



Efficient Irrigation: Services & Products

Disclaimer

*The City of Seattle, the Saving Water Partnership, and participating water utilities do not regulate or endorse irrigation or landscape products or companies. The irrigation equipment manufacturers and distributors listed on the following pages are presented as a reference for locating efficient irrigation technologies. The list is provided as a service to customers and contractors, and is not intended to comprise a complete list of products, nor a complete list of water saving features. **This listing is updated and published on February 26, 2013 and may not be current as you read it.** For more information, please contact Jenna Smith at (206) 684-5955 or jenna.smith@seattle.gov.*

Choosing A Contractor: http://savingwater.org/docs/Choosing_a_Contractor.pdf

Below are types of products and services that can potentially increase the water efficiency of automatic irrigation systems.

➤ Professional Three-Point Irrigation Inspection

1) Point of Connection (POC)

The POC is the supply line for the irrigation system. It tees off the city's water main or other water supply to the user's property. This connection should include a cross-connection backflow assembly. Some systems have a master valve to contain mainline breaks and a pressure-reducing valve (PRV) to deliver the correct pressure to the system. Hire an irrigation contractor annually to check the master valve, pressure-reducing valve and all fittings for leaks and for proper operation.

Note: Do not confuse this inspection with a backflow inspection. Backflow inspections are required annually by the State of Washington and must be completed separately by a certified Cross Connection Specialist (CCS):
http://www.instruction.greenriver.edu/wacertservices/bat/bat_publiclist.asp

2) Sprinkler Valves

Sprinkler valves open and close to allow the operation of each zone as programmed into the controller. Malfunction of these valves can lead to excessive run times and flooding, or decreased run times and under-watering of the landscape. Hire a contractor annually to:

- Start all valves and observe the time it takes each to open and close. Excessive opening or closing times may indicate possible problems.
- Look for signs of constant weeping from the lower heads in each zone. This may indicate a valve that is not closing properly (not to be confused with low head drainage).
- Check for signs of low pressure or soggy areas in each zone that may indicate a line break.
- Inspect drip valve manifold filters, which should be cleaned at least once a year.

3) Sprinkler Heads

Four factors are critical for efficient irrigation coverage: correct product type and application, proper alignment and spacing, matched precipitation rates of irrigation heads, and correct pressure. Hire a professional to:

- Inspect heads for proper type and application for the area.
- Inspect all heads for proper adjustment to maximize coverage and minimize overspray.
- Check head alignment; heads should be perpendicular and flush with the grade.
- Check for any foliage that interferes with the spray pattern.
- Check for plugged nozzles.

- Check for signs of high pressure or misting at the heads during operation.
- Check for low head drainage.

As part of the irrigation inspection, a contractor should identify necessary repairs and possible upgrades needed to ensure that the irrigation system is operating at maximum efficiency.

➤ **Rain Sensor Specifications**

A rain sensor (or rain switch) catches moisture and prevents the sprinkler system from watering in the rain. The sensor automatically interrupts the watering schedule but returns it to its normal schedule after it dries out. To increase the efficiency of an automatic irrigation system, a rain sensor should:

- Automatically break the circuit to the solenoid valves of the sprinkler system after a rain.
- Have replaceable absorptive disks or an anti-splash catchment system.
- Be adjustable to shut off at different amounts of rainfall.
- Be mounted above ground in an unobstructed location, well suited for gauging rain, and according to the manufacturer's specifications.

➤ **Conservation Controller Specifications**

Controllers/Clocks should have the following features to maximize irrigation efficiency:

Multiple Programs. This means that the controller is capable of retaining separate watering schedules for differing landscape needs. For example, one program for shrubs and a separate program for lawns. Different programs might also be used for drip zones or slopes.

Non-Volatile Memory. This feature protects a system's settings when the power fails and the back-up battery is dead. With a Non-Volatile Memory the watering scheduling program is kept indefinitely and the program is reinstated when the power returns.

Cycling, Cycle Soak or Stackable Start Times. This feature allows for slopes or run-off prone areas to be watered in short runtime increments. For example, for an area that needs to be watered for 40 minutes this feature enables programming four cycles of 10 minutes each, providing time for the water to soak in between cycles.

Water Budgeting or Water Percent Adjust. Sometimes called the Seasonal Adjust key, this feature allows the user to change runtimes globally and/or by program by a percentage, instead of having to go in and individually changing the station runtimes one at a time. Typically this feature is used in accordance with information collected from local weather stations that calculate how much water plants are using each day. The Irrigation Water Management Society's web site at www.iwms.org lists the Seattle area Watering Index percentage in either a monthly historical, daily real-time or weekly forecasted amount. The index reflects the changing water needs or plants using solar radiation, wind speed, humidity and temperature.

Interval or "14 day" Scheduling. This feature allows for watering in even/odd intervals of every day, every other day, every third day, etc, to easily customize scheduling.

Conservation Controller Models – Check with a local distributor for models that have all of the features outlined in Section C above.

➤ **Evapotranspiration (ET) Controllers – "Smart" Controllers**

Smart control technologies fall into two categories based on the source of weather data:

1. Real-Time ET Controllers are fed data from off-site weather stations via telephone, wireless, or internet connections;
2. Real-Time Stand Alone ET systems have on-site weather monitors.

