

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 resale⁴.

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 purposes⁵. 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 program⁶. 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.