Gateway Office Center

Saline, MI

Water Consumption Study for 2008 Season

Weather Station data supplied by ET Connections, LLC.

Irrigation Service and Equipment Installation
contracted with A&H Lawn Service, Inc.

Study complied by:

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EPA Water Sense Partner

Hydrologic Certified Contractor

A&H LAWN SERVICE, INC. Landscape Solutions for Today and Tomorrow

Gateway Office Center

Water Consumption Study

The following study has been completed for Gateway Office Center, by the following parties: ET Connections, LLC., A&H Lawn Service, Inc., Gateway Office Center Association with the release of data from Linda Eye.

ET Connections, LLC., is a weather data service provider. They use local data collected from weather stations they own or have collection agreements with owners of local weather stations. They collect the data from various forms such as Telephone, Internet, etc. They then compile the information and retransmit the data via a paging signal to Rain Bird ET Manager Devices, WR-7RKD (Weather Based Control for Tucor Two-Wire Systems), WR-1 OEM Receiver Cards (Serial Port Interfaces). The data is provided for a monthly fee and rates are contracted with ET Connections, LLC.

A&H Lawn Service, Inc. is an irrigation contractor. They were contracted with Gateway Office Center in 2008. Their contract consisted of servicing the irrigation system as needed, and also contracted a number of visits for: starting the system up, shutting the system down and a number of walkthroughs for pro-active identification of problems and landscape health. They had a secondary contract for the installation of 7 ET Manager Devices, to be installed on their current irrigation system. This installation was completed in the spring of 2008.

Linda Eye, the former property manager for Gateway and current board member. She initiated the release of all water consumption history from 2002 thru 2008.

Water Consumption Data

The following graphs and charts will be used to concisely identify the results of the Water Bill History.

Collected Water Information

(Information provided by Gateway Office Center)							
2002 Water Used in Gallons:	1,344,000	Total Units:	1,344	2002 Price Per Unit:	$ 1.30	2002 Total Costs:	$1,753.88
2003 Water Used in Gallons:	802,000	Total Units:	802	2003 Price Per Unit:	$ 1.50	2003 Total Costs:	$1,201.20
2004 Water Used in Gallons:	1,082,000	Total Units:	1,082	2004 Price Per Unit:	$ 1.94	2004 Total Costs:	$2,095.22
2005 Water Used in Gallons:	1,683,000	Total Units:	1,683	2005 Price Per Unit:	$ 2.53	2005 Total Costs:	$4,255.54
2006 Water Used in Gallons:	1,124,000	Total Units:	1,124	2006 Price Per Unit:	$ 2.65	2006 Total Costs:	$2,973.46
Weather Station device installed in Spring of 2007							
2007 Water Used in Gallons:	452,000	Total Units:	452	2007 Price Per Unit:	$ 3.26	2007 Total Costs:	$1,474.31
From 80-90% of ET Value during the 2007 season							
2008 Water Used in Gallons:	537,000	Total Units:	537	2008 Price Per Unit:	$ 3.35	2008 Total Costs:	$1,799.40
90% of ET Value during the 2008 season							

Weather Station (Gallons of Water) Saved

	vs 2002	vs 2003	vs 2004	vs 2005	vs 2006
Year 2007:	892,000	350,000	630,000	1,231,000	672,000
% Saved:	66%	44%	58%	73%	60%
Year 2008:	807,000	265,000	545,000	1,146,000	587,000
% Saved:	60%	33%	50%	68%	52%

Savings with Weather Station Data

(calculated with "Gallons of Water" saved in past years then multiplied by current years unit costs)						
	vs 2002	vs 2003	vs 2004	vs 2005	vs 2006	
Year 2007:	$2,909.48	$1,141.61	$2,054.90	$4,015.21	$2,191.89	$ 3.26 per unit or 1000 gallons
Year 2008:	$2,704.13	$ 887.97	$1,826.21	$3,840.06	$1,966.94	$ 3.35 per unit or 1000 gallons

Comparison of Total Yearly Costs

(Can be used for some preliminary budgeting numbers; for amounts do not take into consideration annual price increases to the cost of a unit of water.)					
	vs 2002	**vs 2003**	**vs 2004**	**vs 2005**	**vs 2006**
Year 2007:	$ 279.57	$ (273.11)	$ 620.91	$2,781.23	$1,499.15
Year 2008:	$ (45.52)	$ (598.20)	$ 295.82	$2,456.14	$1,174.06

Weather Station Data

The following charts have been compiled from weather stations that ET Connections, LLC., owns and operate, and a weather station operated by MAWN (Michigan Automated Weather Network) at Michigan State University. The data from 2006 comes from MAWN and the data from 2007-2008 comes from ET Connections, LLC. The charts will show you the ET (Evaportranspiration) and Rainfall; they will not show you the Effective Rainfall. The charts are provided to give you a general idea of the climatic conditions for the seasons. Your sites rainfall total will be less based on the principles of Effective Rain. This information that determines your Effective Rain is stored locally in your ET Manager devices during their programming. But, as a general rule of thumb you can anticipate your rainfall total to be less; due to the occasional down pours. The less rain your site has the more your irrigation system will operate.

