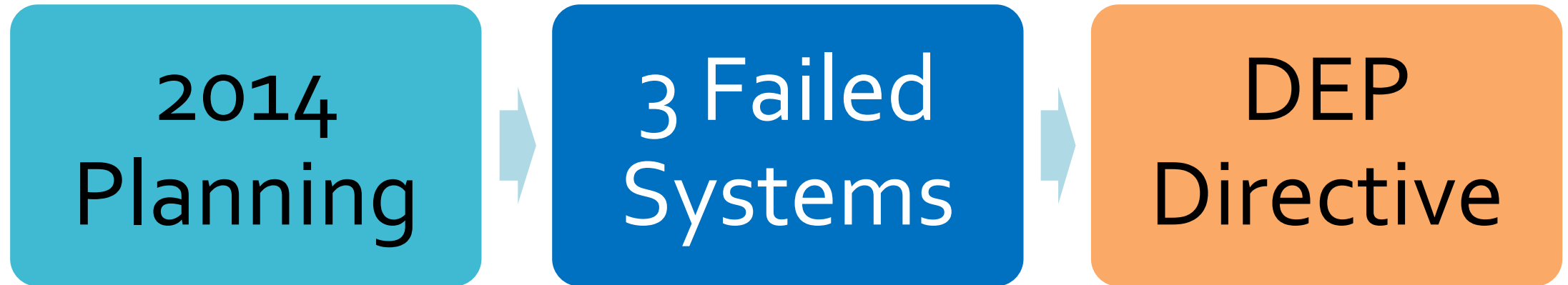


Sewage
Facilities
Planning

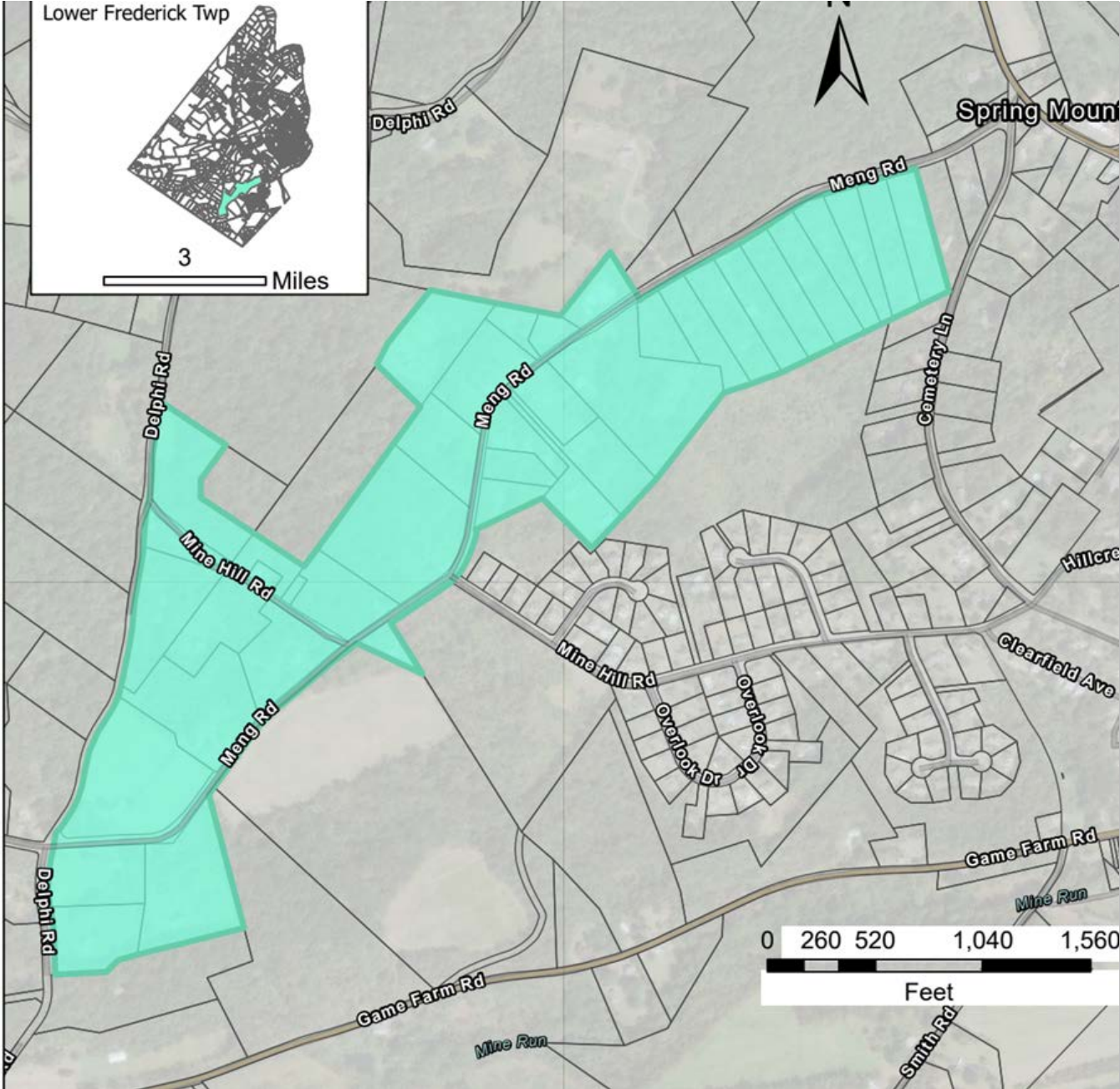
Special Study for Meng Road Planning Area

