. It is based upon this observation and the foregoing conclusion that the following recommendation is made.

It is recommended that Hopewell Township enhance its existing homeowner awareness program on septic system ownership and maintenance. This enhancement would include an increase in the frequency of the program sessions and would elaborate on alternatives available for repair and replacement. Ideally, the best way to maximize the benefit of homeowner awareness is to make the program mandatory for all septic system owners in Hopewell Township. However, the legality of such a mandate would have to be researched. In the alternative, if the Township considers the recommendation for mandatory registration of new and replacement systems, consideration for mandatory training as part of that program might be a consideration again, providing such a mandate passes the legal test. This enhancement could be coordinated with the Stony Brook Millstone Watershed Association who is seeking to assist Hopewell Township in educating the public on matters of non-point source pollution. Such cooperative efforts are encouraged by the NJDEP in its new stormwater management regulations

D. Septic System Repairs

Septic system repairs are not always reported. Yet, information concerning these repairs could be extremely useful in determining a particular course of action for a particular area that might be plagued with septic problems. Septic system repairs have, in some instances, been found to be critical improvements/enhancements to the long-term operation, maintenance and ultimate life of a septic system. Mandatory reporting of any and all septic repairs would provide invaluable assistance in helping the Township understand long-term management of septic systems.

PART III – PUBLIC SEWER SERVICE

Public sewer service represents collection, conveyance and treatment infrastructure that may be owned and operated by a municipality, a Utility Authority operating under the laws of the State of New Jersey or a Public Utility. Planning for public sewer service in Hopewell Township has been the subject of extended debate and environmental scrutiny. Areas previously designated for public sewer service are identified on the Wastewater Management Plan of Hopewell Township. Most of these areas have primarily been located in the southern half of Hopewell Township.

There are two different forms of "public sewer service." These include systems with *discharge to a surface water body* or systems with *discharge to groundwater*. The Ewing Lawrence Sewerage Authority (ELSA) provides treatment for the Delaware River watershed areas of Hopewell Township[7] and the Stony Brook Regional Sewerage Authority (SBRSA) provides treatment for the Millstone/Raritan River watershed areas of Hopewell Township[8]. There are no existing "public" facilities within Hopewell Township that discharge to groundwater.

It is typical to plan for wastewater discharge locations within the watershed in which the wastewater is generated. This is due to the fact that there is a balance that must occur between groundwater recharge and groundwater export within each watershed. Groundwater supplies generally are located underneath the same surface watershed that surface water flows from. Water falling on the surface in a particular watershed ultimately recharges into the groundwater in that watershed. Where wells are dependent upon groundwater in a particular watershed for their supply, it is critical to insure the supply is not diminished by groundwater export, also known as groundwater depletion. Public sewer service removes sources for groundwater recharge and, therefore has been found to impact well water supplies.

[7] Located on Whitehead Road in Lawrence Township, Mercer County.

[8] Two plants located within Hopewell Township – Aunt Molly Road & Pennington-Centerville Road

Wastewater planning in Hopewell Township includes both the Delaware River and the Millstone/Raritan River watersheds. In 1998, a request made by Hopewell Township for wastewater in portions of the Millstone/Raritan River watershed in Hopewell Township, to be discharged into the Delaware River watershed was approved by the Delaware River Basin Commission and NJDEP.

Prior to designating any area of Hopewell Township for public sewer service on a Wastewater Management Plan, adequate capacity must be determined to exist in the treatment facility and the conveyance systems for the additional wastewater being generated by Hopewell Township. For the purpose of this report, the term "adequate capacity" is defined by the author as:

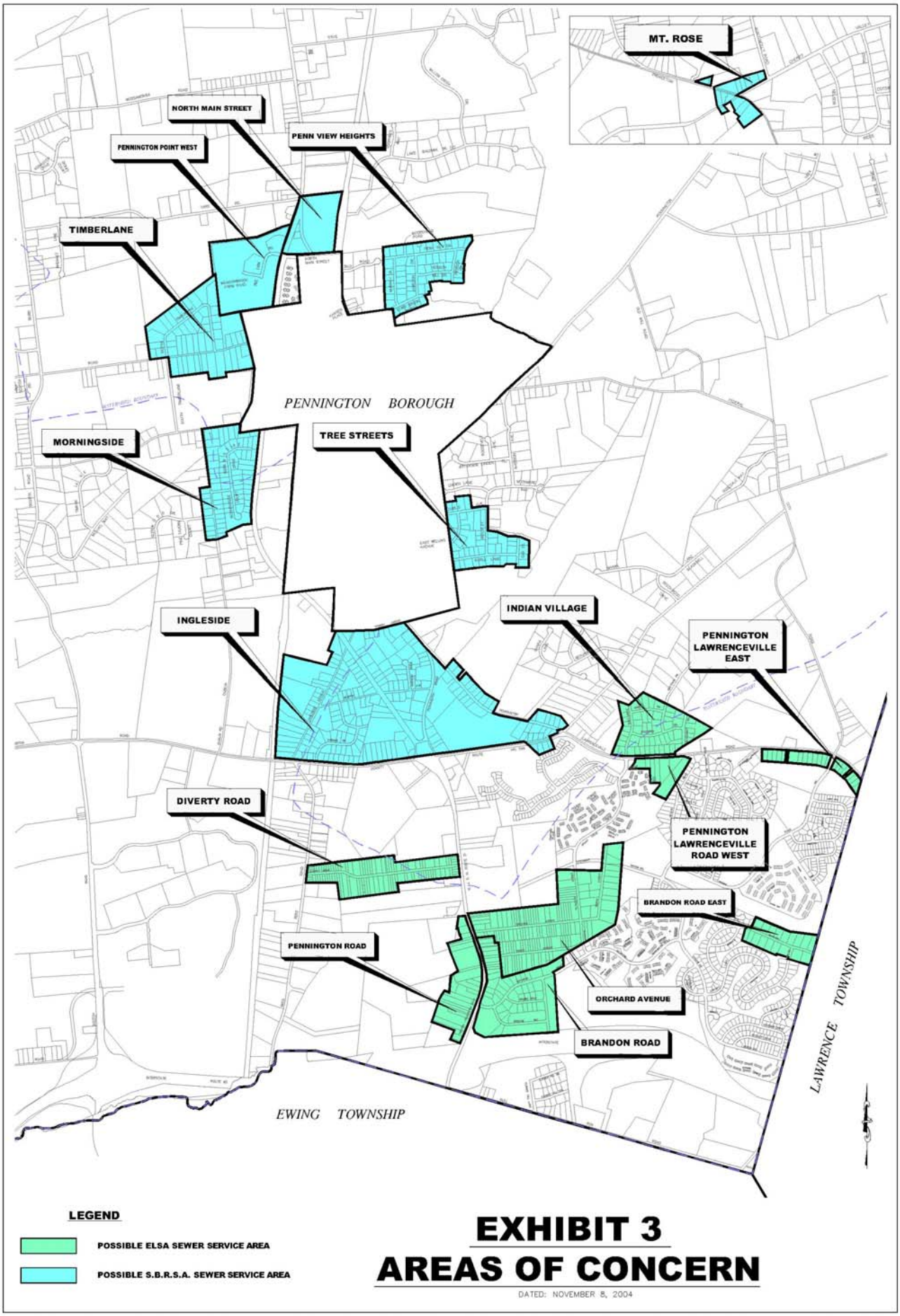
> *The physical ability of a treatment plant and related conveyance systems to receive and treat wastewater as determined by a detailed engineering analyses, AND the contractual ability to convey wastewater to that facility.*

The physical ability to treat wastewater is a matter of science and engineering and has a predictable outcome. Securing the contractual ability to treat wastewater, however, involves issues that include detailed negotiations with multiple parties and does not have a predictable outcome. Both the physical ability AND contractual ability must be met in order for adequate capacity to exist.

In addition to those areas shown on the current Wastewater Management Plan, the Hopewell Township Committee has been considering the addition of 16 areas (Areas of Concern) for public sewer service since 1998. No conclusion on the outcome of providing sewers has been reached for these areas, primarily due to issues of adequate capacity and environmental consequence. To date, considerations have included reviews of Health Department records, homeowner surveys, infrastructure cost analyses, and groundwater quality and quantity impact studies. These areas are graphically identified on Exhibit 3, and are specifically listed as follows:

1. Morningside
2. Timberlane
3. Pennington Point West
4. North Main Street
5. Penn View Heights
6. Ingleside
7. Tree Streets
8. Mount Rose
9. Diverty Road
10. Orchard Avenue
11. Brandon Road
12. Pennington Road
13. Pennington-Lawrenceville Road East
14. Brandon Road East
15. Indian Village
16. Pennington-Lawrenceville Road West

Timberlane, Pennington Point, North Main Street, Penn View Heights, Tree Streets, and Mount Rose are located entirely within the Millstone/Raritan River Watershed. Orchard Avenue, Brandon Road, Pennington Road, Pennington-Lawrenceville Road East and West, and Brandon Road East are located entirely within the Delaware River Watershed. Morningside, Ingleside, Diverty Road, and Indian Village are located in both the Millstone/Raritan and Delaware River Watersheds. The Delaware River Basin Commission formally approved the discharges of all wastewater generated within the Morningside, Ingleside, Diverty Road, and Indian Village areas from the Millstone/Raritan watershed into the Delaware River watershed; (ELSA) sewer service area.


MT. ROSE
NORTH MAIN STREET
PENN VIEW HEIGHTS
PENNINGTON POINT WEST
TIMBERLANE
PENNINGTON BOROUGH
MORNINGSIDE
TREE STREETS
INGLESIDE
INDIAN VILLAGE
PENNINGTON LAWRENCEVILLE EAST
DIVERTY ROAD
PENNINGTON LAWRENCEVILLE ROAD WEST
BRANDON ROAD EAST
PENNINGTON ROAD
ORCHARD AVENUE
BRANDON ROAD
LAWRENCE TOWNSHIP
EWING TOWNSHIP
LEGEND
POSSIBLE ELSA SEWER SERVICE AREA
POSSIBLE S.B.R.S.A. SEWER SERVICE AREA
EXHIBIT 3
AREAS OF CONCERN
DATED: NOVEMBER 8, 2004

In many meetings that have occurred between Hopewell Township and with the various municipalities and Utility Authorities that have regulatory authority over the ability to provide sewer service to Hopewell Township, several key factors have been identified that will influence any decision to provide public sewer service to any area within Hopewell Township:

- The designation of any area for public sewer service will have direct financial impacts upon the Utility providing wastewater treatment. This impact will be passed on to Hopewell Township and its users through capacity, connection and user fees.

- Adequate capacity must be determined to exist. This determination can only be made by detailed engineering evaluations that are costly and time consuming. The costs of evaluation are out-of-pocket expenses, funded either by the general taxpayer or by the utility system users until such time as the areas under consideration are connected.

