Three soil moisture probes were installed in 2009. In May 2011, a water storage tank was installed to boost water pressure and allow the superintendent to adjust irrigation schedules daily using the data from the probes. Between May – October 2011, the Siebel complex used less water than in the same period in 2010.\(^1\) 220,000 gallon reduction in water use may also be attributed to differences in weather conditions between 2011 and 2010.

**Information about the Probes and Project**

- Three stations were installed in the fairway, tee box, and putting green areas.
- One central computer transmits data electronically (via router, see picture on left) from all three probes, sends it to the golf course superintendent’s computer.\(^2\)
- Probes save water by using soil moisture and root zone data to target the right amount of irrigation for healthy grass.

**How the Soil Moisture Probes Work**

- Soil probes do not automatically adjust irrigation run times, instead given the soil type, the probes have sensors that measure soil moisture, temperature and salinity.\(^3\) The soil probe data is used primarily during the dry season when water is depleted from the root zone at a faster rate compared to Spring/Winter.\(^2\)
- The probe installed in the putting green contains an additional sensor for salinity. The salinity sensor indicates salt concentrations so that pre-set thresholds are not exceeded and a specific amount of water is applied to leach harmful salts from the root zone.\(^2\)
- Sensor readings are provided at 2” depth intervals down to 12” for a total of six sensors per soil probe. This provides a vertical “x-ray” of the soil moisture and indicates irrigation penetration and water use.\(^2\)

**Water Use and Soil Probe Data**

![Graph showing Lake Water Use](image)

**Sources:**

\(^1\) Utilities metered data. Water tank installed May 2011. Calculated by comparing May through October 2010 vs. same months for 2011.

\(^2\) Conversation with Stanford University Golf Course Superintendent Ken Williams, March 13, 2009 and August 18, 2009.


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