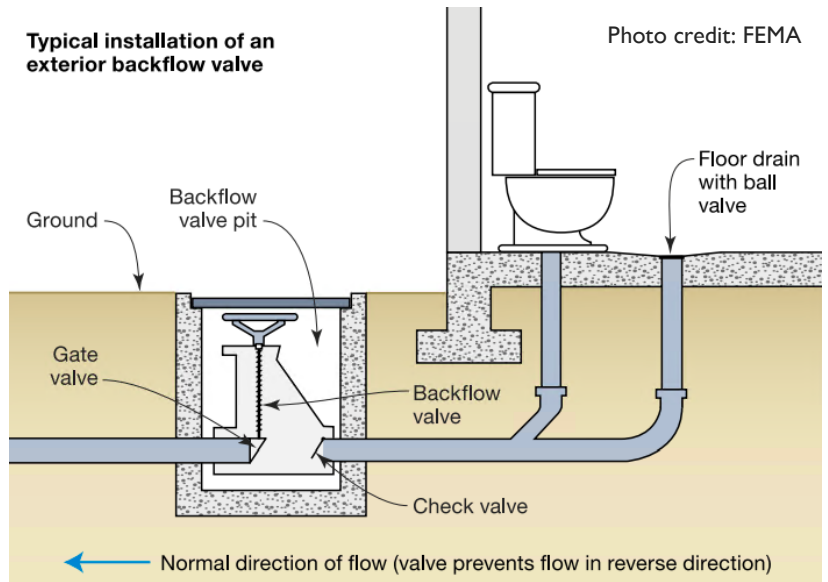


Retrofit Septic System

Overview

- A septic system is an on-site wastewater treatment and disposal system located within an individual property’s boundary. It collects, treats and disposes of wastewater from the home or business.
- Flooding events can cause backup of sewage in septic systems and can damage the septic system components.
- Flooding can also cause leaching of septic hazardous substances into the floodwaters, the house, and/or nearby waterways.
- In areas that experience velocity flooding, the septic tank and associated plumbing fixtures can shift and be damaged due to the high velocity of the floodwaters, wave action, and/or impact from debris.
- Additionally, flooding buoyancy forces can displace tanks and/or plumbing fixtures.
- Retrofitting septic systems can reduce the risk of flood damage for the septic system.
- Septic system retrofitting methods include:
 - Remove septic system and connect the structure to the community sewer line (if possible)
 - Relocating the tank to a higher elevation on the property
 - Installing backflow prevention valves or combination check and gate valves on sewer pipes
 - Installing an effluent ejector pump
 - Purchasing a generator
 - Sealing the septic tank in order to prevent contamination
 - Anchoring the septic tank to prevent floating from buoyancy forces
 - Filling the tank with water immediately after having it emptied

Typical installation of an exterior backflow valve



Key Takeaways

During flood events, floodwaters can cause sewage backups, damage to septic system components, or even leaching of septic system hazardous substances.

To help prevent flooding associated damage to the septic systems, retrofit the septic system.

Estimated Costs/Benefits

*U.S. dollars (2022), estimates are subject to change

Example Potential Costs		Potential Benefits	
Example Actions	Estimate	Post-Flood Recovery Actions	Estimate
Relocate the tank to a higher elevation on the property	\$1,000-\$7,000	Cleaning sewage backup flooding in the structure	\$7-\$7.50 per square foot
Install backflow prevention valves or a combination of check and gate valves	\$100-\$500		
Install an effluent ejector pump	\$400-\$4,000	Replacing the septic system due to compounded damage	\$1,400-\$12,000
Purchase a backup generator	\$400-\$206,000		
Seal the septic tank	\$150-\$500		
ESTIMATED TOTAL COST	\$100-\$218,000+	ESTIMATED TOTAL SAVINGS (1,000 sq ft structure)	\$8,400-\$19,500



I-ADAPT

Exterior Adaptation Retrofit Septic System

Potential Funding Sources

- [Delaware Water Pollution Control Revolving Fund](#)
- [DNREC: Septic Rehabilitation Loan Program](#)
- [USDA Single Family Housing Direct Home Loans Program](#)

Additional Actions

- If your septic system has leaked, notify your neighbors.
- Install backflow valves on water lines as well as sewer lines to prevent indoor flooding.

Additional Resources

- [DNREC: Community Septic System Outreach](#)
- [DNREC: Septic Systems](#)
- [DNREC: Septic Rehabilitation Loan Program](#)
- [FEMA Engineering Principles and Practices for Retrofitting Residential Structures](#)

Resources can also be found at <https://de.gov/iadapt>

Permitting Agencies

Contacts for permitting requirements include but are not limited to the following:

- Your city and/or county government for local flood ordinances or regulations
- Your city and/or county government for building permits
- [DNREC Coastal Construction Permit](#)

Expected Maintenance

- Inspect the septic system every 3 to 5 years.
- Look for signs of damage in the yard at least once per month.
- Pump the septic tank at least every 3 years by a [licensed Class F liquid waste hauler](#).

Who to Contact

- [Licensed class H system inspector](#)
- Groundwater Discharges Section at 302-739-9947 (in Dover) or 302-856-4561 (in Georgetown).

Technical definitions and more information are located on the I-ADAPT website: <https://de.gov/iadapt>.



This information is intended to be used for planning purposes. It is not intended to substitute or take precedence over the guidance of design engineers, contractors, utility companies or regulatory agencies.

For more information, contact DNREC's Division of Climate, Coastal and Energy at DNREC_IADAPT@Delaware.gov