  In the case of SBRSA, it is presently known that the existing plant serving Pennington Borough does not have any adequate capacity for receiving wastewater flows from the Areas of Concern in Hopewell Township. In order to determine what will be required to provide adequate capacity, it will be necessary to first analyze the ability of Stony Brook to assimilate additional wastewater that Hopewell Township will create. Because this work must precede an actual determination that adequate capacity can be made available, expenses will be out-of-pocket, funded by either the general taxpayer or by the utility system users until such time as the areas under consideration are connected.

- In the case of both ELSA and SBRSA, adequate capacity between Hopewell Township and the treatment facility must be determined[9]. This determination can only be made by detailed engineering evaluations that are also costly and time consuming. These evaluations also approximate the costs of providing the capacity. These expenses will be out-of-pocket, funded by either the general taxpayer or by the utility system users until such time as the areas under consideration are connected.

- In the ELSA system, the reservation of capacity for Hopewell Township prior to wastewater being generated, will preclude the allocation of that capacity elsewhere. Since that capacity was previously funded, its reservation will result in an immediate loss of potential revenue to ESLA. Therefore, the mere designation of an area for sewer service in Hopewell Township consumes available capacity to other consumers and may require an annual reservation fee. This capacity would normally be reserved at the time construction permits are issued, thus funding its reservation by connection and user fees. In Hopewell Township's case, however, it will be necessary to reserve this capacity well in advance of any user or connection fees being paid. These reservation fees will be out-of-pocket expenses, funded by either the general taxpayer or by the utility system users until such time as the areas under consideration are physically connected.

- For both ELSA and SBRSA possibilities, approvals from constituent municipalities are required in order for productive negotiations to occur to provide sewer service to Hopewell Township. In the case of any SBRSA service area, Pennington Borough Officials have indicated that there is no desire to extend sewer service beyond Borough boundaries.

[9] In order to get wastewater from Hopewell Township to a treatment plant, the use of some portion of existing conveyance piping within another municipality is required. The use of this existing capacity prevents use by the entity that constructed the piping and, quite often, charges will be assigned to compensate the entity for that use.

RECOMMENDATIONS

The recommendations in this report are offered on the basis of experience, observations of field conditions, interviews, and influencing factors described herein.

A. General

1. All existing areas served by public sewer service should remain designated as they are presently designated on the Wastewater Management Plan of Hopewell Township, unless otherwise recommended herein.

2. Where possible, the boundaries of sewer service areas should terminate along physical features such as roadway centerlines, along restricted open spaces, or conservation easements. Physical features provide the clearest definition of boundary limits and restricted open spaces and conservation easements can be well defined by markings. These limits do not change often, and if they change, the change requires some form of public consideration/hearing.

3. All areas that are the subject of new planning that result in development densities in excess of current zoning ordinances for single family lots with wells and septic systems, should be considered for public sewer service. In areas other than designated ELSA or SBRSA service areas, public sewer service could be provided by a Board of Public Utilities regulated Utility, operating under a Franchise Agreement with the Hopewell Township Committee. Wastewater franchise areas are public sewer service areas and must be designated on the Wastewater Management Plan.

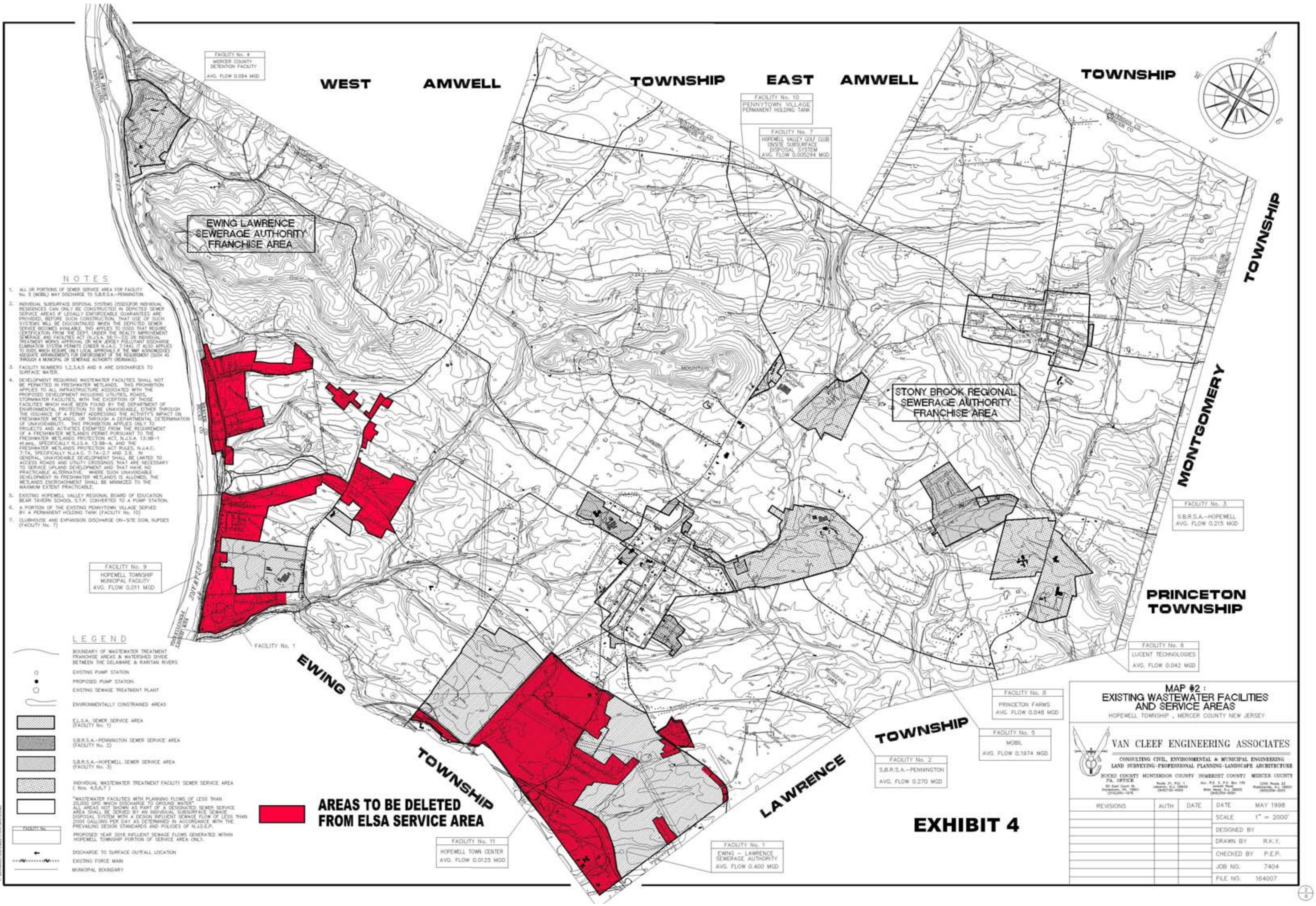
B. Delaware River Watershed

1. The settlement agreement between Hopewell Township and the Ewing Lawrence Sewerage Authority (“settlement agreement”), was made on January 19, 2000 and filed with the court Feb. 9, 2000. Paragraph 10 states:

> "Further ELSA service for any additional areas of Hopewell will be provided by ELSA and Ewing only by agreement among ELSA, Ewing and Hopewell and only to the extent agreed upon. Hopewell agrees to forthwith amend its Wastewater Management Plan and any other plans, permits, applications, etc. that are necessary to remove all areas of Hopewell Township, other than those subject to existing agreements referenced in Paragraph 6, from ELSA's service area. Hopewell agrees that ELSA/Ewing has no present obligation to provide sewer services to any area of Hopewell Township including but not limited to the Titusville and the Washington Crossing areas and that hereafter it will not apply for or support any application for sewer service from ELSA for areas within Hopewell Township without ELSA/Ewing's agreement."

   In order to honor this agreement, Hopewell Township is obligated to remove all ELSA sewer service areas that do not presently have contractual capacity within the ELSA Wastewater Treatment Facility. The areas of change required by this settlement are identified in red on Exhibit 4.

2. In order to comply with the settlement agreement it is recommended the area of Titusville be deleted from the ELSA sewer service area. Alternative systems should be considered as individual on-lot solutions to specific problems in the Titusville area. If an area-wide wastewater issue arises, then that specific problem should be reviewed and the feasibility of a solution for that specific problem be determined at that time. The settlement agreement requires the removal of the Titusville area from a sewer service area.


WEST AMWELL TOWNSHIP
EAST AMWELL TOWNSHIP
MONTGOMERY TOWNSHIP
PRINCETON TOWNSHIP
LAWRENCE TOWNSHIP
EWING TOWNSHIP
EWING LAWRENCE SEWERAGE AUTHORITY FRANCHISE AREA
STONY BROOK REGIONAL SEWERAGE AUTHORITY FRANCHISE AREA
FACILITY No. 4 MERCER COUNTY DETENTION FACILITY AVG. FLOW 0.094 MGD
FACILITY No. 10 PENNYTOWN VILLAGE PERMANENT HOLDING TANK
FACILITY No. 7 HOPEWELL VALLEY GOLF CLUB ONSITE SUBSURFACE DISPOSAL SYSTEM AVG. FLOW 0.005294 MGD
FACILITY No. 3 S.B.R.S.A.–HOPEWELL AVG. FLOW 0.215 MGD
FACILITY No. 9 HOPEWELL TOWNSHIP MUNICIPAL FACILITY AVG. FLOW 0.011 MGD
FACILITY No. 6 LUCENT TECHNOLOGIES AVG. FLOW 0.042 MGD
FACILITY No. 8 PRINCETON FARMS AVG. FLOW 0.048 MGD
FACILITY No. 5 MOBIL AVG. FLOW 0.1974 MGD
FACILITY No. 2 S.B.R.S.A.–PENNINGTON AVG. FLOW 0.270 MGD
FACILITY No. 1 EWING – LAWRENCE SEWERAGE AUTHORITY AVG. FLOW 0.400 MGD
FACILITY No. 11 HOPEWELL TOWN CENTER AVG. FLOW 0.0125 MGD
NOTES
LEGEND
AREAS TO BE DELETED FROM ELSA SERVICE AREA
MAP #2 : EXISTING WASTEWATER FACILITIES AND SERVICE AREAS
HOPEWELL TOWNSHIP , MERCER COUNTY NEW JERSEY
VAN CLEEF ENGINEERING ASSOCIATES
CONSULTING CIVIL, ENVIRONMENTAL & MUNICIPAL ENGINEERING
LAND SURVEYING-PROFESSIONAL PLANNING-LANDSCAPE ARCHITECTURE
REVISIONS AUTH DATE
DATE MAY 1998
SCALE 1" = 2000'
DESIGNED BY
DRAWN BY R.K.Y.
CHECKED BY P.E.P.
JOB NO. 7404
FILE NO. 164007
EXHIBIT 4

Many sections of Titusville are comprised of densities and soil characteristics that are similar in nature to other areas of Hopewell Township where sewer service has previously been considered. Documentation of these conditions dates back into early 1970's wastewater planning documents.

