

# Case Study: University of Wisconsin – Milwaukee Residence Hall

**Objective:** To reduce municipal water usage for irrigation at a University of Wisconsin Milwaukee Residence Hall by as close to 100% as possible.

**Site Specifications & Known Requirements:**

- Water usage is 100% irrigation.
- Collection location: Rooftop
- Rooftop square footage: 21,000 sq ft
- A 1" rain event would yield
  - 11,000 gallons or
  - 4 irrigation cycles or
  - 1 standard week of irrigation.
  - (accounting for filtration & runoff coefficients)
- 1 irrigation cycle = approx. 3300 gallons
- 14,000 gallons water needed per week during May through October (at most)
- System does require a municipal water backup source connection.
- Underground composite water storage tank selected: 20,000 gallons
  - A full tank provides approximately 2 weeks of irrigation.
- LEED certified building



**Solution:**

After considering the typical rainfall quantity and frequency in the area, the optimal tank size was chosen at 20,000 gallons. This system also incorporates two gravity-type rainwater filters which are installed on the main roof drainage pipe in the basement of the building. The water is filtered to the 400 micron level before entering the tank to prevent debris from entering the system.

The Sky Harvester control system includes a level control which monitors the water level in the tank. The controls provide accurate reporting to the

gallon on exactly how much rainwater is harvested, re-used, and also how much city backup water is used in the case of drought situations. UWM has chosen to display their quantifiable water savings data in two locations – one in the dorm’s entry area for all students to see, and another in the maintenance manager’s office.

The control system will be upgraded with Watertronics' brand new for 2010 web-based remote monitoring package "WaterVision 6" which will allow the control data to be accessed from any web-based location, such as remote computers or hand-held devices.

When the system was designed, we looked at a historical two-month period in the summer. One of those months had a lower than average rainfall. In that month, the SkyHarvester system was still able to supply irrigation water for 28 out of the 30 days without tapping into the city backup supply. It is possible that UWM will be able to rely 100% on the SkyHarvester system for all their irrigation water needs, but the municipal water source is available



in case of dire need for irrigation if a drought condition were to occur.

**Summary:**

- This system collects 11,000 gal on a 1" rain event.
- 1" of rain will provide 4 irrigation cycles or 1 standard week of irrigation.
  - The tank will be filled completely on a 1.7" rain event.
  - A full tank provides 20,000 gallons or 2 standard weeks of irrigation.
- The SkyHarvester system reduces potable water consumption for irrigation by at least 94%.