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CONSERVATION CORNER: LANDSCAPE WATERING GUIDELINES – PART TWO: LEARNING THE WATERING SYSTEM'S OUTPUT

submitted by the Office of the State Engineer's Water Use and Conservation Bureau

(**SANTA FE, New Mexico**) – An important step in achieving efficient outdoor water use is knowing how much the watering system applies to the chosen plant material. A watering "system" can be as simple as hand watering with a hose, but for purposes of this article, it can be defined as an irrigation system with a an automatic timer that can be programmed. Irrigation systems even vary in how efficient they are in applying water to plants, depending on which mechanism is used to deliver the water--sprinklers, bubblers, or drip emitters. A demonstration of variation in water output by method used is apparent when comparing how long it would take to apply 10 gallons of water:

- 2 minutes with a watering hose
- 10 minutes with a 1-gallon per minute bubbler
- 600 minutes (10 hours) with a 1-gallon per hour drip emitter

Sprinkler output can vary greatly according to the system design and water pressure. A simple method to calculate sprinkler output is the "catch-can" test. Six to eight clean, shallow, flat-bottomed containers that are uniform in size/depth (such as soup or fruit cans) can be dispersed evenly about the lawn, about 4 to 5 feet apart. The sprinklers should be turned on for 15 minutes, and then the system shut off so that the depth of water in each container can be measured. The measurements are then added together and divided by the number of containers used in order to get the average depth. This number is the amount of water in inches that the sprinkler system applies in 15 minutes. On average, spray (pop-up) sprinklers apply 0.4 inches of water and rotor (impact) sprinklers apply 0.2 inches of water in 15 minutes. If there's a lot of variation in measurement from container to container, adjust the sprinkler system to get more uniform coverage. The catch-can test can be used again to measure any changes to the system to ensure efficient, uniform coverage. It should be noted that sprinklers

systems are not recommended for any plant material other than lawns, due to their inefficient use of water.

Bubblers or drip emitters are generally used to water trees and shrubs. Bubblers typically apply ½ to 2 gallons per minute (GPM), depending in how they are adjusted. The flow rate will generally be stamped on the top of the bubbler.

Drip irrigation systems are most efficient for watering plants because the emitters can be placed more directly at the root zone and allow for a slow, deep watering, avoiding unnecessary evaporative losses. Also, emitters can be added, subtracted or moved around easily according to the plant's needs as it grows.

Drip emitters come in a variety of sizes from ½ gallon to 4 gallon and some with flows can be adjusted upward or downward and are sized in gallons per hour (GPH). Most plants require more than one emitter per plant. In order to calculate emitter output, multiply the number of emitters by the output in Gallons/Hr to determine the total output in Gallons/Plant/Hr (3 emitters x 2 gallons = 6 gallons per hour.)

Calculating the total output for the landscape plant material will help determine the run times for each watering zone or valve. Group plants by type and size (the diameter of the plant canopy) to easily make this calculation.

Next month in the *Conservation Corner*, look for Part Three of the Landscape Watering Guidelines: Matching the System's Output to the Plant's Needs.

The Office of the State Engineer is charged with administering the state's water resources. The State Engineer has power over the supervision, measurement, appropriation, and distribution of all surface and groundwater in New Mexico, including streams and rivers that cross state boundaries. The State Engineer is also Secretary of the Interstate Stream Commission and oversees its staff.

The Interstate Stream Commission is charged with separate duties including protecting New Mexico's right to water under eight interstate stream compacts, ensuring the state complies with each of those compacts, as well as water planning.

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