Like Conservation Controllers, ET Controllers manage a sprinkler system's watering schedule with multiple start times and programs to customize watering schedules for different landscape areas. ET Controllers have the same features as described under "Conservation Controllers" above. In addition, ET Controllers automatically adjust sprinkler run-times to real-time weather data. For tested models see the list of tested smart Climate-Based controllers and their performance reports at: <http://www.irrigation.org/SWAT/swat.aspx?id=298>

➤ **Soil Moisture Sensor Specifications – "Smart" Controllers**

Soil Moisture Sensors augment Conservation Controllers with real-time data on the moisture available to plants. Because they are in contact with plant root zones, they provide more accurate control than rain sensors alone. Efficient soil moisture systems:

- Automatically break the circuit to the solenoid valves of the sprinkler system
- Have an interface module between the sensor and the controller
- Have the ability to finish an irrigation cycle after activation
- Are adjustable to shut off at different soil moisture levels
- Are installed by a professional trained in soil moisture technology

For qualified models see the list of tested smart Sensor-Based controllers and their performance reports at: <http://www.irrigation.org/SWAT/swat.aspx?id=298>

➤ **Flow Sensors**

A flow sensor, installed with a compatible controller and pressure regulating master valve, will monitor the flow of water through an irrigation system and shut it down in case of major leaks or breaks. A flow sensor should be installed on the mainline with a pulse transmitter (if required) and compatible firmware/software connected to a compatible controller to record flows by zone. High flow conditions should result in the controller closing the master valve or zone valves. A flow sensor should be installed with one master valve and controller with flow monitoring capabilities. The system mainline should be at least 1½" in diameter. The installation should include all wiring from the flow sensor and master valve to the controller. A master valve can be normally open or closed as needed.

➤ **Pressure Regulating Master Valve**

Master valves with pressure regulators lower the pressure at the POC to acceptable levels, which can result in significant water savings. Master valves should be commercial-grade with a pressure regulator capable of maintaining outlet pressure between 15 and 100 psi on the mainline. The installation should include all wiring from the valve to the controller. The master valve can be normally open or closed as needed. The installation should include onsite adjustment of the regulator to the lowest pressure that still ensures proper system operation.

➤ **Pressure Regulating Zone Valves**

The purpose of pressure regulating zone valves is to provide the correct pressure and to reduce pressure on zones at sites with excessive psi or excessive psi variations between zones, or sites that have wide psi requirements between zones.

➤ **Retrofit Pressure Regulators for Zone Valves**

For irrigation systems with existing, commercial-grade master or zone valves that don't have pressure regulators, conversion kits are available. Pressure regulator conversion kits must be compatible with the valve and should regulate outlet pressure between 15 and 100 psi. The installation should include onsite adjustment of the regulator to the lowest pressure that still ensures proper system operation.

➤ **High Uniformity, Low Precipitation Rate, Multi-Stream Spray Head Rotor Nozzles**

Conventional spray heads with poor distribution uniformity contribute to overwatering. Retrofitting existing spray heads with new, high-uniformity, low precipitation rate, multi-stream spray head rotor nozzles can cut water use by significantly increasing system uniformity. In order to do so, all spray heads in a zone must be

replaced with high uniformity, low application rate, matched precipitation, multi-stream nozzles that fit conventional spray head bodies.

➤ **Pressure Regulating Spray Heads**

Pressure regulating spray heads maintain uniform and correct pressure and flow within a zone, increasing system uniformity. If a zone has major sprinkler head pressure differences, replace all heads in a zone with spray heads with built-in pressure-regulating devices to improve efficiency. Pressure regulating spray heads must have matched precipitation rate nozzles with adjusting screws.

➤ **Spray & Rotor Heads with Check Valves**

Low head drainage is caused by water draining out of the lowest heads in a sprinkler zone after the controller has shut off. Spray and rotor heads with check valves will eliminate or reduce water wasted from low head drainage. The replacement of spray or rotor heads must be compatible with other heads in the zone and have integrated check valves capable of holding against a minimum of 10' of head. Only heads with drainage issues need to be replaced.

➤ **Convert Beds with In-Ground Systems to Drip and Micro-Sprinklers**

Many established, in-ground irrigation systems utilize inefficient spray heads to water shrub and flower beds. Converting permanent beds to drip and micro-sprinklers will increase irrigation uniformity. Convert all sprinklers on a zone to point/line source drip or micro sprays, except those that can be capped.

Wholesale Irrigation Equipment Distributors

Berkey Supply www.berkeysupply.com		
Phone: 425-487-3310 15500 Wood-Red Rd, Bldg C-100 Woodinville, WA 98072 Email: bill@berkeysupply.com		
Ewing Irrigation www.ewing1.com		
2901 S Tacoma Way Tacoma, WA 98049 Phone: 253-476-9530 Email: branch136@ewing1.com	8710 Willows Rd NE, Suite C Redmond, WA 98052 Phone: 425-867-9530 Email: branch139@ewing1.com	1805 Pike St NW Auburn, WA 98001 Phone: 253-333-9530 Email: branch164@ewing1.com
HD Fowler Co www.hdfowler.com		
13440 SE 30th St Bellevue, WA 98005 Phone: 425-746-8400 Email: bobk@hdfowler.com	1417 Thornton Ave SW Pacific, WA 98047 Phone: 253-863-8600 Email: mberry@hdfowler.com	
Horizon www.horizononline.com		
11135 NE 33rd Pl Bellevue, WA 98004 Phone: 425-828-4554 jeff.drake@horizononline.com	955 Lind Ave SW Renton, WA 98055 Phone: 425.277.2525 mike.burt@horizononline.com	2425 39 th St Everett, WA 98201 Phone: 425-303-9200 mmunoz@horizononline.com
John Deere Landscapes www.johndeerelandscapes.com		
1740 NW Maple St Issaquah, WA 98027 Phone: 425-557-3400 wscanlan@johndeerelandscapes.com	13930 NE 190th St Woodinville, WA 98072 Phone: 425-485-6167 chendry@johndeerelandscapes.com	