

GREEN INFRASTRUCTURE: RAINWATER HARVESTING

Rainwater harvesting systems treat stormwater as a resource rather than a waste product. It is a more sustainable urban drainage infrastructure that attempts to minimize the use of drinking water for irrigation purposes. Cisterns, rain barrels, vertical storage, and similar devices have been used to capture stormwater from the roofs of buildings.



DESIGN CONSIDERATIONS

Rainwater harvesting systems can be used in low traffic residential areas to reduce potable water needs for uses such as irrigation while also reducing stormwater discharges. Cisterns and rain barrels vary in size and material and some systems include treatment and filtration systems. Buried systems should contain an observation well and all systems must include a bypass or overflow for large storms.

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> • Provides additional stormwater storage capacity, • Reduced potable water consumption, • Peak discharge reduction, and • Availability of water during periods of drought or restricted water use. 	<ul style="list-style-type: none"> • Limited storage volume, and • Water-harvesting systems are not always fully utilized.

CONSTRUCTION AND COSTS

Some of the key constructability concerns for a rainwater harvesting system are ensuring harvested water is not connected to the potable water system and is clearly marked “reclaimed water”, cisterns must be watertight with a smooth interior surface and covers should have a tight fit to keep out surface water, animals, dust and light. Rainwater harvesting system costs vary depending on the material of the cistern system capacity, pump characteristics, filtration system, and other appurtenances.

MAINTENANCE

The required maintenance is noted in the table below.

Maintenance Activity	Frequency
<ul style="list-style-type: none"> • Clean filtration system. • Flush cisterns to remove sediment. • Brush the inside surfaces and thoroughly disinfect. • Empty cistern before first frost. • Inspect and clean cistern vents, floats, and sensors. • Inspect the cistern foundation for cracks, voids, and slippage. • Inspect the cistern and piping for leaks. 	<ul style="list-style-type: none"> Monthly Annually

FLOOD REDUCTION

The roof runoff reduction that can be achieved from rain barrel or cistern varies by the size of the rail barrel. Rail barrels reduce the amount of potable water used for outdoor use.