BACKGROUND –

Why are we undertaking this study?



Study Area



Survey of Current Conditions

28 on-lot
systems

•Of the 36 properties in the study area, 28 have individual, on-lot land-based sewage disposal systems

SEO
Inspected

A licensed Pennsylvania Sewage Enforcement Officer (SEO) from Value Engineering Inc. inspected 27 of the 28 lots (96%) with on-lot land-based sewage disposal systems.

No current
malfunctions

Each property was inspected for indicators of current or pending septic malfunction. No indicators of septic system malfunction were encountered on the inspected properties.

Identify Alternatives



A – Continued use of On-lot Systems with Education

B – Low Pressure and Gravity to LFT Public Sewer

C – Low Pressure to SBA Sewer

D - Low Pressure to LFT Public Sewer

E – Low Pressure Connection and redirect existing flows from SBA to LFT

F – Holding Tank

Evaluate Alternatives

A – Continued use of On-lot Systems with Education

- Minimal costs
- Improve user knowledge of on-lot system maintenance and operation

B – Low Pressure and Gravity to LFT Public Sewer

- \$350,000 cost per connected property

C - Low-Pressure Sewer Connection to the SBA Collection System in Mine Hill Road

- \$270,000 cost per connected property
- SBA has capacity limitations

Evaluate Alternatives

D - Low-Pressure Sewer Connection to Existing Lower Frederick Public Sewer System

- \$310,000 cost per connected property

E - Low-Pressure Sewer to the SBA System and Redirect Existing Homes to LFT

- \$450,000 cost per connected property

F – Holding Tank

- Not suitable as a long-term solution.

Option A Selected



Mail educational info to property owners.



Add information about managing On-lot Systems to Township Website.

On-Lot Septic Pumping & Inspection Report
LOWER FREDERICK TOWNSHIP

OWNER: _____

(different than above)

Pumping System: _____

Pumping/Inspection: _____

Concrete: _____ Other: _____

gallons No. of gallons pumped: _____

Needs Repair: _____ type of repair: _____

Are there signs of Malfunction? (circle all that may apply)

Continue Pumping program under the Sewage Management Ordinance

Owner Education and Regular Pumping are all better than spending \$3 million to \$9 million building sewer lines. But what happens if or when the next system failure occurs?