The physical characteristics and anecdotal evidence for Titusville suggest that public sewers should be considered. However, the cost of infrastructure to support the Titusville area would not be feasible.

3. It is recommended the ELSA sewer service area that presently exists between Ewing Township, New Jersey State Highway Route 31, Mercer County Route 546 and Lawrence Township remain a designated ELSA sewer service area. This sewer service area includes the Areas of Concern known as Brandon Road, Brandon Road East, Orchard Avenue, Pennington-Lawrenceville Road East, and Pennington Road on the east side of Route 31. There is also a limited number of lots fronting upon and located on the west side of Route 31 just north of Interstate 95 and south of Diverty Road that should also remain designated as ELSA sewer service area.

The area described is part of the existing ELSA sewer service area. There is no strong evidence that indicates there are significant septic failures in this area. There is no evidence that indicates a proliferation of septic failures in this area.

This area is comprised primarily of residential lots but includes a limited number of existing non-residential lots. There are a limited number of commercially zoned properties along Route 31 which have environmental constraints which limit their ultimate development potential. Additionally,

there are properties owned by the College of New Jersey, a public agency that may be provided sewer service.

These existing lots may or may not benefit from alternative septic system technology. These lots will, however, be deprived of the benefit of a public sewer solution they currently enjoy if they were to be eliminated from the existing ELSA service area in which they are located.

Public water is required if public sewers are constructed in these areas in order to mitigate potential groundwater table impacts:

Orchard Avenue, Brandon Road, Pennington Road, Lehigh Town Center[10]*, Pennington-Lawrenceville Road East*

These five proposed sewer service areas are combined because of their proximity, lack of local option as indicated by Van Cleef Engineering in their April 27, 2001 report, and because the water demands of each exceed the dependable yields and recharge rates……However, in all of these areas, unless public water is provided in lieu of groundwater from the underlying aquifer systems, continued groundwater withdrawals to meet water-supply demands will very likely result in adverse impacts to the aquifer systems. (M^2*Associates, Inc.,p25)*

The physical infrastructure required to provide both public water and public sewer exists within close proximity to these areas.

4. The Areas of Concern known as Diverty Road and Indian Village should remain designated for public sewers discharging into the ELSA system. These area are presently designated for public sewer service discharging to ELSA.

Physical observations of surface water runoff, high water table conditions, and physical features of both Diverty Road and Indian Village support the

[10] Lehigh Town Center was required to connect to public sewer and public water and is an existing development.

need for public sewers in these areas. Interviews with the Hopewell Township Health Officer and septic system contractors who have worked in this area offer concurrence with this opinion. More intense management of septic systems or use of alternative septic system technologies does not appear viable for these areas due to the limiting soil constraints.

Both areas are located partly within the Delaware River and partly within the Millstone/Raritan River watersheds. Both areas are currently designated as ELSA public sewer service areas and both areas were the subject of prior considerations and approvals by the NJDEP and Delaware River Basin Commission for watershed transfers, permitting them to be located within the ELSA sewer service area.

Groundwater impacts under all conditions are expected with public sewer installation in Diverty Road and under drought conditions for Indian Village. Both developments, therefore, will require public water as stated by M^2 Associates, Inc. in its report:

Diverty Road

The dependable yield and recharge volumes of the Passaic Formation aquifer system beneath this area are exceeded by the existing water-supply demands of these homes. Installation of sewers would very likely result in adverse impacts to the aquifer system during most years and especially during drought. If the sewers are connected to the regional ELSA system, water levels are likely to decline within the aquifer and inter-related surface water. If the regional option is selected, provision of public water to eliminate local groundwater withdrawals is very likely necessary to reduce the potential for adverse impacts to the groundwater system. (p25)

Indian Village

The demands of Indian Village exceed the volume of water recharging the aquifer during a drought…….If this area is connected to the ELSA facility, provision of public water would very likely be required to minimize the potential for adverse impacts to the aquifer system and inter-related surface-water systems. Furthermore, public water may be necessary if the current septic-system operations have adversely impacted groundwater quality. (p26)

Diverty Road is located within the franchise area of Trenton Water. Indian Village is not located within the franchise area of Trenton Water and an amendment to the franchise agreement to include Indian Village will be required to provide public water service to this area. Public water mains exist in close proximity to both areas.

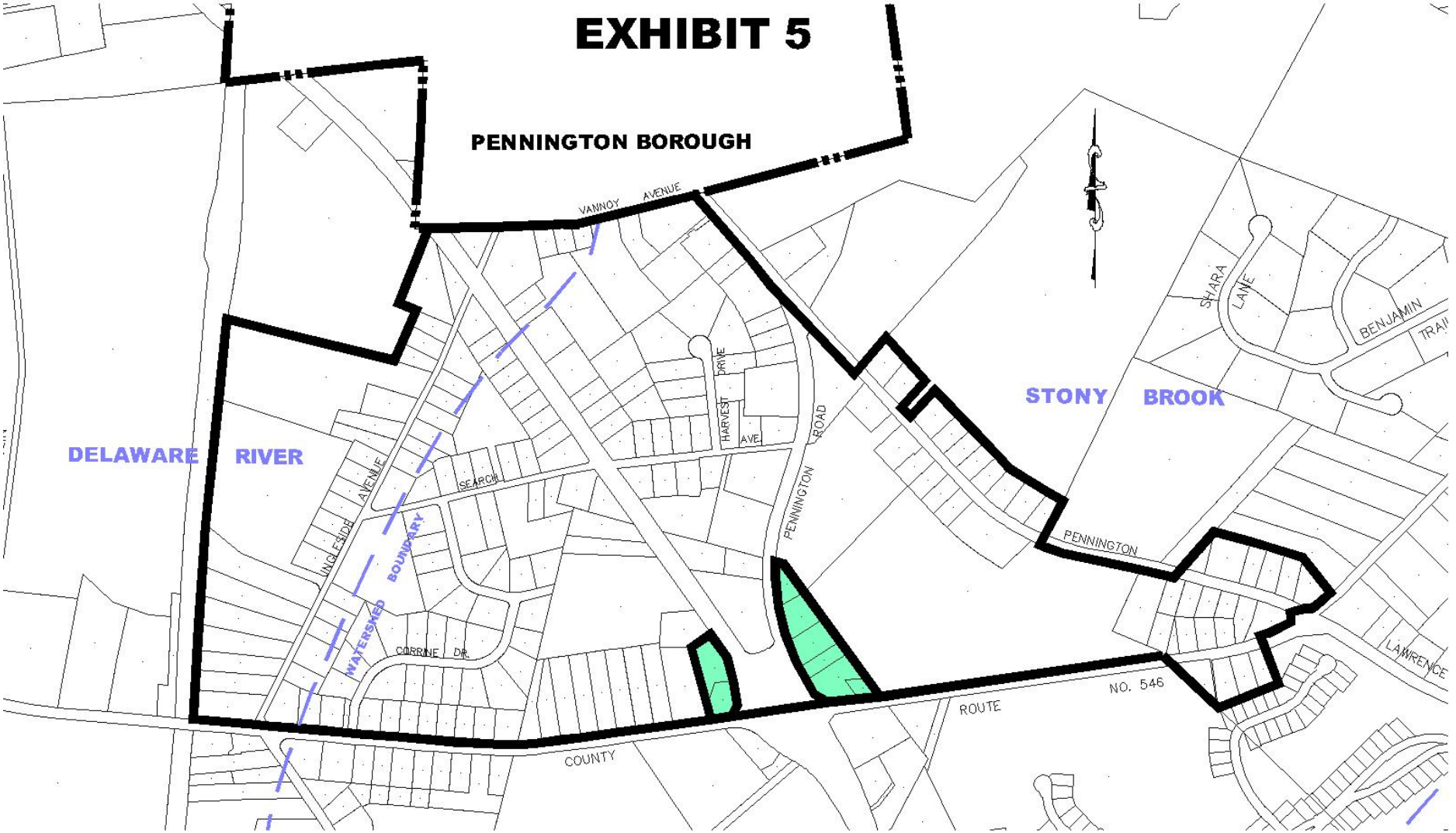
5. It is recommended that the Area of Concern known as the Ingleside area remain designated for individual on-site septic systems, with one exception. The portion of this area adjacent to the Pennington Circle on NJSH Route 31, Exhibit 5, should receive public sewers discharging to the ELSA system. This recommendation is conditioned upon Hopewell Township providing the ability to use alternative technologies as a means of septic repair. If the use of alternative technologies is not permitted, this Area of Concern should be considered, in its entirety, for public sewers.

The Ingleside area is not presently considered a public sewer service area. It was designated as a public sewer service area with discharge to the City of Trenton in the 1998 Wastewater Management Plan, however, the cancellation of the contract with the City of Trenton eliminated this designation.

The Ingleside area is predominantly underlain by Bucks soils. This soil formation is considered one of the better soil formations in Hopewell

INGLESIDE
RECOMMENDED PUBLIC SEWER SERVICE AREAS

DATED: NOVEMBER 2004 SCALE: 1"= 600'±



Township. Alternative technologies for septic repairs may offer relief from the objectionable results that occur with conventional soil replacement septic system technologies. The Pennington Circle area is predominantly a non-residential area served by individual on-site septic systems and wells. The underlying soils of this area are different than the majority of those found in the remainder of the Ingleside area. This has contributed to the septic problems that have plagued this part of the Ingleside area for years. Attempts to manage the negative consequences created by these septic problems have occurred, however, these attempts have not been successful. Local waterways and ground water tables are suffering the consequences of these failing septic systems. It is recommended that the lots highlighted in green on Exhibit 5 receive public sewer service with discharge to ELSA.

Ingleside is partially located within the Delaware River Watershed but the majority is located within the Raritan River (SBRSA) Watershed. This entire Area of Concern was the subject of prior considerations and approvals by the NJDEP and Delaware River Basin Commission for watershed transfers from the SBRSA watershed to the ELSA watershed.

Because of its location within the Millstone/Raritan River watershed, a wastewater system serving Ingleside should discharge into the SBRSA facilities. Connection to the SBRSA facilities would require a long circuitous route around the southern and eastern perimeter of Pennington Borough through environmentally sensitive corridors. The construction costs of the SBRSA routing will be high, resulting in a low cost-benefit ratio.

