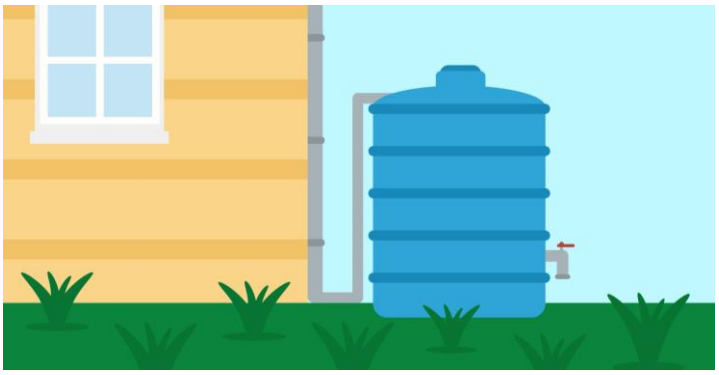
Cistern

Overview

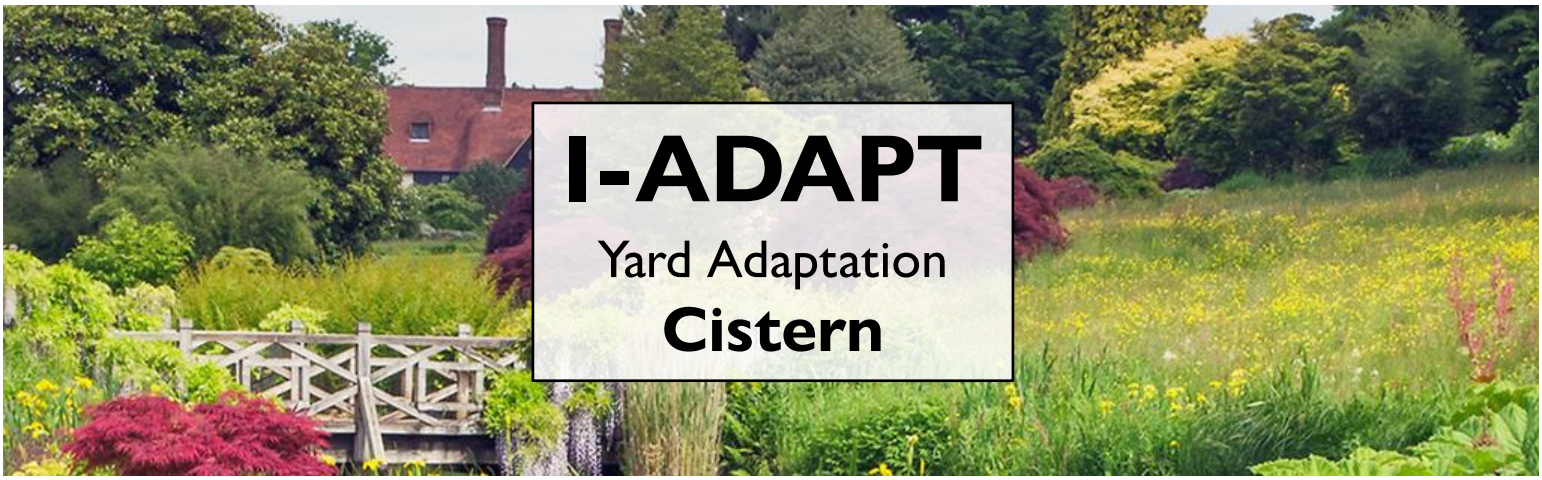
- A cistern is a type of green stormwater infrastructure that diverts and captures rainwater flowing off rooftops or other impervious surfaces to store the water for reuse and reduce localized flooding.
- Cisterns are storage tanks that are located either outside of a structure or below ground. They can be located underneath lawns, recreational areas, or parking lots if conditions are favorable.
- The size of a cistern depends on the frequency and volume of water supply and demand. They can hold up to several hundred gallons of water.
- Cisterns capture rainwater that would otherwise have been lost as runoff and would have either caused flooding issues on the property or would have been diverted to local streams or storm drains.
- Rainwater could be re-used for landscape irrigation, car washing, ornamental water fountains, etc.
- As the water is reused, cisterns can reduce water bills and decrease the demand on the municipal water supply.
- Cisterns should only be installed where there is a demand for water year-round so that the rainwater supply can be depleted between rain events.
- Cisterns are typically used on large and/or commercial properties.



Key Takeaways

During storm events, rainwater flows off impervious surfaces (like roofs) and can cause flooding.

In order to reduce stormwater volumes and help reduce local flooding, cisterns can be installed to collect and re-use stormwater flowing from the structure's roof or other impervious surfaces.



I-ADAPT

Yard Adaptation

Cistern

Estimated Costs/Benefits

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

Potential Costs		Potential Benefits	
Item	*Estimate*	*Post-Flood Recovery Actions*	*Estimate*
Cistern	$700-$4,500	Flood damage recovery (professional clean-up, mold removal, replacement/ repair of flood damaged items)	$10,800-$53,500+
Installation (including discharge pump, trenching, pipes, filter, and other features)	$1,000-$20,000	Regrade yard	$700-$1,700
		Remove standing water	$1,300-$5,000
ESTIMATED TOTAL COST	**$1,700-$24,500**	**ESTIMATED TOTAL SAVINGS**	**$12,800-$60,200**

Potential Funding Sources

- Delaware Water Pollution Control Revolving Fund

Additional Resources

- DNREC: Site-Scale Green Infrastructure
- DNREC: Rain Barrels, Cisterns, and Downspout Disconnections
- Philadelphia Water Department: 4.5 Cisterns
- Philadelphia Water Department: Cisterns 1-pager

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

Additional Actions

- Consider displaying signage that educates the public on the benefits of cisterns.

Expected Maintenance

- The cistern must be emptied between rain events to prevent overflow.
- Cisterns should be drained before a freeze to prevent structural damage.
- Regular inspection and maintenance of the system is required. Generally, access structures are constructed to aid in maintenance and inspection.

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 or delegated agency Sediment and Stormwater Management Plan
- DNREC Coastal Construction Permit

Who to Contact

- Green infrastructure contractor
- Design engineer

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

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