Three on-lot system failures drove DEP to require this study, but another 6 on-lot systems within this study area have been identified as problematic and replaced with new on-lot systems. Thanks in part to the expansion of approved alternate systems, a replacement system can often be installed when an existing system fails.

SCENARIO: Jane Doe has noticed a soggy area in her yard with lush grass and foul odors. After investigation, it was determined the septic system must be replaced.

Signs of Septic System Problems



Slow Drains

If you have multiple slow drains in your home, it's a strong sign of a septic system backup.



Foul Odors

A septic tank smells bad when it is full or experiencing issues.



Soggy Lawn

A drain field that is soggy or has standing water is a definitive sign of failure.



Lush Grass

Green, excessively lush grass over the drain field may indicate an issue.



Septic System Alarm

For systems with a pump or ATU, the alarm will sound if there's a malfunction.



Next Step: Soil Testing

- Jane Doe's consultant along with the MCHD Sewage Enforcement Officer (SEO) will evaluate soil test probes throughout the property to determine soil limiting zones
- Percolation testing may then be required
- Percolation tests are not always required - some newer system types must be evaluated by a Soil Scientist instead
- This process is with MCHD. The Township is often not contacted.



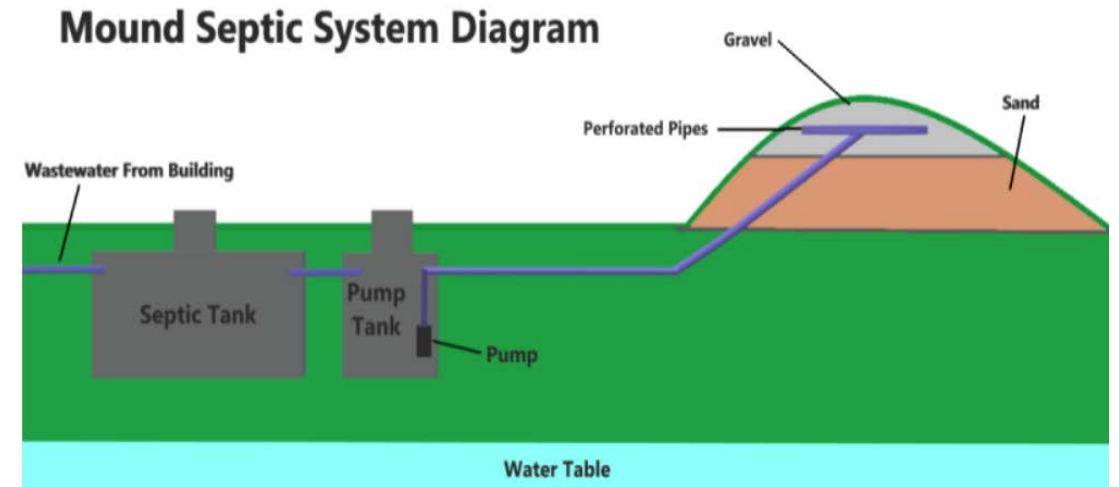
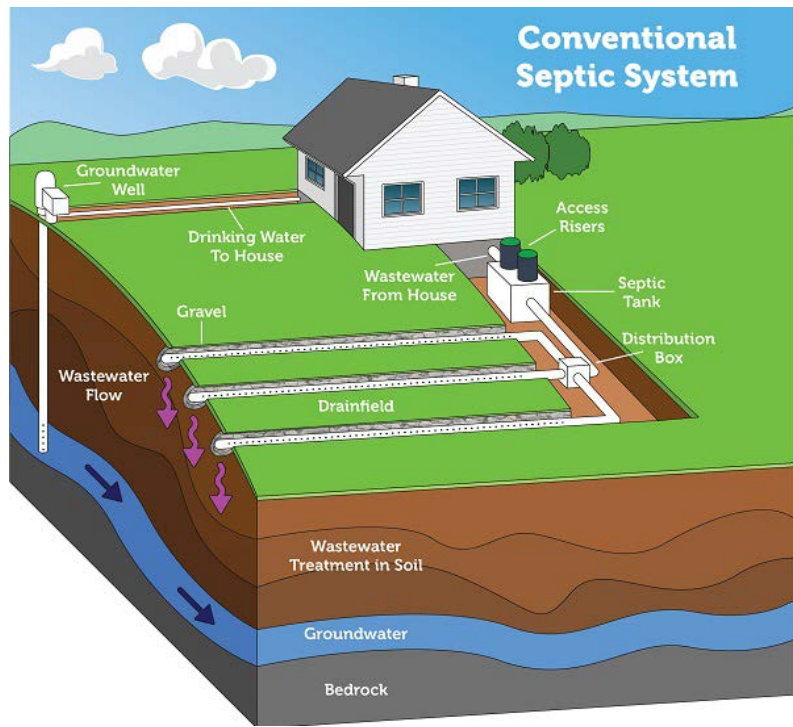
Previously, options were limited for land-based disposal:

