

## Understanding Your Irrigation Audit

So, you've just had your irrigation system audited. What next? The auditor left you some recommendations for ways to improve the system and help you manage your water more efficiently over the summer and for many summers to come. Following through in making these corrections will help reduce your summertime water usage and minimize the impacts we may have on the environment due to excessive water use.

**Section # 1:** This section of the audit form is a record of reference data. The auditor records how the system was programmed (schedule) at the time of the assessment. This is the baseline information from which later recommendations for corrective measures can be calculated. Specific corrections will be identified later in the **Recommendations** portion of the form.

**Controller:** Records the make and model of controller(s), the number of stations available and how many valves (zones) were connected and/or functioning at the time of the assessment. The notes line will reflect anything that the auditor noticed during the assessment such as bad connections, and anything on the display not working.

**Run Times:** This section reflects how many minutes each valve is scheduled to run on a particular cycle as programmed on the controller.

**Programs:** Reflects how many days per week, how many times per day and what time of day the irrigation cycle(s) is set to begin.

**Landscaping:** This is a general description of the property being assessed. The auditor will record a general overview of plant types and areas of plantings. It may also include references to slopes, water features, sun exposure, soil conditions and other indicators in the landscape that can be identified as potentially affecting water usage; either positively or negatively.

**BFP:** (Back flow preventer) City code requires that all irrigation systems have installed devices or assemblies that meet or exceed standards to prevent accidental intrusion of irrigation water into the potable supply. In this section the auditor will record if, what type, whether or not it meets City requirements, its size, if it is installed properly and whether or not it has been or can be tested. *For more detailed information on this subject, please go to:*

<http://www.ci.oswego.or.us/publicworks/backflow-and-cross-connection-control-program>

**GPM:** The auditor will operate each individual valve by controller (manually if necessary) and calculate the volume of flow generated by the sprinklers on each zone/valve at the meter; converting Cubic Feet per Minute (CFM) into Gallons per Minute (GPM). These numbers are then used to record the amount of water currently being applied for each zone/valve. which is then used to estimate typical usage per irrigation cycle and determine the possibility of excessive usage due to leaks, sprinkler type or other issues.

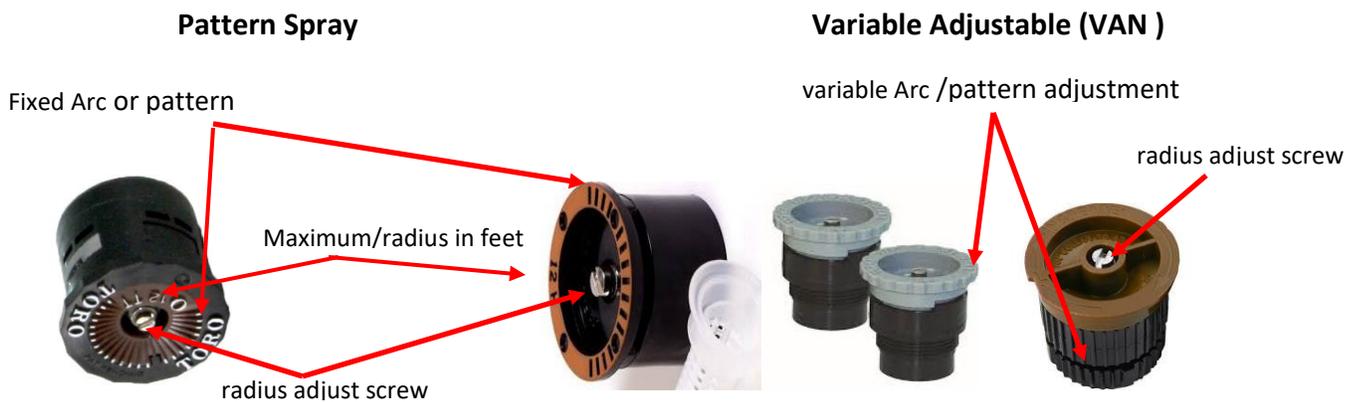
## Section # 2

In this section the auditor will suggest specific changes that can be made to the system which may help reduce unnecessary water usage. This section focuses on hardware, i.e. pipes,

sprinklers, controller, valves, etc., and management or scheduling. Recommendations will include proposed repairs, adjustments or replacements of heads, pipes or valves. The auditor will recommend changes based upon visual observations of sprinkler patterns, calculations of current flows and soil and plant needs if changes are made. Schedules for operation of the irrigation system will be based upon observations as well as seasonal needs. While these schedules are fairly accurate, they are in no way “perfect”. It will be up to the owner to make minor adjustments as needed, up or down, to accommodate variances in soils, temperatures, sun exposures and seasonal weather changes.

