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## Water

By far the largest part of the total volume of wastewater generated is water. The typical Minnesota resident (adult or child) uses an average of 75 to 100 gallons of water per day. This quantity amazes most people until they start to think about how much water is used for laundry, dish washing, bathing and toilet flushing. This means that a family of four is likely to generate over 300 gallons of wastewater per day—not including lawn watering and other outdoor water uses!

The water is, of course, the component of the wastewater we want to reuse. However, the nutrients and organic components removed from the water during treatment can also be valuable resources provided they can be delivered to the right place for reuse (for example, N and P are valuable as plant food for crops and lawns).

# Evaluating Treatment Facility Options

Many small communities begin the process of addressing their sewage treatment needs by thinking that all they will need to do is find the “recommended” treatment option and install it! However, what they quickly find out is that numerous treatment technologies are available to small communities and that each technology has its advantages and limitations. ***There is no one recommended treatment technology that meets the specific conditions and treatment objectives of every community. To choose the right treatment technology, a community must evaluate many factors.***

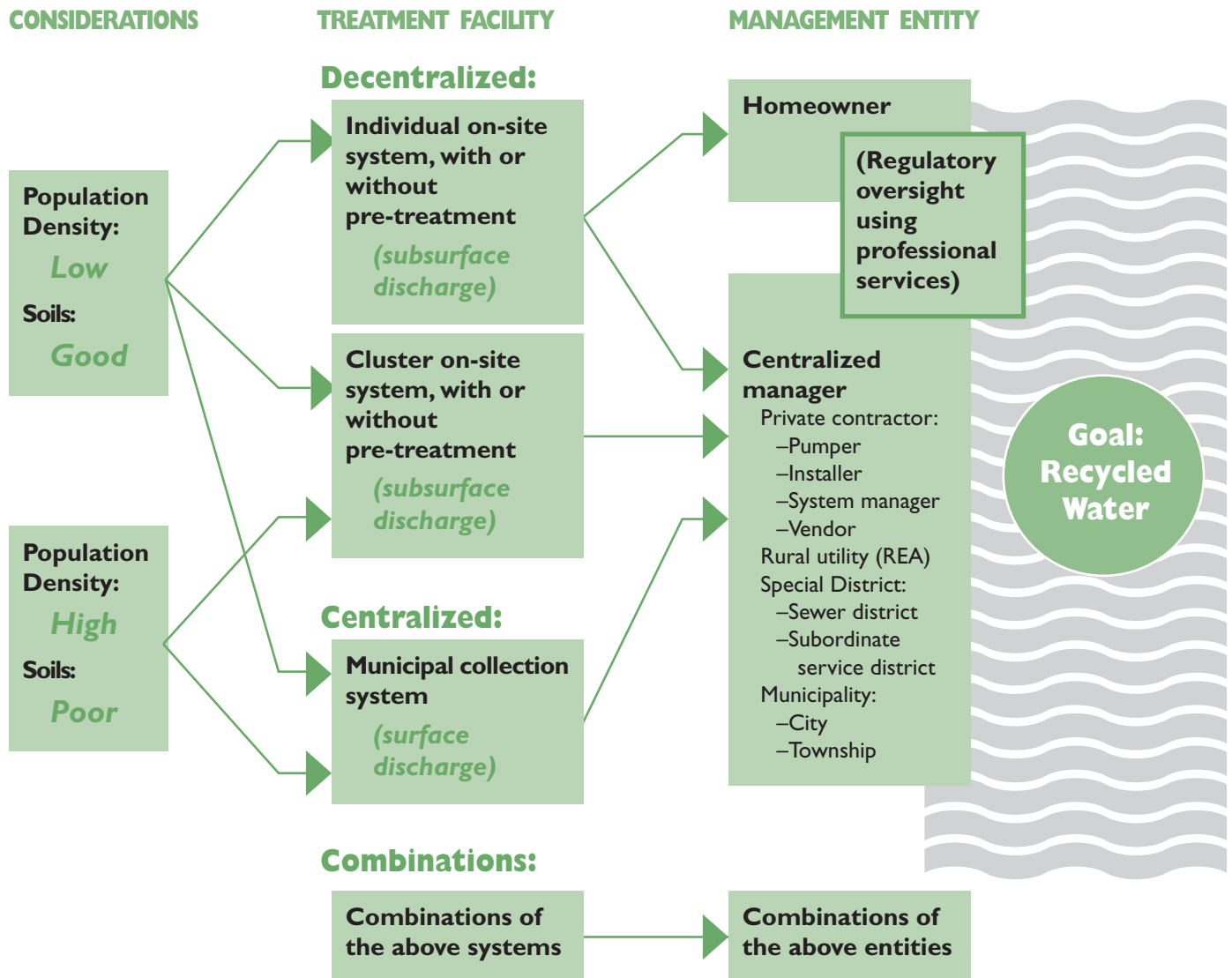
- **Regulatory requirements.** Local, state and national treatment standards; county or local land use plans and ordinances.
- **Community characteristics.** Population trends, location and distribution of customers, desired character of the community (rural, urban, open space, etc.).
- **Physical conditions.** Topography, soil conditions, spaces available, surface and ground-water conditions, quality and quantity of wastewater generated, climate, condition of existing systems, esthetics and appearance.
- **Financial factors.** Capital costs, operation and maintenance costs, community income levels, financial reserves and capacity.

Individuals and communities are responsible for seeing that all wastewater is delivered to an adequate and well-managed treatment facility. In addition to water being discharged, all systems must also properly recycle residuals or solids removed in the treatment process.

## General system concepts

Depending on the population density (property sizes) and soil conditions, treatment systems follow one of two general concepts: *decentralized and centralized*.

# Responsible Management of Wastewater



## ● Decentralized concept

- Individual on-site systems
- Multiple-household on-site systems (cluster systems)

Both use standard or alternative technologies with or without pretreatment processes with subsurface discharge and reuse on site.

## ● Centralized concept

Use municipal style collection and centralized treatment with surface discharge.

## ● Combination of concepts

A combination of centralized and decentralized approaches is frequently found to be the most viable solution . Such a combination may use two or more of the above options.