Conventional In-Ground Systems

- Can be used only on the best soils with limiting zone >60"
- System is below grade
- Study area is unlikely to be suitable

Elevated Sand Mounds

- Requires 20 inches to limiting zone
- System is mounded
- Study area has moderate limitations for this type of system

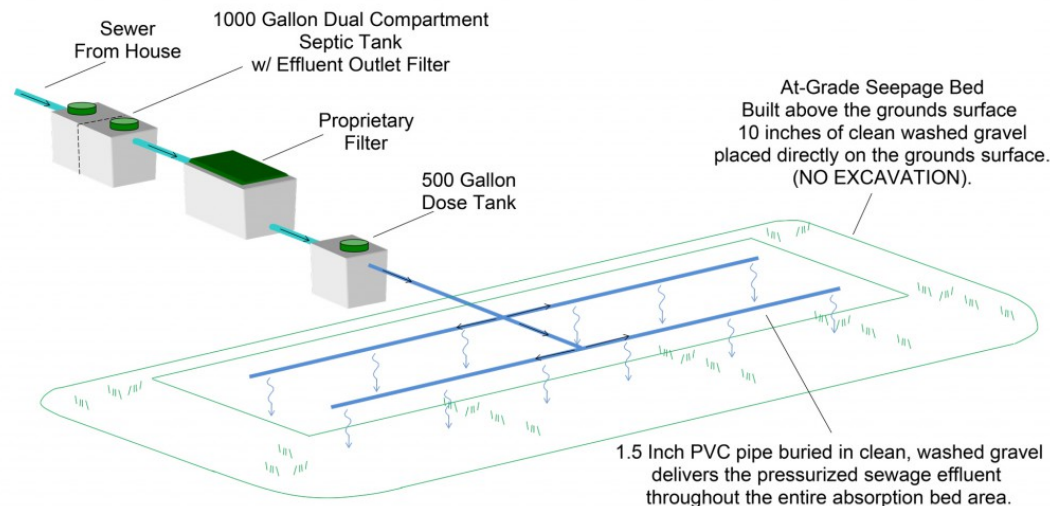


Recently, new “alternate” systems have been approved for use on soils with shallower limiting zones