**General:** This topic addresses the overall state or health of the irrigation system. The auditor will identify, if possible, any leaks or anomalies that were encountered. This overview will speak to general adjustments, problem areas and recommend changes to equipment. This summary will help to prioritize areas that will need the greatest commitment for repair or adjustment.

**Spray heads/nozzles:** This refers to a sprinkler in which the general action and pattern of water as it leaves the sprinkler is generally fixed. Most are restricted by degree of the pattern or arc, i.e. 90°, 180°, 360° etc.; and the length of throw or radius, i.e. 10’.12’ 15’ etc. These patterns and numbers are generally stamped into the top of the nozzle. (see below) There are also some models with variable or adjustable arcs. (VAN) These nozzles can be used to help irrigate areas that do not exactly match the coverage available for pattern sprays. The arcs of these nozzles can be adjusted to fit almost any shape. **These Van nozzles frequently go out of adjustment** and will need more regular monitoring. Radius (distance of throw) is adjusted on all models by the adjustment screw in the center of the nozzle.



**Helpful Tip:** The shape of the area you intend to water must align with the pattern of the arc. It is not appropriate to use a 1/2 circle (180°) nozzle to irrigate a 90° corner of your yard; or vice versa.

**Multi-stream Rotator Nozzles:** These are nozzles designed for use in place of spray nozzles. Designed to fit almost any Pop-up spray body. Stream patterns continually rotate when under pressure, hence the name. Almost all manufacturers offer these nozzles. These nozzles apply water at a much lower rate which helps to control run off; and more even (uniform) applications. Many are adjustable and the

radius can be shortened by the small screw in the center of the nozzle. Manufacturers web sites provide detailed adjustment instructions



**Rotors:** As the name suggests, these sprinklers are designed to circle 360°, however most brands offer adjustable versions that can be set to water smaller areas according to your needs. How these adjustments of radius and arc (pattern) are made is unique to the individual brands, models and styles. All manufacturers offer detailed adjustment instructions on their web sites. It is important to note that one size does not fit all. Nozzle sizes (controls the amount of water and radius) can be different amongst the different models and brands. Many have groups of varying nozzle sizes. Matching nozzles/sizes throughout a zone/valve will help make the distribution of water more efficient (balanced). Again, consult the manufacturers website for help.



**Drip, Micro, Other:** The auditor may have mentioned some issues with a drip or micro irrigation system on your property. These may refer to leaks, or pressure or some other issues. **Things to remember about drip and micro:** Combining the drip/micro equipment with a conventional system is a bad idea. Drip/micro is measured in Gallons per Hour while conventional systems are Measured in Gallons per Minute. Balancing the water times is virtually impossible resulting in over or under watering. Drip/micro must be on a separate valve and requires a much more frequent monitoring schedule. Pipe walls are thin and easily damaged by animals (it becomes a water source to them in the summer) and can be easily damaged by a shovel or other garden tool. Drip/micro equipment are designed to operate at much lower pressure levels, usually no more the 25 PSI (pounds per square inch). Higher pressures can cause emitters to blow out and fittings to fail. The idea that drip/micro systems will save water is not always true. When designed and installed properly, they are without a doubt the most efficient watering system we have available today, sadly though, if designed, installed or maintained improperly, they are one of the least efficient.



**Schedule by Season:** The auditor will recommend a general schedule that is basically a fairly accurate “ball park” estimate of water needs by plant-type and time of year. This schedule will address your yard’s specific water needs based upon comparison with current scheduling and if the majority of recommendations are implemented. This schedule will also illustrate the time of season for programming changes to be made.

Use this web link to the Water Conservation Web Page to find more tips, techniques and projects. <http://www.ci.oswego.or.us/conservation>