Unlike other Areas of Concern, there is no scientific evidence to indicate that providing public sewers to this area would result in an environmental

degradation (ground water depletion) that could have long lasting effects. In its 2003 report, M^2 Associates, Inc. states:

Ingleside

Provided that water-supply demands do not increase, the sewers are unlikely to result in adverse impacts to the underlying aquifer system since groundwater recharge during drought and normal years exceed demands. (p23)

Additionally, Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Given Pennington Borough's stated position, its approval for sewer service for the Ingleside Area, or lack thereof, would affect the ultimate approval required by SBRSA.

C. MILLSTONE/RARITAN WATERSHED

1. It is recommended that the Areas of Concern known as Morningside, Penn View Heights and Timberlane remain designated for individual on-site septic systems. This recommendation is conditioned upon Hopewell Township providing the ability to use alternative technologies as a means of septic repair. These areas are not presently designated as public sewer service areas.

These areas are existing developed areas comprised primarily of residential lots. These areas are not currently located within a sewer service area. There is some anecdotal evidence that a proliferation of septic failures in this area exists. However, there is also contradicting evidence that suggests there is not a proliferation of failures. There is an absence of scientific evidence that supports the cost-benefit ratio associated with public sewer construction in this area. Alternative technologies for septic repairs may offer relief from the objectionable

results that occur with conventional soil replacement septic system technologies.

The costs of public sewer construction, or when combined with the costs of water main construction approaches and, in some instances far exceeds the cost of septic system repairs or septic system replacement. Lots with functioning septic systems[11] will be reluctant to voluntarily support the large expenditure to connect to a public sewer system. Mandating connections may be required to support the system financing. Such a mandate would impose a financial hardship that might otherwise be avoided on an as-needed basis with alternative technologies.

M^2 Associates, Inc. concluded that impacts associated from the construction of public sewers would result in impacts to groundwater in the Morningside and Penn View Heights areas during drought conditions and that there are no anticipated impacts in the Timberlane area:

Morningside

The dependable yield of the Passaic Formation aquifer system beneath this area is exceeded by the existing water-supply demands of these homes. Installation of sewers should not result in adverse impacts to the aquifer system during most years but is likely during drought since demands exceed drought recharge. Connection to the regional SBRSA system would most likely result in aquifer water levels declining during drought with possible slow recovery during 22 subsequent years of normal precipitation. Given the small difference between demands and normal year recharge for this area, provision of public water to eliminate local groundwater withdrawals would further reduce the potential for adverse impacts. (p21)

Penn View Heights

The dependable yield of the Passaic Formation aquifer system beneath this area is exceeded by the existing water supply demands. Installation of sewers should not result in adverse impacts to the aquifer system during

[11] New septic systems exist in each Area of Concern.

most years but are very likely during drought since demands exceed drought recharge. Even during most years, there is little groundwater recharge in reserve beneath this proposed sewer service area after water is withdrawn to meet demands and therefore, the potential exists for adverse impacts resulting from lowered water levels. (p23)

Timberlane

While the dependable yield of the aquifer beneath this proposed sewer service area is exceeded by the water-supply demands, installation of sewers within this area is unlikely to result in adverse impacts to the aquifer system since these demands are less than recharge during drought and years of normal precipitation. However, there is little margin of safety between the volume of water recharging the aquifer and the daily demands during drought and therefore, monitoring of water levels and reduction in demands early in a drought may be warranted. (p22)

Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Due to the location within the Millstone/Raritan River watershed, any public sewer system serving the Areas of Concern known as Morningside, Penn View Heights, and Timberlane should discharge into the SBRSA facilities serving Pennington Borough. In order to effect this connection, sewer infrastructure would have to follow a long circuitous route around the northern and eastern perimeter of Pennington Borough, and the environmentally sensitive corridor along Stony Brook. Given Pennington Borough's stated position, its approval for sewer service for the Ingleside Area, or lack thereof, would affect the ultimate approval required by SBRSA.

Original consideration for public sewer service to the Morningside Areas of Concern was in direct response to a petition filed with the Hopewell Township Committee during the Trenton Sewer proposal. Testimony at that time, suggested the petition was based upon existing groundwater contamination in the area. This area is underlain by a water table that has been contaminated and, although it is only indirectly related to the

topic of wastewater, it is recommended this area be considered for public water service[12].

2. The Area of Concern known as Tree Streets should remain as a designated SBRSA public sewer service area. This area is presently designated as an SBRSA public sewer service area.

Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Due to its location within the Millstone/Raritan River watershed, any public sewer system serving this Area of Concern should discharge into the SBRSA facilities serving Pennington Borough. In order to effect this connection, sewer infrastructure would have to follow a long circuitous route around the eastern perimeter of Pennington Borough, and the environmentally sensitive corridor along Stony Brook and its tributaries.

The M^2 Associates, Inc. evaluation for groundwater impacts indicates that public sewer installation in the Tree Streets area will not require the installation of public water:

Tree Streets

Since this proposed sewer service area appears fully built out, it is unlikely that demands will increase and therefore, the installation of sewers is unlikely to result in adverse impacts to the aquifer system. Interconnection of this proposed sewer service area to the SBRSA system is unlikely to result in adverse lowering of water levels within the aquifer system. (p24)

As public water is not required, the infrastructure costs remain as stated in the April 2001 Van Cleef Engineering Associates report. Based upon this report, the cost to provide public sewers to this Area of Concern may

[12] In 1989 an application was made to bring in Trenton Water to this area but the application was never approved by NJDEP.

exceed the cost of septic system repairs. Additionally, connecting lots with functioning septic systems to a public sewer system, or connecting lots where significant expenditure has already occurred to construct new mounded septic systems, will not be voluntary. A mandate for such connections might be required to support the public sewer system construction financing. This hardship might be avoided by encouraging the use of alternative septic system technologies on an as-needed basis.

This Area of Concern is located within an existing public sewer service area, it is recommended there be no change in the designation status. Conditions could change that will make public sewers an affordable alternative. However, until such time, individual on-lot septic systems should remain as the primary means for wastewater disposal in this Area of Concern.

3. It is recommended the Area of Concern known as North Main Street receive public sewers.

North Main Street is an area that is primarily zoned non-residential and over 50% of its land area is comprised of lands owned by the Borough of Pennington. This area is not presently designated as a public sewer service area. The Borough of Pennington has presented plans for the development of public facilities on its property and has stated that those facilities will require public sewer service. The remainder of the land is developed with commercial structures. There is one residential dwelling located on a small lot adjacent to a Category I waterway as defined by NJDEP.

Category I waterways are a significant environmental resource. Public sewers to this small area would eliminate any potential source of non-point source pollution.

Public water supply is not required to support public sewers in this area:

North Main Street

The water-supply demands of this proposed sewer service area do not exceed the dependable yield, drought recharge, or normal year recharge. Installation of sewers in this area provided that demands are not increased is unlikely to result in adverse impacts to the underlying aquifer system. (M^2 Associates, Inc., p23)

Pennington Borough has indicated that it is not interested in extending any utility services beyond its corporate boundaries. Due to its location within the Millstone/Raritan River watershed, any public sewer system serving this Area of Concern should discharge into the SBRSA facilities serving Pennington Borough. In order to effect this connection, sewer infrastructure would have to follow a long circuitous route around the northern perimeter of Pennington Borough, and the environmentally sensitive corridor along Stony Brook and its tributaries. Given Pennington Borough's stated position, its approval for sewer service for the North main Street area, or lack thereof, would affect the ultimate approval required by SBRSA. However, because Pennington Borough is a major land owner in this area, such approval might be possible or, in the alternative, annexation of this area to Pennington Borough might be a consideration if sewer service to this area is deemed necessary.

4. Pennington Point West is an Area of Concern where there is ongoing planning for affordable housing. This area is not presently designated as a public sewer service area. Current zoning anticipates high density housing on this tract. A lawsuit filed by the owner in 2003 sought public sewer service to this tract. This lawsuit ended with Pennington Borough taking a formal position that it will not extend any utilities outside of the Borough boundaries and the Court did not order such extension.

High density development requires some form of public wastewater disposal[13]. If the ultimate density for this area exceeds that permitted by Hopewell Township ordinances for single family lots with wells and septic systems, public sewer service is recommended. In the absence of such planning, this area should remain with wastewater disposal being provided by individual on-site septic systems, as presently exists.

Public sewer service to high density development as permitted by the current ordinances for Pennington Point, also requires the installation of public water:

Pennington Point

The water-supply demands of this planned development will far exceed the dependable yield, drought recharge, and even recharge during years of normal precipitation. Using an onsite well or possibly, a local public water service and the installation of sewers will very likely result in adverse impacts to the aquifer and interrelated surface-water systems. (M^2 Associates, Inc., p22)

5. The Mount Rose Area of Concern should be designated for public sewer service by SBRSA. This area is not presently designated as a public sewer service area.

This area is a concentration of small lots underlain by geologic and soil formations which severely limit the ability to dispose wastewater on-site. Reconstruction of septic systems serving these lots may not be possible or may require the displacement of designated or potentially historic structures. The use of alternative technologies for septic systems in this area may be quite difficult due to the combination of underlying geologic and soil formations

[13] Public sewers discharging to the SBRSA or public sewers discharging to groundwater.