• SHALLOW LIMITING ZONE AT-GRADE

- Low mound
- Pressure dosed pipe in gravel
- Requires Pre-Treatment

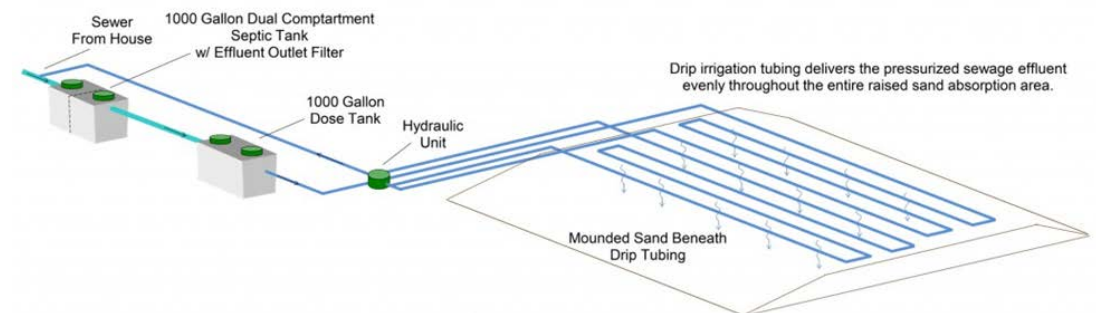
Shallow Limiting Zone At-Grade Seepage Bed utilizing a proprietary filter
Requires a minimum of 10 inches to limiting zone.
Requires a soil scientist's morphological soil evaluation.



MICROMOUND

- Low mound
- Pressurized tubing with emitters in sand
- Requires Hydraulic Filtration Unit

Micromound w / Drip Irrigation (Primary Effluent Discharge)
Requires a minimum of 10 inches to limiting zone.
Requires a soil scientist's morphological soil evaluation.



If Jane Doe's expert demonstrates to DEP that no portion of the property is suitable to permit an onlot disposal system, Ms. Doe may then consider:

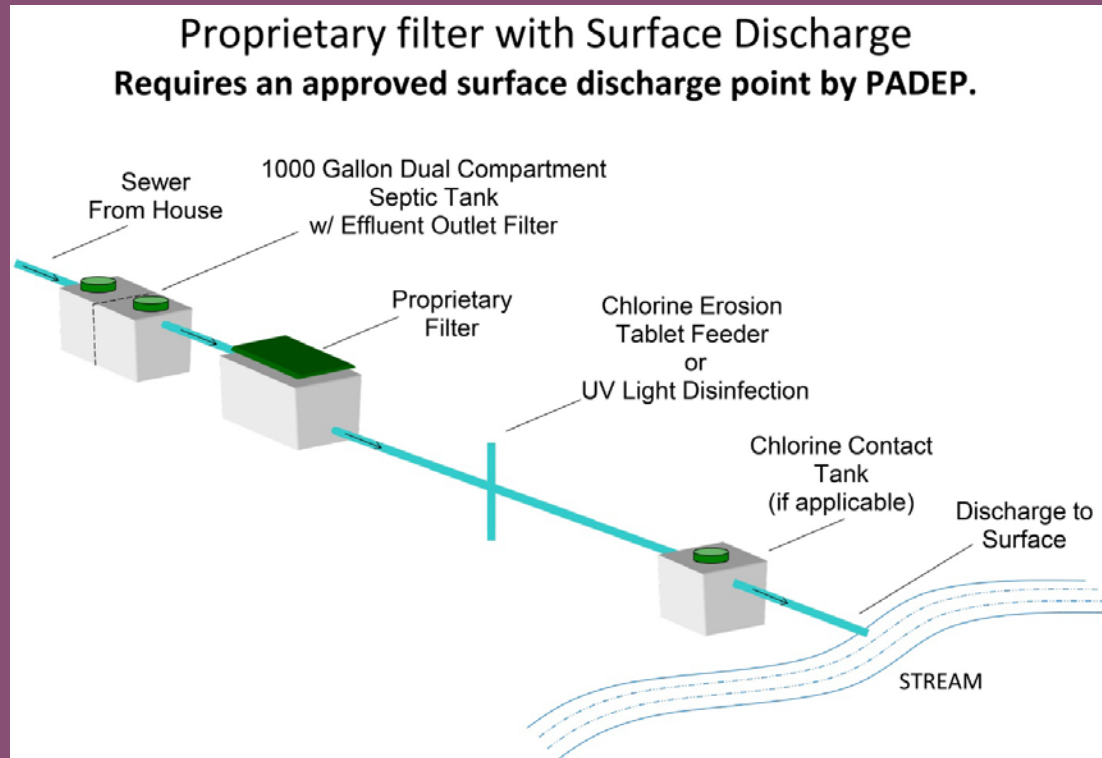
- Small Flow Treatment Facility (SFTF) with Stream Discharge