Definitions for Weather Station Data Comprehension

ET (Evaportranspiration) -

The sum of the water lost from the soil surface (evaporation) and water used by plants (transpiration) is called evaportranspiration [**ET**]{in./day]. There are many factors that affect the rate of **ET**, including plant species, weather factors, and the amount and quality of water available to the plant. Weather factors include relative humidity, wind speed, temperature and amount of cloud cover. (Definition provided by Irrigation Association publication "Principles of Irrigation" page 42)

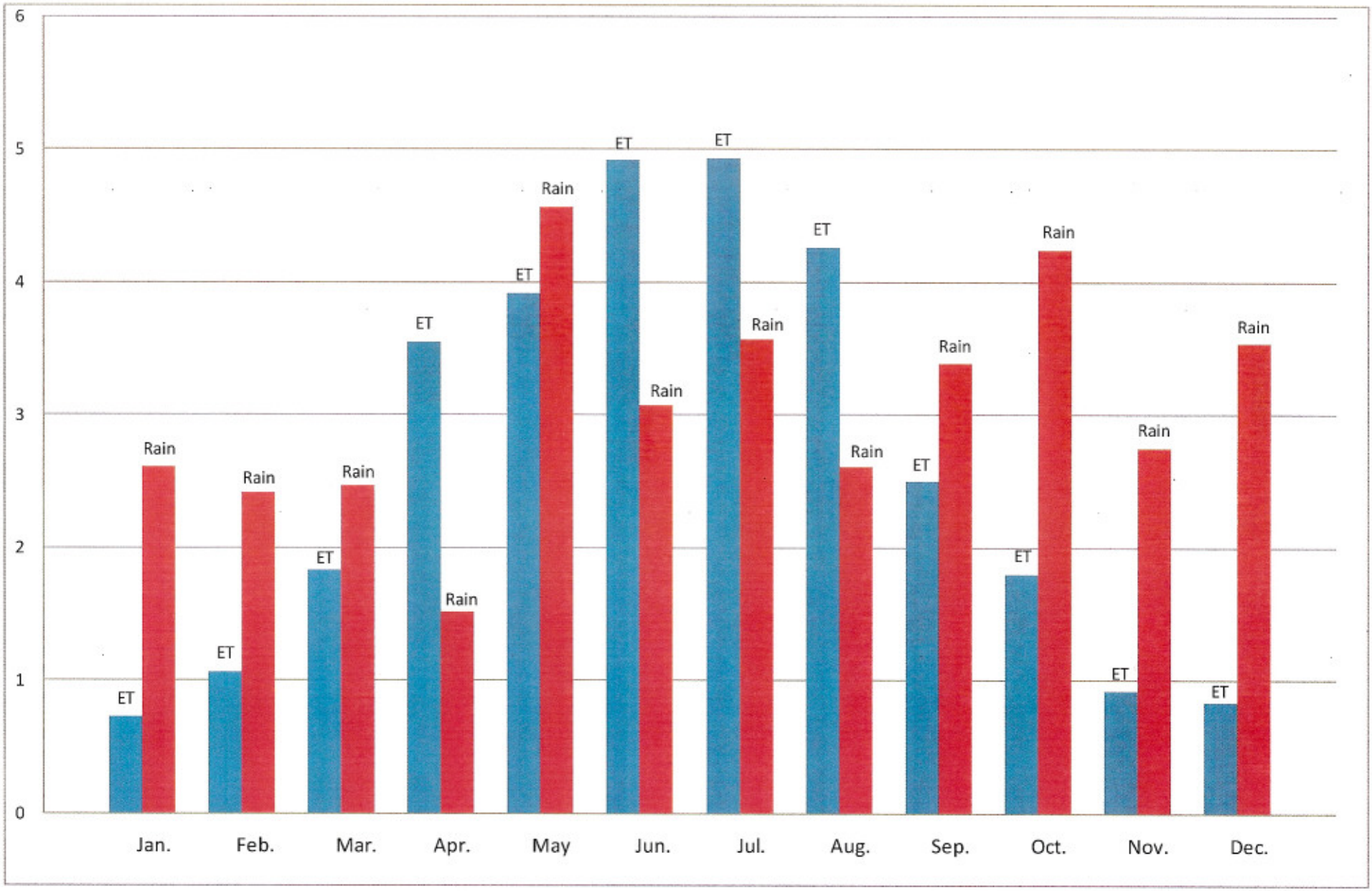
Rainfall -

Rain is liquid precipitation. On Earth, it is the condensation of atmospheric water vapor into drops heavy enough to fall, often making it to the surface. Rain is the primary source of fresh water for most areas of the world, providing suitable conditions for diverse ecosystems, as well as water for hydroelectric power plants and crop irrigation. (http://en.wikipedia.org/wiki/Rain)

