Atlanta Rainwater Harvesting system

for Therell High School

Presented by: UV Pure and Rain Harvest Systems (GA)

weftec
STORMWATER CONGRESS

Rainwater Harvesting

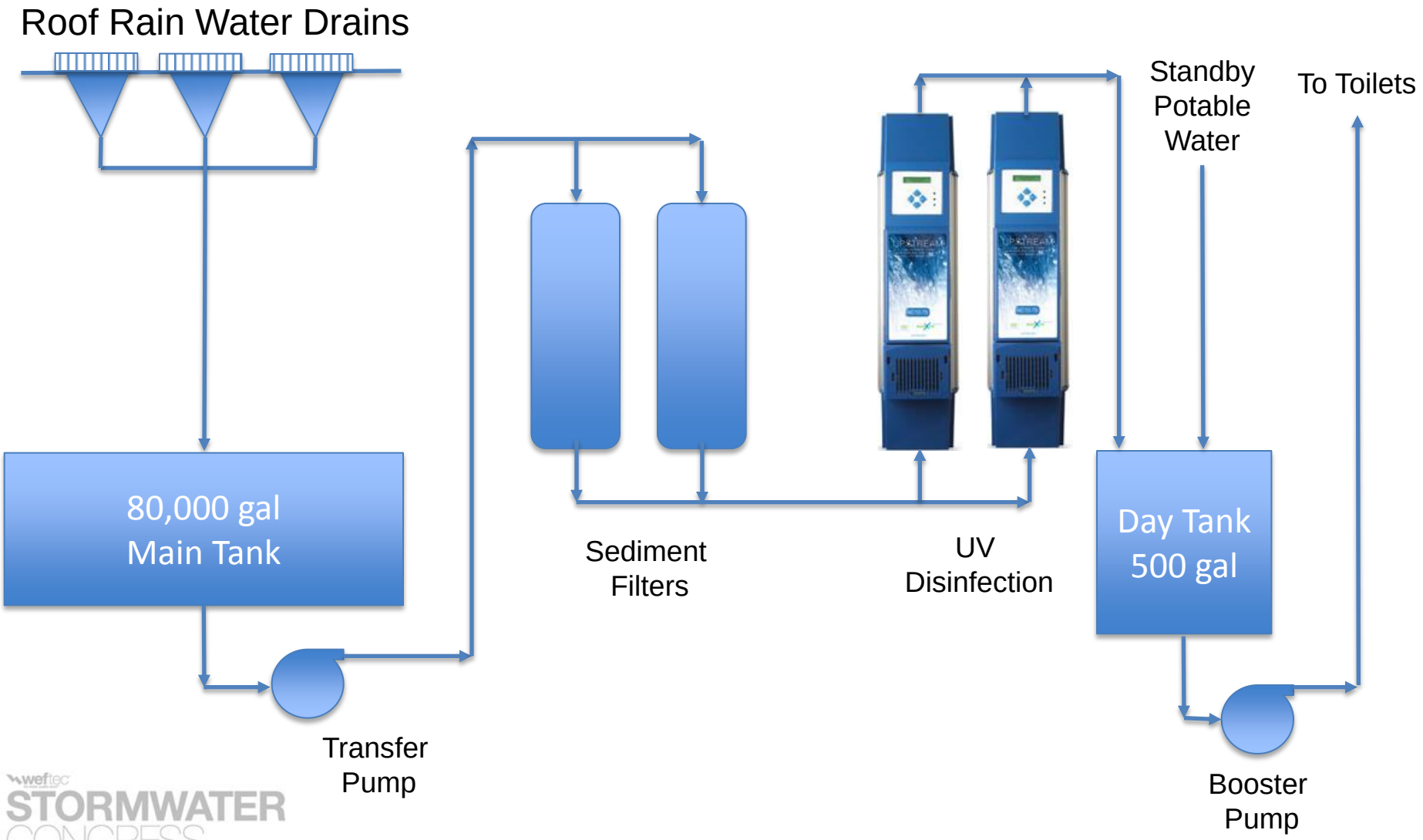
Therell High School

First school in Atlanta, GA to install a Rainwater Harvesting system

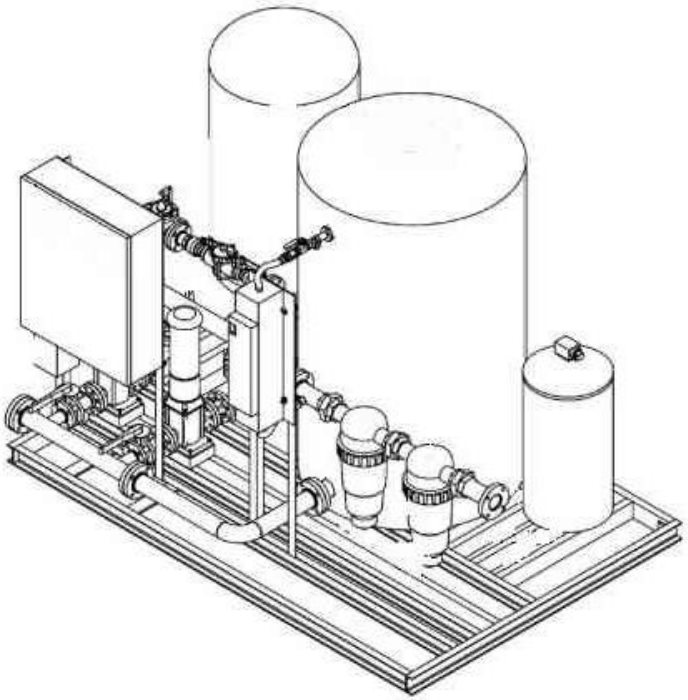
Project objective was to achieve a 50% reduction in potable water use for the flushing of toilets (LEED point WE2 – a water efficiency credit)