Or

- Retaining (Holding) Tanks

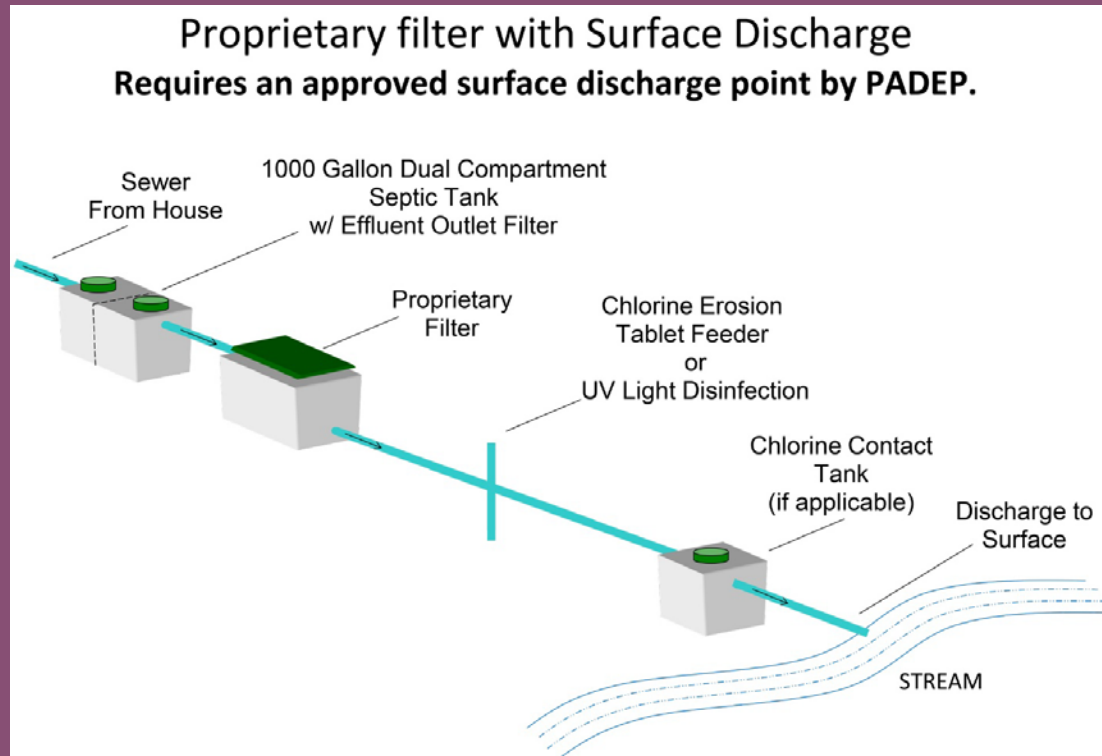


Small Flow Sewage Treatment Facility (SFTF) with Stream Discharge



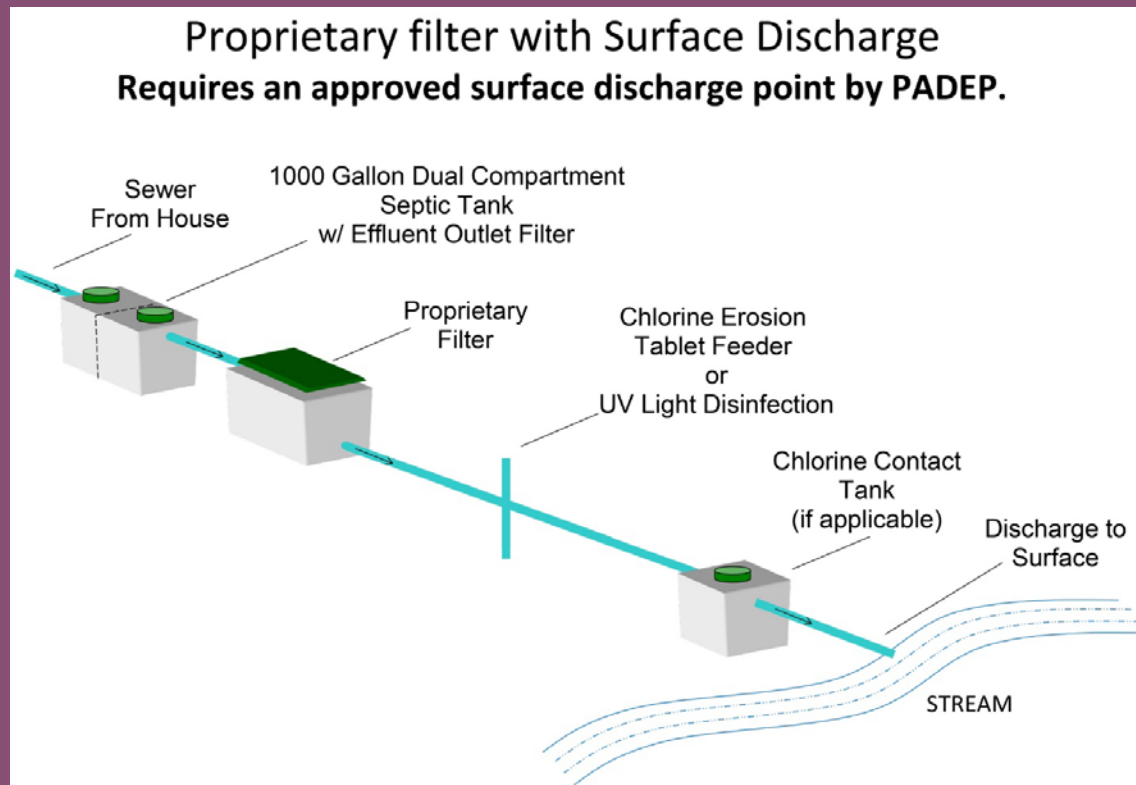
- SYSTEM COMPONENTS:
- Treatment tank – septic or aerobic
- Filter System – sand filter or proprietary filter
- Disinfection - chlorine or UV light
- The highly treated effluent must discharge to a suitable stream or dry channel

Small Flow Sewage Treatment Facility



- REQUIREMENTS:
- Requires Township and DEP approval of sewage planning
- Must show site is not suitable for on lot systems
- Neighbor notifications until perennial conditions are met
- Individual or general permit through DEP
- Design engineer inspection and certification

Small Flow Sewage Treatment Facility



OPERATION & MAINTENANCE:

- Discharge must be monitored at a frequency specified in the permit and reported annually to DEP for compliance with discharge limits for: CBOD5, TSS, pH, Fecal Coliform, and Total Residual Chlorine (if using chlorine disinfection)
- Annual Inspection by Service Provider
- Additional testing parameters may be required for HQ & EV streams
- Additional maintenance responsibility may include adding chlorine to contact tanks, monthly cleaning of UV bulb, UV bulb replacement, effluent sampling, and removal and replacement of filter medias based on manufacturer's requirements

Constructing a SFTF tends to be a last resort for owners because:

- Must document to DEP that other options have been exhausted.
- Approvals involve more time and investment due to:
 - Sewage facilities planning approval through Township and DEP – lengthy process that is not needed for other on-lot systems.
 - A DEP permit is needed . The health department permit that other systems need is a less involved, less expensive, and a quicker process.
- Higher operating and maintenance costs due to:
 - Annual service contractor inspection and certification
 - Sample collection and analysis
 - Monthly maintenance of disinfecting units
 - Costs for chlorine or UV bulbs
 - Cleaning or replacing media in filters

For these reasons, a SFTF is not a first-choice solution for the property owner.

Retaining Tanks

There is no disposal field or discharge after the tank – it must get emptied before it fills

Frequency of pumping depends on tank size and water use

Frequent pumping is expensive

