ONTARIO Turfgrass SYMPOSIUM

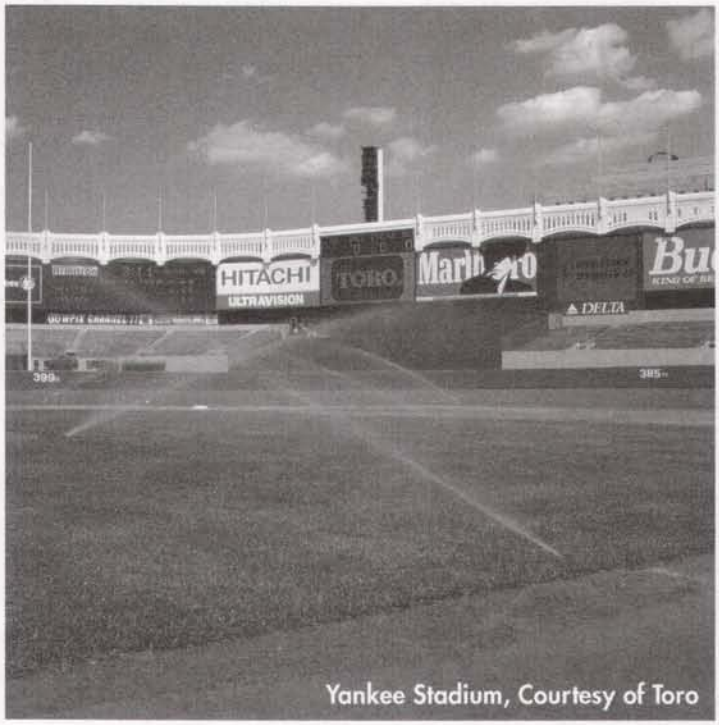
Sports Fields: Water Assessment Management

UNDERSTANDING THE TRUE VALUE OF WATER BY GREGORY SNAITH, ENVIROIRRIGATION ENGINEERING INC.

Ever wonder how much water a sports field actually uses. Perhaps there is a better question. How much water does a sports field actually require to sustain a healthy playable turf surface?

The summation of evaporation from the soil and transpiration from the turf is defined in the irrigation industry as the evapotranspiration rate (ET rate). This rate can be measured in mm per day, week, month or over the whole season.

The challenge for any sports field manager is relying on a traditional irrigation controller with a set daily schedule in minutes of run time. The reality is the ET rate fluctuates with the weather on a day-to-day basis, depending on wind, temperature, humidity and solar radiation.



Yankee Stadium, Courtesy of Toro

The amount of water applied on a daily basis is a direct correlation to the run time of irrigation. The difficulty is allocating the labour to alter this run time as the weather changes. This is why the irrigation industry is heading toward state-of-the-art "ET based" irrigation controllers as endorsed by the Irrigation Association and irrigation professionals.

Experience in applying ET based irrigation scheduling has generally shown from 30-50% in water savings with some case studies even higher! This is a huge savings by any standard and certainly catches the eye of every municipality and region that is making efforts to reduce the necessary infrastructure for peak water demand during the summer months.

But the value of this savings is not just in the water and water infrastructure alone. It also provides benefits including increasing longevity in any irrigation system with moving parts, including rotors. If a booster pump is on site, there are also power and pump operation savings.

To calculate the estimated monthly water use of a sports field, simply multiply the area of the sports field in m^2 times the monthly ET value in mm. The answer will be equivalent to litres which can easily be converted to gallons, cubic feet or unit water charge of choice.

For example, a turf soccer field in Ottawa (see Table 1 on the following page) is capable of using 125 mm water for the month of June. If the field is 60m x 100m, then the total potential water used is 750,000 litres (calculated by 60m x 100m x 125 mm ET month). If 40% savings in water was applied to this case, a savings of 300,000 litres would be available. This is equivalent to 300 cubic metres and at a water cost of $1.25 per cubic metre, the dollar value in water savings alone is approximately $375 for the month of June for one soccer field!

So what is the next step for a sports field manager wanting to reduce the water use on sports fields? As an intelligent irrigation specialist once said, "you cannot manage what you cannot measure" (W. Chinn, AAFRD). There are trained irrigation auditor professionals who can provide both an irrigation water audit and implement an irrigation management program.

The key is to first establish the baseline water use, set a realistic water savings goal, and then monitor to find the results. Striving towards sustainable management means making the most of a very precious resource we often take for granted – water. ♦

Gregory Snaith is a professional engineer and certified irrigation designer and irrigation water auditor. Gregory will be a guest speaker at the Field Day on Sept. 14th in Milton and will be discussing some interesting case study results in sports field water savings. For a copy of his "Water Asset Management" presentation made at OTS 2005, email gsnaith@enviroirrigation.com.

Handy water unit conversions (note that the irrigation industry uses US gallons).

- 1 cubic foot = 7.48 gallons (US)
- 1 acre-inch = 27,154 gallons (US)
- 1 acre-foot = 325,848 gallons (US)
- m^2 x mm water applied = litres
- 1,000 litres = 1 m^3
- 1 m^3 = 264 gallons (US)

Table 1. Evapotranspiration rates (potential ET rate mm/month) for selected Canadian cities (source: LEED® Canada-NC 1.0)

City	May	June	July	August	Sept.
Victoria	91	106	121	97	55
Vancouver	97	113	128	104	60
Calgary	122	133	135	109	69
Edmonton	122	131	131	98	63
Saskatoon	130	145	150	126	78
Regina	131	152	163	145	86
Winnipeg	134	147	150	126	79
Toronto	102	125	138	110	72
Ottawa	109	125	134	105	67
Montreal	103	122	132	101	63
Quebec	100	118	125	97	59
St. John	70	88	104	83	53
Fredericton	93	112	119	97	60
Halifax	84	102	109	93	59

INDUSTRY NEWS

ENVIROIRRIGATION LAUNCHED

ENVIROIRRIGATION ENGINEERING INC.

Following two successful years, Gregory Snaith, P.Eng., has resigned as a Principal from Creative Irrigation Solutions Inc. to specialize in water management by launching, Enviroirrigation Engineering Inc. Creative Irrigation Solutions Inc. will continue to provide the essential service of independent irrigation design and specification consulting.

Enviroirrigation Engineering Inc. provides a unique expertise within the landscape industry to evaluate and manage efficient water use for existing and new parks, sportsfields and commercial sites with irrigation systems. Professional services include alternative water sources and water demand management and creating natural park hydrologic regimes through environmental considerations:

1) irrigation system inventory & management
2) park & sportsfield daily irrigation scheduling
3) premium water efficiency program
4) reducing city peak water use

Gregory Snaith, P.Eng., is also a Certified Irrigation Designer (CID - Commercial, Golf, Residential), Certified Landscape Irrigation Auditor (CLIA) and a Certified Golf Irrigation Auditor (CGIA). Contact Enviroirrigation Engineering Inc. at 416-577-2610, gsnaith@enviroirrigation.com, 1750 The Queensway, Suite 1204, Toronto, Ontario, M9C 5H5.