It has been concluded that public sewer construction in this area will impact the groundwater table:

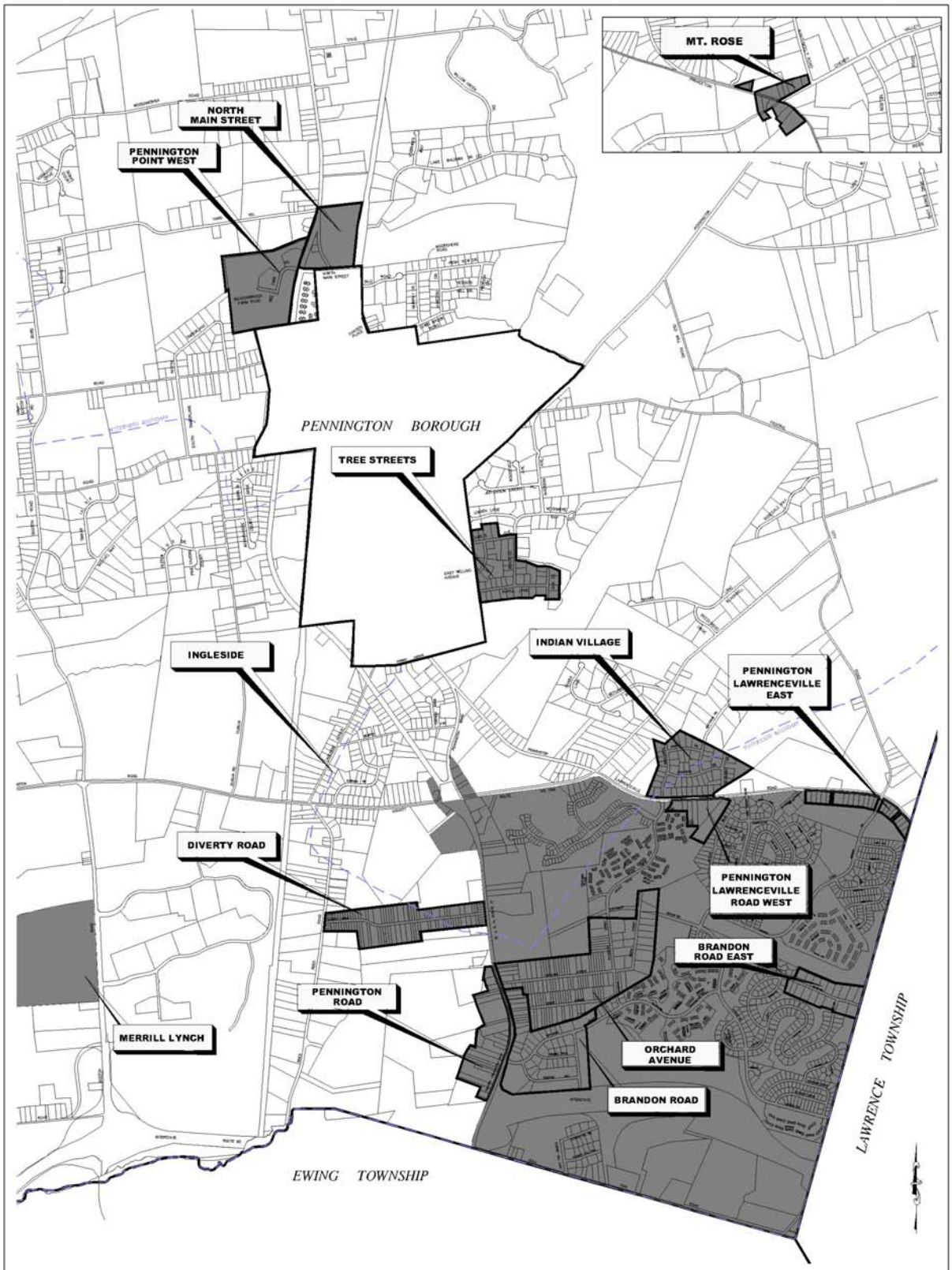
Mt Rose

"…since water-supply demands exceed the dependable yield, drought recharge, and normal year recharge, the installation of sewers is likely to result in the lowering of water levels within the underlying aquifer system. Therefore, if sewers are installed, public water is likely necessary to eliminate or reduce demands on this aquifer system and prevent or reduce potential adverse impacts." (M^2 Associates, Inc., p24)

Public water to portions of Mount Rose will be provided by a water main to be constructed in the future as part of a franchise agreement between the Hopewell Township Committee and Elizabethtown Water Company. The lots in Mount Rose are uniquely located along the path of the water main, which is expected to be constructed by others. Connections to this water main can be made directly by the Mount Rose lots without significant cost to the property owner.

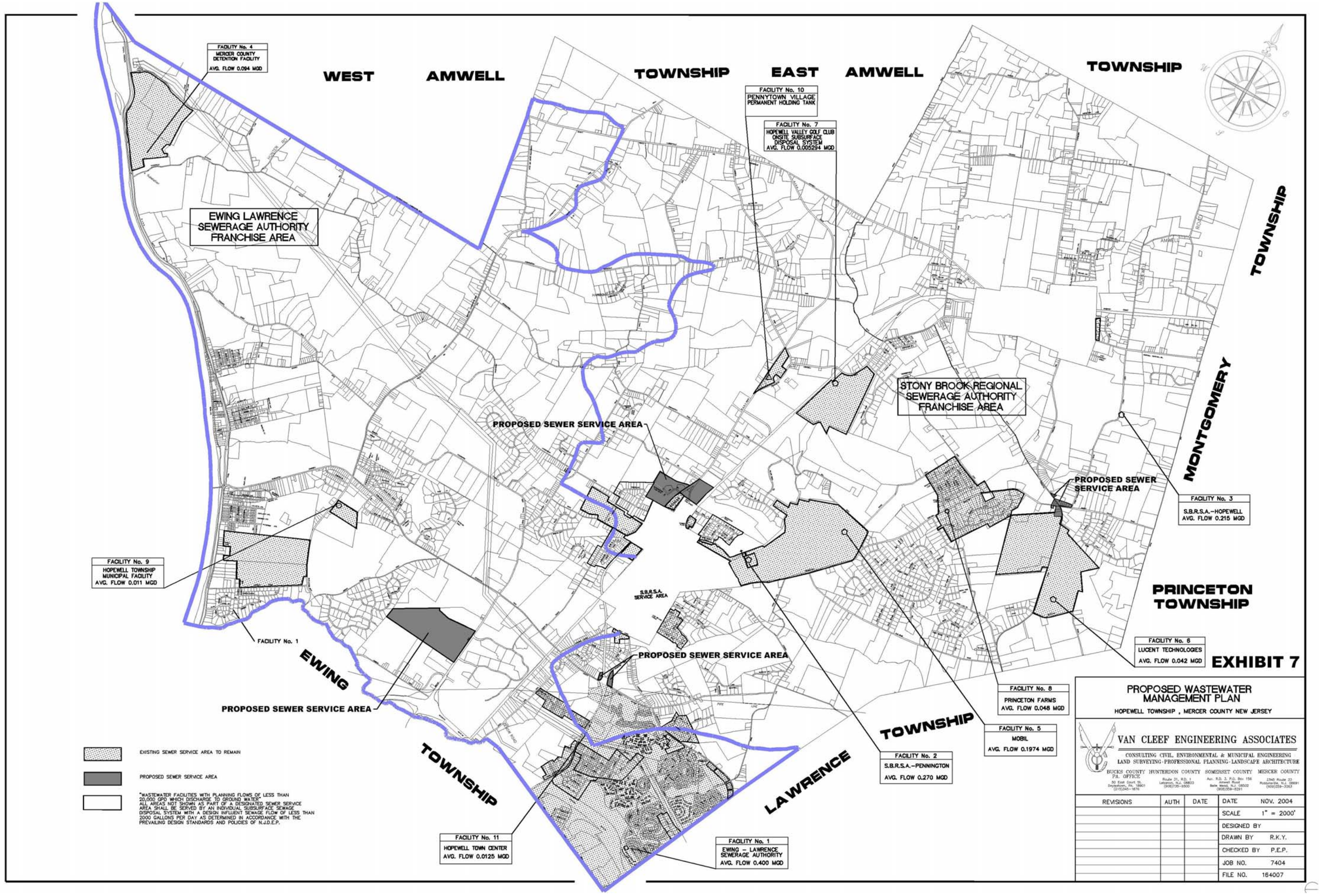
Public sewer for Mount Rose should not be considered until public water is available or unless other groundwater recharge measures can be implemented simultaneously due to the groundwater export degradation associated with public sewer installation.

It is recommended that wastewater disposal for any area of Hopewell Township not specifically recommended in this Part III for public sewer service, remain serviced by individual on-site septic systems. Exhibit 6 is a graphical depiction showing the recommendations for the Areas of Concern. Exhibit 7 is a graphical depiction of the Wastewater Management Plan recommended for the entire Hopewell Township.



PROPOSED
SEWER SERVICE AREAS

DATED: NOVEMBER 10, 2004


WEST AMWELL TOWNSHIP
EAST AMWELL TOWNSHIP
EWING TOWNSHIP
LAWRENCE TOWNSHIP
MONTGOMERY TOWNSHIP
PRINCETON TOWNSHIP
FACILITY No. 4
MERCER COUNTY DETENTION FACILITY
AVG. FLOW 0.094 MGD
EWING LAWRENCE SEWERAGE AUTHORITY FRANCHISE AREA
FACILITY No. 10
PENNYTOWN VILLAGE PERMANENT HOLDING TANK
FACILITY No. 7
HOPEWELL VALLEY GOLF CLUB ONSITE SUBSURFACE DISPOSAL SYSTEM
AVG. FLOW 0.005294 MGD
STONY BROOK REGIONAL SEWERAGE AUTHORITY FRANCHISE AREA
PROPOSED SEWER SERVICE AREA
FACILITY No. 3
S.B.R.S.A.–HOPEWELL
AVG. FLOW 0.215 MGD
FACILITY No. 9
HOPEWELL TOWNSHIP MUNICIPAL FACILITY
AVG. FLOW 0.011 MGD
FACILITY No. 1
S.B.R.S.A. SERVICE AREA
PROPOSED SEWER SERVICE AREA
PROPOSED SEWER SERVICE AREA
FACILITY No. 6
LUCENT TECHNOLOGIES
AVG. FLOW 0.042 MGD
FACILITY No. 8
PRINCETON FARMS
AVG. FLOW 0.048 MGD
FACILITY No. 5
MOBIL
AVG. FLOW 0.1974 MGD
FACILITY No. 2
S.B.R.S.A.–PENNINGTON
AVG. FLOW 0.270 MGD
FACILITY No. 11
HOPEWELL TOWN CENTER
AVG. FLOW 0.0125 MGD
FACILITY No. 1
EWING – LAWRENCE SEWERAGE AUTHORITY
AVG. FLOW 0.400 MGD
EXISTING SEWER SERVICE AREA TO REMAIN
PROPOSED SEWER SERVICE AREA
"WASTEWATER FACILITIES WITH PLANNING FLOWS OF LESS THAN 20,000 GPD WHICH DISCHARGE TO GROUND WATER" ALL AREAS NOT SHOWN AS PART OF A DESIGNATED SEWER SERVICE AREA SHALL BE SERVED BY AN INDIVIDUAL SUBSURFACE SEWAGE DISPOSAL SYSTEM WITH A DESIGN INFLUENT SEWAGE FLOW OF LESS THAN 2000 GALLONS PER DAY AS DETERMINED IN ACCORDANCE WITH THE PREVAILING DESIGN STANDARDS AND POLICIES OF N.J.D.E.P.
EXHIBIT 7
PROPOSED WASTEWATER MANAGEMENT PLAN
HOPEWELL TOWNSHIP , MERCER COUNTY NEW JERSEY
VAN CLEEF ENGINEERING ASSOCIATES
CONSULTING CIVIL, ENVIRONMENTAL & MUNICIPAL ENGINEERING
LAND SURVEYING · PROFESSIONAL PLANNING · LANDSCAPE ARCHITECTURE
BUCKS COUNTY HUNTERDON COUNTY SOMERSET COUNTY MERCER COUNTY
PA. OFFICE
30 East Court St. Doylestown, PA. 18901 (215)345-1676
Route 31, P.O. 1 Lebanon, N.J. 08833 (908)735-9500
Aur. R.D. 3, P.O. Box 156 Amwell Road Belle Mead, N.J. 08502 (908)359-5251
2340 Route 33 Robbinsville, N.J. 08691 (609)259-3363
REVISIONS | AUTH | DATE
DATE NOV. 2004
SCALE 1" = 2000'
DESIGNED BY
DRAWN BY R.K.Y.
CHECKED BY P.E.P.
JOB NO. 7404
FILE NO. 164007

Appendix A

Onsite Wastewater Treatment Systems

Model Management Ordinance

Since 1990 the Department has maintained the regulations which govern the Standards for Individual Subsurface Sewage Disposal Systems at N.J.A.C. 7:9A. Although these Standards generally guide the regulated community through the process of locating, designing and constructing septic systems, the Standards do address the need for the proper operation and maintenance of those systems. However, it is difficult to ensure that these systems are properly operated or maintained without a mechanism to oversee systems after the certification of compliance is issued. This is where management of systems becomes important. The purpose of this Model Management Ordinance is to provide an example to Boards of Health of what could be incorporated into local ordinance to allow them to begin managing systems within their borders.