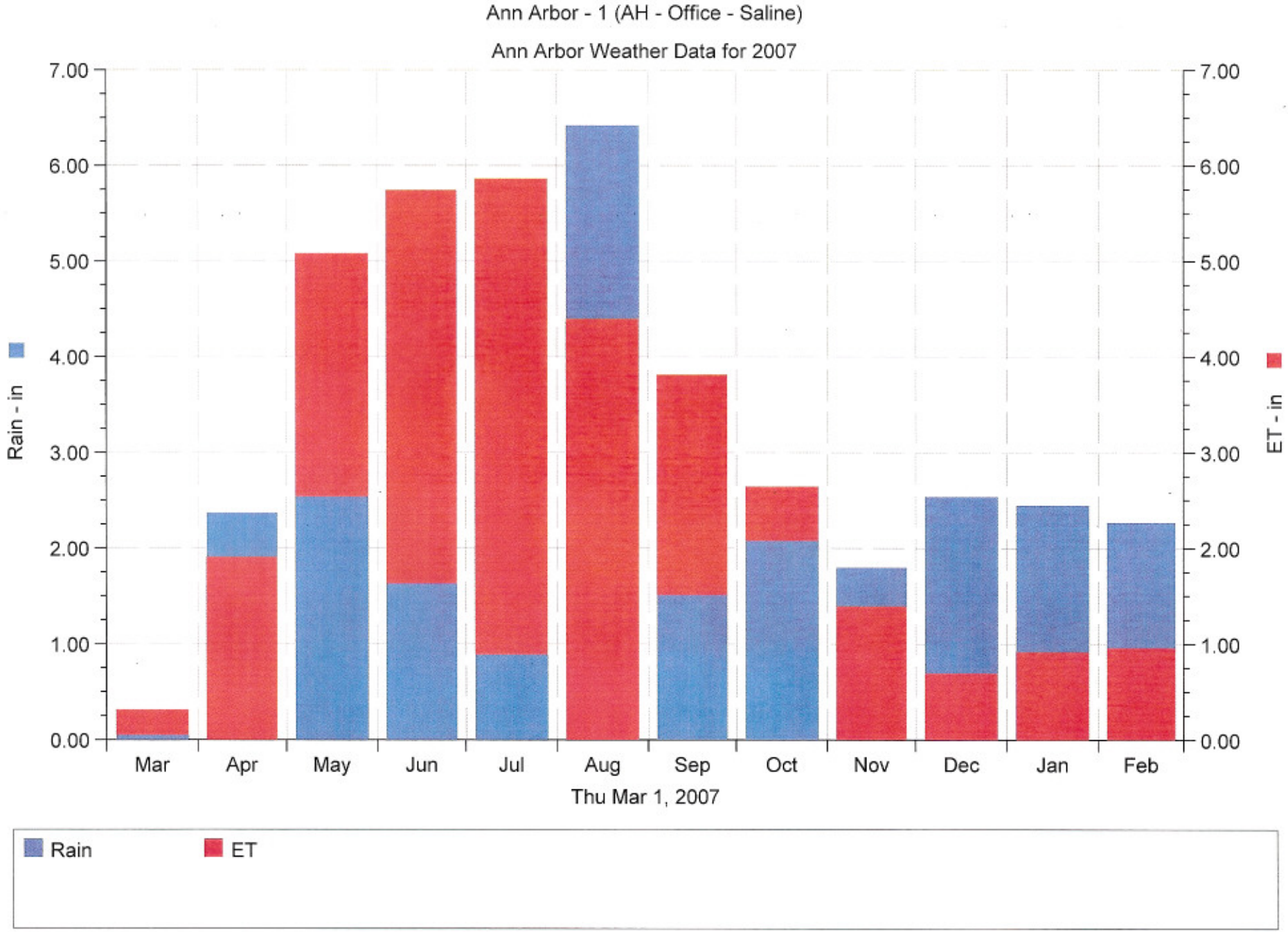
Effective Rainfall –

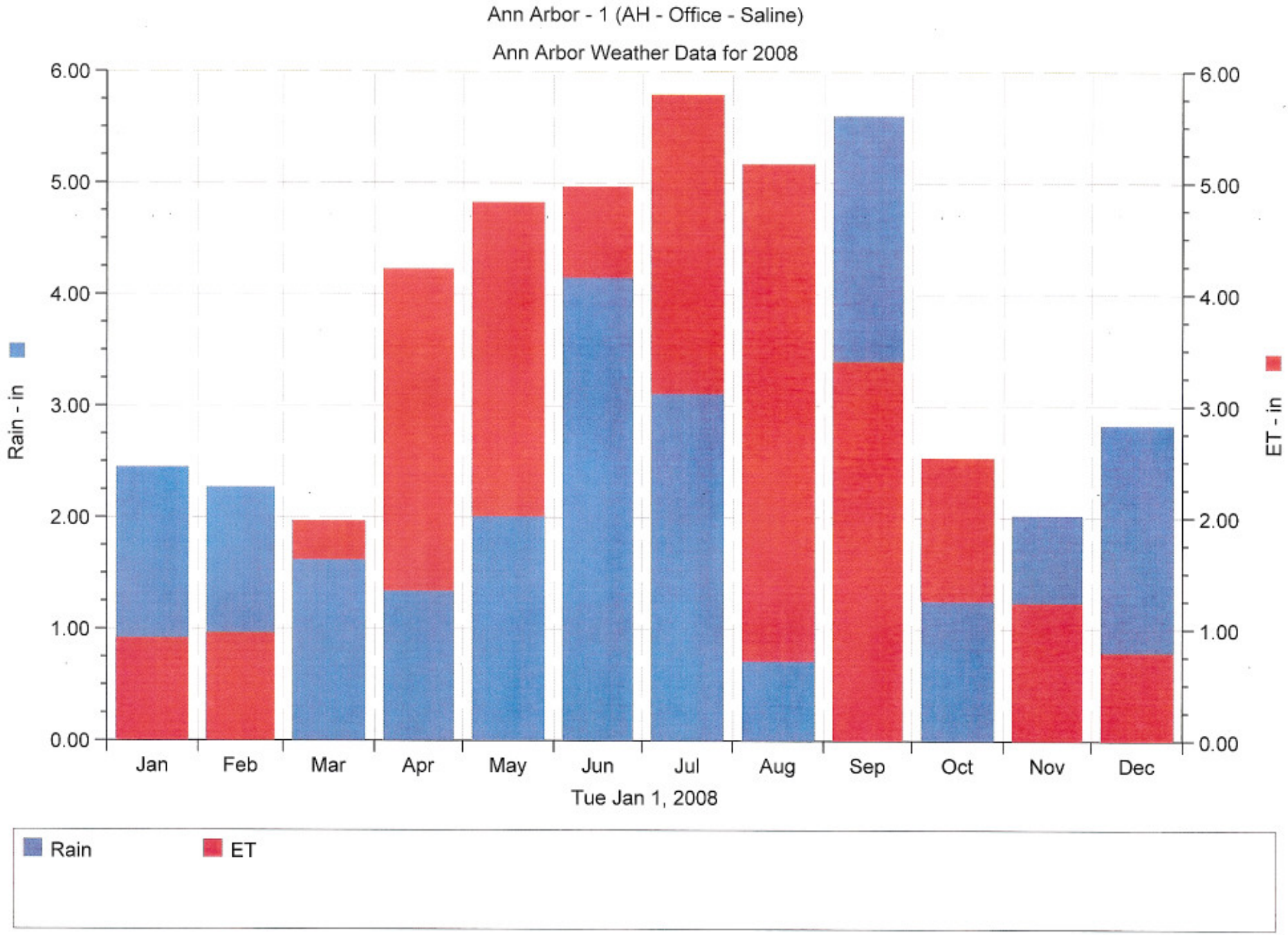
Not all rainfall measured is considered effective rain. Rain that falls too quickly will run off before reaching the root zone (determined by the sites soil and its infiltration rate), and rain that falls when the soil is completely saturated will run off as well.

Ann Arbor Weather Data for 2006



Gathered from MAWN Weather Station in Petersburg, MI


Ann Arbor - 1 (AH - Office - Saline)
Ann Arbor Weather Data for 2007
Rain - in
ET - in
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Thu Mar 1, 2007
Rain
ET


Ann Arbor - 1 (AH - Office - Saline)
Ann Arbor Weather Data for 2008
Rain - in
ET - in
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Tue Jan 1, 2008
Rain
ET