This presentation will review the sizing, design and challenges of the Rainwater Harvesting System

System Design



Rain Water Treatment System



Challenges of the Project

- Limited space within the mechanical room
- Flow would not be constant and UV System would be left on (overheating concern)
- Toilets would be required to be operational regardless of Rainwater

Solution

- An 80,000 gal tank for rain water collection and transfer pump station was installed
- In the mechanical room, a 500 gal day tank was installed which would act as a buffer and allow smaller treatment components to be used
- (2) UV Pure Upstream UV Systems were installed since they could be left on without overheating

Selection of the Components

Day Tank

-Typical sizing of a day tank;

expected occupancy X 3 gal/person

-Since size was a constrain, a 500 gal tank was used rather than normal sizing

(A day tank allows for lower flow rates and in turn smaller components)

Selection of the Components

Sedimentation Filter

-Filters are required to ensure the aesthesis of the water and proper UV operation.

-Filters were required to be back flushable and filter down to 5-10 um

-Filters are sized based on a 1-2 hr day tank fill time. For sizing 100 minutes was used

500 gal (day tank)/ 100 minutes = 5 gpm

Selection of the Components

UV Disinfection

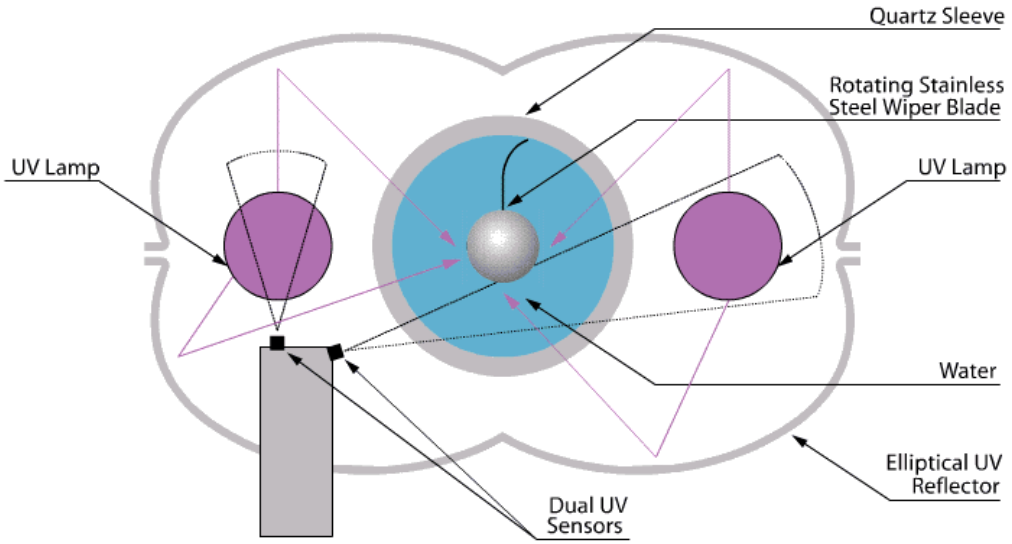
-UV Disinfection is used to deactivate Viruses and Bacteria Instantaneously

-UV system was sized based on day tank fill time (same as sediment filter)

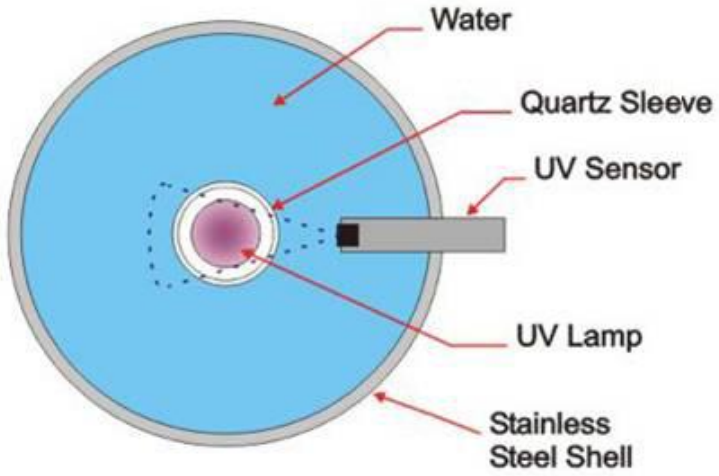
-The selected UV system had to be able to not overheat during no flow conditions and be self cleaning

Selection of the Components

The selected UV system located its UV Lamps outside of the process stream and had a self cleaning UV reactor



Crossfire Technology



Conventional Technology

Results

-50% water reduction was achieved for the flushing of toilets and earned LEED Credits

-Installation of the day tank allowed for smaller components to be used, resulting in a significant cost savings

-The UV system did not overheat during no-flow conditions, simplifying overall operations

Questions