The model ordinance is comprehensive and should not discourage anyone from taking a step back and ask "What level of management is appropriate for my area?" It is not the intention of the Department to suggest that every town needs to adopt every facet of the model ordinance. This is a dynamic document which can be adopted in whole, in part or in some variation to suit the needs of the jurisdiction.

Some areas have already begun septic management and could use ideas within the model ordinance to expand their program a little or a lot. Areas without a model ordinance could adopt some basic requirements to allow for the use of technology to fix malfunctioning systems in problematic areas. Others still could want to incorporate septic management of all their systems to begin assessing the local situation and allow for access to low interest loan programs to help their citizens repair malfunctioning systems. The point is that there are many, many levels and methods of septic management and by providing this model document, the Department hopes to inform communities in New Jersey and promote the possibilities and benefits associated with septic management.

The model ordinance incorporates ideas, format and structure from existing model ordinance documents such as the Pinelands Commission pilot program for nitrate reducing technologies and the Association of New Jersey Environmental Commissions model ordinance for septic maintenance and USEPA's voluntary guidelines for decentralized system management. The Department has expanded on those documents and developed this model ordinance to provide a model document which shows many of the conventional thoughts on septic management.

After reading this document, you should feel free to contact the Department to discuss the possibilities for your area. Please contact us at (609) 633-7021 or at CH199@dep.state.nj.us and we will be happy to address your concerns and questions.

(INSERT NAME OF JURISDICTION) BOARD OF HEALTH

AN ORDINANCE TO AMEND THE CODE OF THE BOARD OF HEALTH OF THE (INSERT NAME OF JURISDICTION) TO CREATE ESTABLISH REQUIREMENTS FOR THE MANAGEMENT OF ONSITE WASTEWATER TREATMENT SYSTEMS.

WHEREAS the Board of Health of the (Name of jurisdiction) desires to implement an onsite wastewater management program in accordance with the guidelines from the United States Environmental Protection Agency and in cooperation with the New Jersey Department of Environmental Protection.

BE IT ORDAINED by the Board of Health of the (INSERT NAME OF JURISDICTION) in the County of (Insert Name of County) and State of New Jersey as follows:

SECTION ONE

A. FINDINGS

It is found and declared that:

1. Residential and non-residential onsite wastewater treatment systems are in use within the (insert name of jurisdiction).

2. Onsite wastewater treatment systems, similar to any other physical structure, require ongoing maintenance and proper operation to ensure proper functionality.

3. When existing onsite wastewater treatment systems have malfunctioned even when the systems have been designed, constructed, and sited in accordance with applicable standards, largely due to lack of proper operation and maintenance. These malfunctions have been shown to adversely affect public health and welfare and the environment. Such systems constitute a potential source of pollution of ground and surface waters, contamination of potable water supplies, foul odors, nuisance problems and other hazards to public health.

4. It is determined to be in the interest of public health and the environment, safety and welfare to establish provisions to regulate the management of such systems to protect the public and environment against system failures and resultant pollution.

5. The licensing provisions contained in this Ordinance are necessary to protect the public health safety and welfare and it is therefore necessary to exceed the provisions contained in N.J.A.C. 7:9A-1 et seq. This is hereby declared to be a "special ordinance" in accordance with N.J.A.C. 7:9A-3.1(b) and shall be forwarded to the New Jersey Department of Environmental Protection within 10 days of adoption.

6. In order to enable the use of onsite system technology that enhances treatment of wastewater, management and maintenance are a necessity.

7. Economic benefits to all onsite system owners by improving the quality of wastewater management, will extend the serviceable life of onsite systems, preventing or postponing the need for costly repairs or replacements.

B. PURPOSE

In addition to the purposes set forth in N.J.A.C. 7:9A-1.1, it is the purpose of this ordinance:

1. To establish a management program for residential and non-residential onsite wastewater treatment systems in the (insert name of jurisdiction) in order to ensure the proper operation and maintenance of such systems. This ordinance requires all onsite wastewater treatment systems subject to local regulation to be satisfactorily operated, inspected and maintained on a regular basis in order to minimize future malfunctions of such systems.

2. To regulate onsite wastewater treatment systems in (insert name of jurisdiction) to protect public health and welfare and the environment. This includes a means of educating onsite wastewater treatment system owners/operators, as defined herein, in the characteristics of such systems and the proper procedures for altering, operating and maintaining them.

3. To develop a management program to maintain records regarding onsite wastewater treatment systems in the program area.

4. To promote and assure the proper use and maintenance of residential and non-residential onsite wastewater treatment systems.

SECTION TWO

TITLE.

This Ordinance shall be known as the Onsite Wastewater Treatment System Management Ordinance of the (insert name of jurisdiction.)

SECTION THREE

DEFINITIONS.

All definitions given in Subchapter 2 (N.J.A.C. 7:9A-2.1) of the New Jersey Department of Environmental Protection (NJDEP) Standards for the Construction of Individual Onsite wastewater treatment Systems, N.J.A.C, 7:9A-1.1 et seq., and any amendments thereto ("NJDEP Regulations") are hereby incorporated into this article, with the following additions:

ADVANCED WASTEWATER TREATMENT OR DISPOSAL TECHNOLOGY- Any component or system, which is a part of an individual subsurface sewage disposal system, that is employed to reduce levels of pollution or convey pollutants to the subsurface environment that is not addressed or is not designed in strict conformance with the requirements of N.J.A.C. 7:9A.

BOARD OF HEALTH- The Board of Health of the (insert name of jurisdiction)

EDUCATION PROGRAM- An educational program prepared and administered by the Board of Health regarding the function of onsite wastewater treatment systems and the proper procedures for the operation and maintenance of such systems. The educational program shall be performed in accordance with the minimum requirements of N.J.A.C. 7:9A-3.14.)

ENFORCING OFFICIAL- The (Insert name of officer) of the (insert jurisdiction) or his designee.

LICENSED SEPTIC SLUDGE REMOVAL OPERATOR- Any person, firm or corporation which has been duly examined by the enforcing official and found qualified to pump onsite wastewater treatment systems, and who has been properly registered with all appropriate local, county and state authorities.

MANAGEMENT DISTRICT- (This definition is necessary if the ordinance is to be applied only to a portion of a jurisdiction. The definition must be developed locally and specifically describe the geographic area to be subject to the ordinance.)

NON-RESIDENTIAL- Any realty improvement other than a single family home. Such systems include but are not limited to those systems defined in N.J.A.C. 7:9A-1.8(C)2. Typical examples include but are not limited to: commercial buildings, restaurants, food establishments, commercial/residential mixed uses, and systems servicing multiple units.

ONSITE WASTEWATER TREATMENT SYSTEM- An individual subsurface sewage disposal system as referred to in N.J.A.C. 7:9A. A septic system is one example.

OPERATOR'S LICENSE- A license issued to an applicant pursuant to this ordinance for the operation of an onsite wastewater treatment system.

OWNER/OPERATOR- The person who owns or leases the realty improvement which is served by a residential or non-residential onsite wastewater treatment system and/or the person who uses or operates said system. The owner of the reality and the operator of the system, if different, are jointly and severally liable for the obligations imposed by this ordinance.

PLOT PLAN - A sketch showing the type (if known) and location of the onsite wastewater treatment system servicing the property, as well as the location and type of any on-site water supply. All plots plans shall be drawn to scale and list the dimensions used.

RETAIL FOOD ESTABLISHMENT- Any fixed or mobile restaurant; coffee shop; cafeteria; short order cafe; luncheonette; grill; tearoom; sandwich shop; soda fountain; tavern; bar; cocktail lounge; night club; roadside stand; industrial feeding establishment; private, public, or nonprofit organization, institution, or group preparing, storing or serving food; catering kitchen; commissary; box lunch establishment; retail bakery; meat market; delicatessen; grocery store; public food market, or any similar place in which food or drink is prepared for retail sale or service on the premises or elsewhere, and any other retail eating or drinking establishment or operation where food is served, handled or provided for the public with or without charge.

SYSTEM- An individual or non-individual onsite wastewater treatment system, including all of the component parts thereof.

SECTION FOUR

SCOPE, APPLICABILITY AND EXEMPTIONS

SCOPE. The owner and/or occupant of any realty improvement serviced by an onsite wastewater treatment system located in the Management District shall be subject to all of the requirements of this chapter.

APPLICABILITY. No person within the (insert name of jurisdiction) area shall operate a residential or non-residential onsite wastewater treatment system unless such construction, installation, alteration, maintenance or operation is in accordance with all applicable sanitary regulations and this ordinance.

EXEMPTIONS. Any system not in operation for a period of six (6) months or longer shall be exempted from this Ordinance. The Board of Health shall require an owner or operator of a system seeking exemption under this section to submit proof in the form acceptable to the Board to qualify for this exemption.

SECTION FIVE

LICENSE TO OPERATE

A. REQUIREMENT FOR LICENSE: On and after (insert effective date) no owner or occupant of a property in the (insert name of jurisdiction) upon which an individual or non-individual onsite wastewater treatment system is located shall operate or otherwise use a system unless a currently valid license to operate the system has been issued by the Board of Health in accordance with the schedule herein to the owner of the property on which the system is located.

