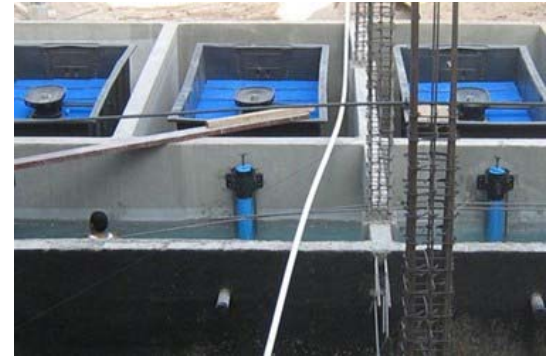


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Do You Know The Value Of Decentralized Infrastructure?

Source: [Bio-Microbics, Inc.](#)

According to the National Onsite Wastewater Recycling Association (www.nowra.org), onsite and decentralized wastewater treatment systems are an important part of a country's permanent wastewater infrastructure. Representing about 30% of new construction in the USA market alone, they serve more than 60 million Americans, roughly one-quarter of the country. Although onsite and decentralized systems have been in-use for nearly a century, they are not well understood; particularly, when compared to centralized sewage treatment. As a result, as NOWRA explains, it has not received the financial, technical, managerial or policy support enjoyed by other sectors in the wastewater treatment industry.

Onsite wastewater systems include a wide range of individual and cluster treatment systems that process household and commercial sewage. Decentralized wastewater treatment systems have become an attractive option for dealing with wastewater at the point of generation and an ideal pretreatment method for Sewage Treatment Plants. Decentralized sewage treatment technologies are ideal for projects with land constraints and flows of 500 to 160,000 gallons per day or more. Design parameters for today's systems must have the following: equalization and clarification all in one tank, operating flexibility and control, all below grade components, very small footprint (ex. 90,000 GPD [340 m³/D] = 1/3 Acre or less), no (or limited) operator needed, no operations building required, and integrates well with other technologies.

In 2012, the EPA Decentralized MOU Partnership (<http://water.epa.gov/infrastructure/septic/>), which consisted of the EPA and 16 partner organizations, developed four short

papers detailing the economic, environmental, and public health related aspects of decentralized wastewater treatment. They include information on the uses and benefits of decentralized wastewater treatment and examples of where they have played an effective role in a community's wastewater treatment infrastructure.

"Our industry has a terrific story to tell," said Eric Casey, NOWRA Executive Director. "We provide sanitary, cost-effective and sustainable wastewater treatment for more than 30 million families, generating more than \$5 billion per year in economic activity, and up to 150,000 small business jobs. Onsite systems are highly scalable, from individual residences to subdivisions to entire communities, making them an ideal choice for small towns as well as for utilities moving to a distributed infrastructure model."

Although onsite wastewater treatment systems are capable of treating wastewater to the same standards as centralized sewage treatment facilities, they differ from those facilities in several significant ways:

- **Decentralized systems:** Treat and disperse wastewater close to the source where it is generated, thus keeping water in the watershed.
- *Centralized systems:* Use a collection of sewers, large diameter pipes, catch basins, bar screen, pump stations to move water to a centralized location, often many miles from where the wastewater is generated.
- **Decentralized systems:** Take advantage of the vast capacity of soil to remove or transform pollutants that are in the effluent

as it percolates through the soil, thereby maintaining the quality and quantity of our groundwater.

- *Centralized systems:* Treatment takes place at the distant facility and discharges into a nearby waterway, usually moving the water out of the watershed where it was generated.

An important advantage to onsite wastewater systems is the ability to develop 'reuse opportunities'. The first system to be approved for water reuse (NSF/ANSI Std 350) is the advanced MBR (membrane bioreactor) technology of the Bio-Microbics (www.biomicrobics.com) BioBarrier system. It offers the highest quality effluent possible on the market. Just like other decentralized treatment systems, these pre-engineered, modular systems fit into either new or existing tanks for both residential and commercial applications. A BioBarrier MBR system meets the most stringent state regulatory requirements, has an effluent quality of BOD <2 mg/L, TSS <2, Ammonia <1, is effective at removing harmful pathogens from wastewater while reduces Fecal Coliform & E. Coli <10 CFU (colony forming units), and is an ideal treatment unit for direct discharge applications.

However, other technologies on the market, including SeptiTech (www.septitech.com) STAAR™ Trickling Filter Systems and popular Aerobic Treatment Units, like MicroFAST® Systems from Bio-Microbics, can make even the most difficult sites usable. Frost & Sullivan's unbiased research in the North American Water & Wastewater Treatment market, especially with commercial outlets, have compared the Bio-Microbics FAST® (MicroFAST and MyFAST®) Systems versus others available and awarded them as the most innovative decentralized technology for potential markets (2010 & 2011). In the case with the Bio-Microbics FAST® system, most of the treatment occurs inside the tank. The effluent is more than 95%

free from solids and waste. The treated wastewater is then available to replenish groundwater and aquifers, or in some cases, it could be made available for grey water reuse for the property. Water reuse opportunities include use in toilets for flushing, subsurface lawn and landscape irrigation, fire-fighting sprinkler system, machine wash down, and more. With further disinfection, it can be used for even more reuse opportunities.

Pointed out by the EPA and the MOU, onsite wastewater management systems are a 'green technology' because treated effluent recharges local aquifers. In addition, they have a smaller carbon footprint because most onsite systems use little or no energy to move water. Central sewer systems must frequently pump water vast distances to and from outlying areas. In fact, 4% of all energy used in the US is attributable to moving water and wastewater. However, the energy-intensive nature of aeration remains an area of concern, particularly at a time when energy prices are rising. Conforming to GreenSpec® guidelines for energy-efficiency, they review several technologies on the market, including the MicroFAST, BioBarrier MBR, and STAAR Filter systems. The energy consumption was found to be no more than a large household appliance, such as a refrigerator, and with the ability to remove harmful pathogens and nutrients (nitrogen and phosphorous) found in wastewater; these alternative wastewater treatment systems provide neighborhoods and large facilities an energy-efficient means to treat and reuse water onsite.

With the continuation of green-building trends, mandatory compliance, and the push for smarter water management, decentralized wastewater treatment systems are an attractive option for engineers, architects, developers and property owners, even with progressively stricter environmental regulations across all regions.