

How much water does it take to keep a lawn green and healthy 'down the shore'?

What's the most efficient way to water a lawn automatically?

As water becomes a more expensive resource, the Green Team wanted to find the answer to those questions. With partners from the community, the Green Team chose three median islands on Dune Drive to test out water systems and see which one is best.

**THE GOAL** of the experiment was to have three equally green healthy island lawns and to measure what system used the least amount of water.

**THE RESULTS** showed that a smart system made up of modern water conserving rotary spray nozzles and a controller using three sensors - a rain sensor, a temperature sensor, and a solar radiation sensor, used significantly less water to provide the best results.

**THE EXPERIMENT** started in the winter of 2011 with meetings of the Green Team, the Borough of Avalon's Public Works Department, local landscapers - Garden Greenhouse and Nursery and Exclusive Land Design, and representatives from Toro, John Deere Landscaping, and Hunter. It was decided to dedicate three median islands all of similar size and plantings to an experiment using three systems. Toro, John Deere Landscaping, and Hunter would provide the technical assistance and the new equipment. Garden Greenhouse and Nursery and Exclusive Land Design would provide the equipment and labor. The Borough of Avalon would pay for new sod. All three islands would each have new grass and new water meters installed.

**THE CONTROL ISLAND** The first system was located between 39th and 40th Streets. The old grass was removed and new sod was installed. The irrigation system would use the existing 30 traditional spray heads that threw water in a spray or mist. The existing Rain Bird 15 half nozzles used 1.8 gallons per minute. The system would be hooked to a rain sensor and the island's 3,488 square feet of new sod would be run for 20 minutes per day. We referred to this island as the CONTROL island.

**THE SMART ISLAND** The second system was installed between 38th and 39th Streets. The old grass was removed and new sod was installed to cover the island's 3,488 square feet of new sod. The irrigation system would use the existing water lines and spray heads but the nozzles were replaced with water conserving rotary nozzles. These nozzles are designed to spray a bigger water droplet to avoid wind drift and to apply water slower to increase absorption by the soil. They use less water to cover the same area. The Hunter MP 2000 rotating nozzles deliver water at a 90 to 210 degree angle. They were placed 13 feet apart. The timer/controller was a Hunter 6 Station Controller, model IC6000PL I-CORE series. The smart component was a Hunter Industries Solar Sync ET system sensor unit. The Hunter MP Rotator nozzles use 0.74 gallons per minute and 30 heads with a 19 minute run time uses 421 gallons per irrigation cycle. This island was controlled by the Hunter i Core controller that was converted to a "Smart Controller" by the addition of The Solar Sync ET

sensor, a solar radiation sensor and a temperature sensor. The Solar Sync allows the controller to increase or decrease run times based on the the weather. This island was called the SMART island.

**THE DRIP ISLAND** The third system was installed between 38th and 37th Streets. It was hooked to a a rain sensor, too.. Because we were using a drip system here, more preparation had to be done by manufacture's standards. The existing system was removed and soil was excavated. Six inches of new screened top soil mixed with leaf compost was installed and Toro DL2000 Root Guard Tubing one gallon per hour drip lines were put in place every twelve inches throughout the island. After leveling this new soil, new sod was installed to cover the island's 3,488 square feet of area. This island was known as the DRIP island.

The islands transformation was completed in during March, 2011. The islands were checked weekly through the Spring by members of the Green Team, Public Works, landscapers, and the manufacturer's representatives. Fifteen soil samples were taken from each island and sent to an independent lab in Pittsburgh to make sure the soil was healthy enough to conduct a fair and equal test. It was determined that the sufficient rain and cool temperatures had encouraged excellent root growth of the new sod. No overwatering was deemed necessary.

At the beginning of May, the irrigation systems were turned on and baseline measurements began. Representatives from Exclusive Land Design, John Deere Landscaping, Toro, and Hunter along with the Public Works Department and the Green Team were present to set the computer controls and make sure the systems were up and running. Each island was examined and photos were taken. Root samples and grass blade heights were measured. Each island's meters were read.

Weekly throughout the Spring, Summer, and Fall, a member of the Green Team and the Avalon Public Works Department were present while the meters were read. Photos were taken of the individual islands and root samples were taken and recorded. Each island was examined closely for healthy growth.

Adjustments were necessary during the Spring and Summer. They were done under manufacturer supervision with a representative from Public Works. To view changes and recorded measurements, see the reverse side.