1. The Board of Health or its designee may issue a license to operate and distribute educational information relative to the proper operation and maintenance practices to the owner and occupant of a property upon one or more of the following events:

a. Issuance of a certificate of compliance for any system using advanced wastewater treatment or disposal technology(ies);

b. Issuance of a certificate of compliance for a new system;

c. Issuance of a certificate of compliance for the alteration of a system;

d. Upon the sale or transfer of a premises;

e. For all existing individual and non-individual sewerage disposal systems in accordance with the following schedule:

Option 1- Immediate effective date for all/some systems
(i.e., within 90 days of the effective date of this ordinance)

Option 2- Deferred effective date for all/some systems
(i.e., within 2 years of the effective date of this ordinance)

Option 3- Phased in date for existing systems
(i.e., Systems constructed prior to 1990 within 1 year

Systems constructed prior to 2000 but after 1990 within 2 years
Systems constructed since 2000 within 3 years)

2. All licenses issued pursuant to this section shall be on a form provided by the Board of Health. Once issued, a license shall be transferable upon change of ownership or occupancy of the premises for which the license has been issued. A fee, as provided in section eleven of this ordinance, shall accompany each application for a license or renewal. The initial application for a license shall include a plot plan showing the location of the septic system (both the tank and the disposal area) and of any private water source on the property. The plot plan shall also include the general location, if known, of any wells, and septic systems on adjoining properties.

B. EXPIRATION/RENEWAL. The license to operate shall expire three (3) years after issuance. The Board of Health shall notify the licensee or its designee at least (INSERT REASONABLE TIME) before the license expires and shall be directed to apply for a renewal of the license. The renewal notice shall include educational materials relative to the proper operation and maintenance practice for such systems in accordance with N.J.A.C. 7:9A-3.14.

1. Requirements for Renewal: The Board of Health or its designee shall not renew the license unless the licensee has submitted the following to the Board of Health or its designee:

Submission of a Septic System Inspection Report on a form approved by the Board of Health indicating that the system has been maintained, is not in need of pumping, and is functioning in conformance with the requirements of this chapter. Said form shall be prepared, completed and certified by:

A staff member of the Board of Health;

A licensed professional engineer;

A licensed health officer or sanitarian;

(Insert local option if, any); or

Other person acceptable to the Board of Health.

Any such inspection under this section, shall include but not be limited to the following:

A complete walkover of the septic field;

Measurement of the effluent in inspection ports, (if any);

Pumping of the septic tank(s); and

An inspection of baffles and internal integrity of the tank.

Any such inspection shall be conducted in accordance with any NJDEP approved protocol, guidance or regulations.

Any system which incorporates advanced wastewater treatment technology must submit verification annually, following the initially required warranty period, that a valid maintenance contract is currently in effect for the subject system.

If the inspection indicates that pumping of the treatment tank or other maintenance, alteration, or repair of the system is necessary, the Board of Health shall issue a notice of pumping, alteration or repair. Following pumping or other maintenance, alteration or repair of the system, the owner /operator shall submit to the Board of Health a completed alteration/pumping report prepared and signed by the person performing the required work.

No person shall test an onsite wastewater treatment system in a manner that will adversely affect the functioning of the system. Hydraulic loading shall not be applied in excess of the design flow capacity. All solids shall have been removed from the septic tank and/or grease trap prior to testing unless the hydraulic loading is applied at a point that will bypass the septic tank and/or grease trap.

2. Renewal Term: Any license shall be renewed for a period of three years.

As a condition precedent to a license renewal, the owner/operator shall pay the fee required by section eleven herein.

C. SUSPENSION OF LICENSE: The Board of Health or its designee may suspend or revoke the license to operate in the following circumstances:

1. It has been determined that the system is malfunctioning based upon criteria provided for in N.J.A.C. 7:9A-3.4(a) and the licensee fails to take immediate steps to correct said malfunction as directed by the Board of Health or its designee;

2. The owner or occupant of the premises served by the system violates any provision of this chapter with respect to operation and maintenance of the system; or

3. The owner or occupant of the premises served by the system denies the right of entry to the Board of Health or its designee, or to the New Jersey Department of Environmental Protection (NJDEP), as required in N.J.A.C. 7:9A-3.19, or in any way interferes with the administration or enforcement of this ordinance.

4. Operation of an onsite system under a suspended license shall be subject to penalties under Section 12 of this ordinance.

D. MODIFIED TERM OF LICENSE: The Board of Health may on its own motion, upon notice and opportunity to the property owner or operator for a hearing, or upon application of a property owner or system operator, alter the time period of a license to operate.

The Board of Health may consider the following factors in determining that a more frequent licensing renewal or pumping/inspection schedule may be necessary:

1. Inadequate size of the septic tank or disposal field;

2. The fact that the existing system may be a cesspool;

3. The age of the system;

4. Past history of malfunction or other non-compliance;

5. Location of the existing system in a flood hazard, wetland area, wetland transition zone or other environmentally sensitive area as defined in (insert reference);

6. Proximity of the system to a well or water body.

SPECIAL LICENSING PROVISIONS FOR RETAIL FOOD HANDLING ESTABLISHMENTS:

The license to operate for a retail food-handling establishment shall expire one year after issuance or one year from the date of the documented inspection, whichever comes first. The owner of said establishment shall have the right to apply to the Board of Health for a longer license renewal period, but in no case shall the license renewal period exceed three years. In considering any such application the Board of Health may consider the establishment's demonstrated compliance history of with management of the system.

SECTION SIX

STANDARDS ON THE USE OF ONSITE WASTEWATER TREATMENT SYSTEMS

A. GENERAL

The onsite wastewater treatment system shall be used only for the disposal of sanitary wastes of the type and origin provided for in the approved engineering design. No permanent or temporary connection shall be made to any source of wastes, waste water or clean water other than those plumbing fixtures which are normally present within the type of facility indicated in the approved engineering design.

Drainage from basement floors, footings or roofs shall not enter the sewage disposal system and shall be diverted away from the area of the disposal field.

As set forth in N.J.S.A. 58:10A-17, no person shall use or introduce or cause any other person to use or introduce into any sewage water disposal system any sewage system cleaner containing any restricted chemical material.

Disposal of materials containing toxic substances into a onsite wastewater treatment system is prohibited. Materials containing toxic substances include, but are not limited to, waste oil (other than cooking oil), oil based or acrylic paints, varnishes, photographic solutions, pesticides, insecticides, paint thinners, organic solvents or degreasers and drain openers.

Inert or non-biodegradable substances should not be disposed of in the onsite wastewater treatment system. Such substances include, but are not limited to, disposable diapers containing plastic, cat box litter, coffee grounds, cigarette filters, sanitary napkins, facial tissues and wet-strength paper towels.

Large quantities of cooking greases or fats shall not be discharged into systems not equipped with a grease trap designed and constructed as prescribed in N.J.A.C.7:9A-8.1.

Major plumbing leaks shall be repaired promptly to prevent hydraulic overloading of the system.

Vehicle traffic and vehicular parking shall be kept away from the aspects of the system, unless the system has been specifically designed to support vehicular traffic.

Swimming pools and additional building structures shall be setback according to the requirements of N.J.A.C. 7:9A-4.3.

Water softener backwash and HVAC condensate may be disposed into the onsite system in accordance with N.J.A.C. 7:9A-12.1. OR Although water softener backwash may be disposed into the onsite system in accordance with N.J.A.C. 7:9A-12.1, to reduce hydraulic loading to the system and preserve the serviceability of the system, HVAC condensate and water softener backwash is required to be discharged to a separate seepage pit designed in accordance with N.J.A.C. 7:9A-11.

B. DISPOSAL FIELD MAINTENANCE.

1. The area of the disposal field shall be kept free of encroachments from decks, pools, sprinkler systems, driveways, patios, accessory buildings, additions to the main building and trees or shrubbery whose roots may disrupt the system

2. Grading shall be maintained in a condition that will promote run-off of rainwater away from the system and prevent ponding.

3. All drainage from roofs, footing drains, ditches or swales shall be diverted away from the system.

4. Vegetation shall be maintained to prevent soil erosion.

C. ABANDONED SYSTEMS.

When it is necessary to abandon a system or components of a system, all septic tanks, dosing tanks, seepage pits, dry wells and cesspools which are to be abandoned shall be emptied of wastes and removed or filled completely with sand, gravel, stones or soil material in a manner which is acceptable to the Board of Health or its designee.

Except when done as part of or in conjunction with an alteration, a permit must be obtained from the Board of Health prior to abandoning a septic system or component of a septic system.

D. ADDITIONAL INSPECTION AND MAINTENANCE REQUIREMENTS FOR SYSTEMS WITH GREASE TRAPS.

1. Grease traps or other grease removal systems shall be inspected and cleaned out at a frequency adequate to prevent the volume of grease from exceeding the grease

retention capacity. Grease shall be removed whenever seventy-five percent (75%) of the grease retention capacity has been reached.

2. Pumping of grease traps/removal systems shall be performed by a solid waste hauler registered with the NJDEP in accordance with the requirements of N.J.A.C. 7:26-3.1

3. Equipment used in the pumping of grease traps/removal systems shall meet the following requirements:

Mobile tanks shall be securely mounted on trucks or trailers, shall be watertight and provided with a leak-proof cover and shall be vented to permit the escape of gases but not the liquid or solid contents of the tank.

Pumps and hoses shall be maintained and operated in a condition that will prevent the leakage of sewage.

Equipment shall be available to permit accurate measurement of the volume of grease in relation to the grease retention capacity of the grease trap.

Pumping of grease traps shall be conducted in such a manner that the entire contents of the grease trap including both liquids and solids are removed.

Pumping shall be carried out in a manner that will prevent spillage of sewage onto the ground. If any spillage occurs, the solid portion shall be immediately removed and disposed of in a sanitary manner and the area of the spill shall be disinfected using a suitable chlorine-bearing compound.

Grease and other waste materials removed from grease traps shall be disposed of in accordance with the requirements of the Statewide Sludge Management Plan adopted pursuant to N.J.S.A. 13:1E-1 et seq. and N.J.S.A. 7:11A-1 et seq., as well as any other applicable State or local rules, regulations, ordinances or directives.

E. MAINTENANCE OF DOSING TANKS.

Dosing tanks and associated pumps, siphons, switches, alarms, electrical connections and wiring shall be maintained in proper working order.

Any solids that accumulate in the dosing tank shall be removed and disposed of in a sanitary manner.

F. ADVANCED TECHNOLOGY

Advanced wastewater technology, which is alternative to the standard technology allowed by N.J.A.C. 7:9A-1 et seq., may be (is)required by the Board of Health to repair/alter an existing, malfunctioning septic systems in cases where site constraints do not allow for a repaired/altered system that is fully compliant with the requirements of N.J.A.C. 7:9A-1 et seq. {and/or}

Advanced wastewater technology, which is in addition to the standard technology allowed by N.J.A.C. 7:9A-1 et seq., may be (is) required by the Board of Health for all new systems to provide additional wastewater treatment to sanitary sewage for the further protection of human health and the environment. Any advanced technology

must be provided in addition to a standard system as required by N.J.A.C. 7:9A-1 et seq.

Each system which incorporates advanced technology shall incorporate the following conditions:

1. Alternative wastewater treatment systems that are equipped with automatic dialing capability or other automatic notification to the manufacturer, or its agent, in the event of a mechanical malfunction shall be covered by a minimum three-year warranty that can not be cancelable and is renewable. This warranty must include provisions for the manufacturer or its agent to inspect the system at least once a year and undertake any maintenance or repairs determined to be necessary during any such inspection or as a result of observations made at any other time;
2. Alternative wastewater treatment technology which do not include automatic notification capabilities described in paragraph 1., above, shall be covered by a minimum five-year warranty that can not be cancelable and is renewable and which includes provisions for the manufacturer or its agent to inspect the system at least once every three months (quarterly) and undertake any maintenance or repairs determined to be necessary during any such inspection or as a result of observations made at any other time;
3. All alternative wastewater disposal systems shall be covered by a minimum two-year warranty that can not be cancelable which includes provisions for the manufacturer or its agent to inspect the system at least once every six months to ensure the system was properly installed and is functioning properly. The warranty shall also include provisions that include all costs of repairing any problems associated with the inadequate function of the disposal system.
4. Any property served by an onsite wastewater treatment system, which utilizes advanced wastewater treatment and/or disposal technology, shall submit with the appropriate fee, on an annual basis, proof that the renewable warranty has been extended for the proper inspection and maintenance of the advanced technology. Any system that does not renew its warranty shall be deemed a nuisance pursuant to this ordinance, subject to a separate violation for every [day] the maintenance contract is not renewed.
5. The property owner shall provide notification of the presence and requirements of the advanced technology that exists on the property.

   Example 1: Provide any prospective purchaser of the property, prior to entering into any contract for real estate transfer, of the manufacturer's owner's manual for the technology and a copy of the requirements for the system owner listed in this ordinance.

   Example 2: Record with the deed to the property a notice that identifies the technology, acknowledges the owner's responsibility to operate and maintain the technology in accordance with manufacturer's specifications, and grants

access to the local board of health and its agents for inspection and/or sampling.

G. ADVANCED GREASE REMOVAL

Food service facilities that experience a malfunction must install advanced grease removal systems as part of the alteration to that system to correct the malfunction. Advanced grease removal systems must be certified by a New Jersey Licensed Professional Engineer to meet the following minimum standards: Total Fats, Oils and Grease (FOG) level of 70 mg/l and a 5-day biochemical oxygen demand (BOD_5) of 140 mg/l prior to discharging to any other standard septic system components, including any passive grease trap. All requirements of D., above, shall be met.

SECTION SEVEN

REMOVAL OF SEPTIC TANK SLUDGE

A. Any person, partnership, firm or corporation who empties, relieves or pumps out all or a portion of an individual or non-individual sewage disposal system within the (insert jurisdiction) shall first apply to the Board of Health to become a licensed septic sludge removal operator. The applicant shall have the following qualifications: (Insert qualifications.) Any such license shall be for a term of (insert time period) and shall be subject to the payment of a fee as provided in section eleven of this ordinance.

B. Prior to emptying, relieving or pumping out all or a portion of any individual or non-individual onsite wastewater treatment system within the (insert name of jurisdiction), the licensed septic sludge removal operator shall obtain a septic sludge removal permit from the Board of Health.

C. The septic sludge removal operator shall complete all information on the septic sludge removal permit and deliver one (1) copy to the property owner and one copy to the Board of Health within 72 hours of the time that the individual or non-individual sewage disposal system is pumped. Failure to deliver said report within the required time frame shall be considered to be a violation of this ordinance.

In addition, to the license required under section a above, the pumping of septic tanks shall be performed by a solid waste hauler registered with the NJDEP in accordance with the requirements of N.J.A.C. 7:26-3(c).

The Board of Health may suspend or refuse to renew the license of any septic sludge removal operator who fails to comply with this ordinance.

Equipment used in the pumping of septic tanks shall meet the following requirements:

1. Mobile tanks shall be securely mounted on trucks or trailers, shall be watertight and provided with a leak-proof cover and shall be vented to permit the escape of gases but not the liquid or solid contents of the tank.

2. Pumps and hoses shall be maintained and operated in a condition that will prevent the leakage of sewage.

3. Equipment shall be available to permit the accurate measurement of the sludge and scum levels in relation to the bottom of the outlet baffle.

Pumping of septic tanks shall be conducted in such a manner that the entire contents of the septic tank including both liquids and solids are removed.

Pumping shall be carried out in a manner that will prevent spillage of sewage onto the ground.

If any spillage occurs, the solid portion shall be immediately removed and disposed of in a

sanitary manner and the area of the spill shall be disinfected using a suitable chlorine-bearing compound.

I. Septage shall be disposed of at a sewage treatment plant designated in accordance with District and/or State Solid Waste Management Plans pursuant to the Statewide Sludge Management Plan adopted pursuant to N.J.S.A. 13:1E-1 et seq. and N.J.S.A 58:IA-1 et seq.

SECTION EIGHT.

APPEAL TO BOARD OF HEALTH

Any person aggrieved by any decision of a designee of the Board of Health made pursuant to this chapter shall have the right to appeal that decision to the Board of Health. Any aggrieved person seeking a hearing under this section shall make application to the Board in writing within 30 days of the decision to be appealed. The Board of Health shall schedule the matter for a hearing within 45 days thereafter. The hearing shall be conducted at a meeting held pursuant to the Open Public Meetings Act.

SECTION NINE

ENFORCEMENT

A. NUISANCES TO BE CORRECTED.

1. Any on-site sewage disposal system or component thereof that is found to be malfunctioning (as defined in N.J.A.C. 7:9A-2.1 and 3.4) shall constitute a nuisance and shall be repaired, modified or replaced pursuant to an order of the Board of Health or its designee to correct the condition caused by the malfunction. Alterations shall be performed in accordance with N.J.A.C. as adopted and implemented by the Board of Health by virtue of this Code and any amendments thereto.

2. Any onsite wastewater treatment system which has not been operated or maintained in accordance with the provisions required by this ordinance is hereby declared a nuisance.

3. Any onsite wastewater treatment system which is constructed, installed, altered, operated or maintained in violation of this section, N.J.A.C. 7:9A-1 et seq., any rule or

regulation promulgated pursuant to this ordinance or any approval, permit, certificate or license issued pursuant to this ordinance is hereby declared to be a nuisance.

4. In addition the powers provided for in N.J.A.C. 7:9A-1.1 et seq., the Board of Health retains its authority to abate any nuisance in accordance with the provisions of N.J.S.A. 26:3-45 et seq.

B. MALFUNCTIONING ONSITE WASTEWATER TREATMENT SYSTEM: INSPECTIONS OF SYSTEM; REVOCATION OF LICENSE

1. The Board of Health shall have the right to inspect any system that shows evidence of any malfunction. Such evidence may include, but not be limited to, foul odors, leakage to ground surface, or saturated soil/lush vegetation over system. Water and/or soil samples may be taken to confirm the existence of a malfunctioning system.

2. The Board of Health may require that any malfunctioning system be corrected by servicing, replacement or alteration of the system.

3. Until any necessary replacement or alteration of a system has been accomplished, the Board of Health may require pumping and the removal of the entire contents of the septic tank for the system (both liquids and solids) at intervals specified by the Board.

4. No provision to this Ordinance shall be interpreted as precluding the Board of Health from revoking a license issued by the Board for the operation of a system in the event that the Board shall determine that such action is necessary and appropriate for the enforcement of this Ordinance. Any such revocation shall be upon Notice to the owner/operator, with an opportunity to comment or appeal.

SECTION TEN

RIGHT OF ENTRY.

In furtherance of the rights granted to the Board of Health in N.J.S.A. 26:3-45 et seq. and N.J.A.C. 7:9-3.19, the (insert name of enforcing official) or his designee, upon presentation of identification, shall have the right to enter upon property where an individual or non-individual onsite wastewater treatment system is located for the purpose of observation, inspection, monitoring and/or sampling of the on-site sewage disposal system. 'This authority is exercised by virtue of N.J.S.A. 26:3-31 as a necessary and reasonable method of furthering the duties of the Board of Health as enumerated therein.

SECTION ELEVEN

FEES

(The fees established herein are only a suggestion to approximate the fees necessary to adequately operate a management district. Fees may be adjusted to adequately fund the management program.)

A. An initial license fee of ($100) shall accompany each initial application for system licensure.

B. Upon renewal of each license, a Renewal License fee of ($50) shall accompany the application for license renewal.

C. If a Board of Health Inspection is requested to complete the license renewal, an additional fee of ($350) shall be due at time of license renewal

D. Fees for licensure as a Septic Sludge Removal Operator shall be established at ($250) for each individual requesting licensure in the jurisdiction. Renewal fees shall be established at ($150) per individual requesting renewal of licensure.

E. An administrative fee of ($15) shall be assessed for each Septic Sludge Removal Permit issued by the management district.

F. An administrative filing fee of ($10) shall be included with each alternative technology warranty renewal submitted to the management district.

G. Any fee which is submitted late shall be assessed a $5 late fee for every work day after the fee is due.

SECTION TWELVE

VIOLATIONS AND PENALTIES

A. A person who violates any provision of this article, or any term or condition of any certificate or license issued hereunder, shall be liable for one or more of the following penalties [N.J.S.A. 40:69A-29(b)].

1. A fine of not less than one hundred dollars ($100.00) nor more than ($1,000).

2. A period of community service not to exceed 90 days.

B. Each separate day and each violation of any provision or this article, any term or condition of any certificate or license or any notice or order issued by the Board of Health shall constitute a separate and distinct violation under this ordinance.

C. Nothing in this section shall be construed as limiting the remedies of the Board of Health for violation of this article. The Board of Health may proceed under any other remedy available at law or in equity for any violation of this article or any term or condition of any certificate or license issued by the Board or Health or for any failure to comply with any notice or order issued by the Board of Health or its enforcement official under this ordinance.

SECTION THIRTEEN

REPEAL OF INCONSISTENT ORDINANCES.

All ordinances, codes or parts of same inconsistent with any of the provisions of this ordinance are hereby repealed to the extent of such inconsistency

SECTION FOURTEEN

EFFECTIVE DATE.

This ordinance shall take effect thirty (30) days after adoption and publication of a Notice of Adoption in accordance with New Jersey law.

SECTION FIFTEEN

SEVERABILITY.

In the event that any provision of this Ordinance or its application to any person is held invalid for any reason, such invalidity shall not affect any other provision of this Ordinance and to this end, the provisions of this Ordinance are severable.

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Van Cleef Engineering Associates, Design Report, Hopewell-Trenton Sewer System, August 1998.

Van Cleef Engineering Associates, Feasibility Analysis for Selected Wastewater Alternatives Serving Areas Of Concern, April 2001.