

# \* Idaho/Washington Aquifer Collaborative



## Irrigation and Landscape Design - Technical Assistance Workshop

For more information, please contact us at  
[iwacinfo4@gmail.com](mailto:iwacinfo4@gmail.com)

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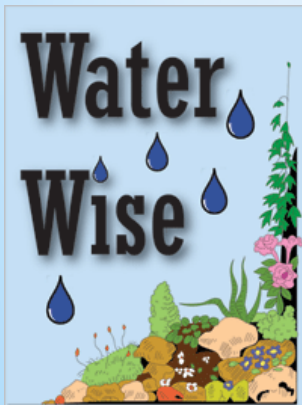


What is IWAC's purpose  
and who is involved?

[iwacinfo4@gmail.com](mailto:iwacinfo4@gmail.com)

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## IWAC MODEL EFFICIENT IRRIGATION AND LANDSCAPE DESIGN GUIDELINES



QUESTIONS FOR THE PRESENTERS?  
Send feedback to [iwacinfo4@gmail.com](mailto:iwacinfo4@gmail.com)



# IDAHO WASHINGTON AQUIFER COLLABORATIVE

- WHAT IS THE IDAHO WASHINGTON AQUIFER COLLABORATIVE (IWAC)?
- WHO ARE THE IWAC MEMBERS?
- WHY ARE WE HERE TODAY?
- WHY DO WE CARE?
- WHAT PROJECTS WE ARE INVOLVED WITH?



MODEL EFFICIENT IRRIGATION AND LANDSCAPE DESIGN GUIDELINES

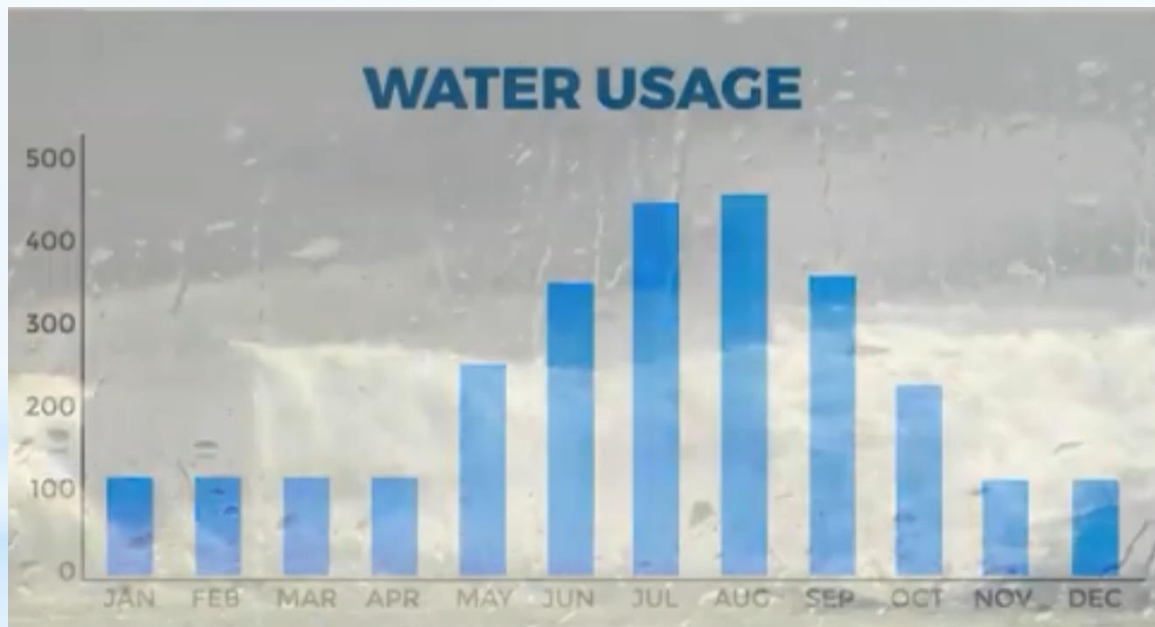
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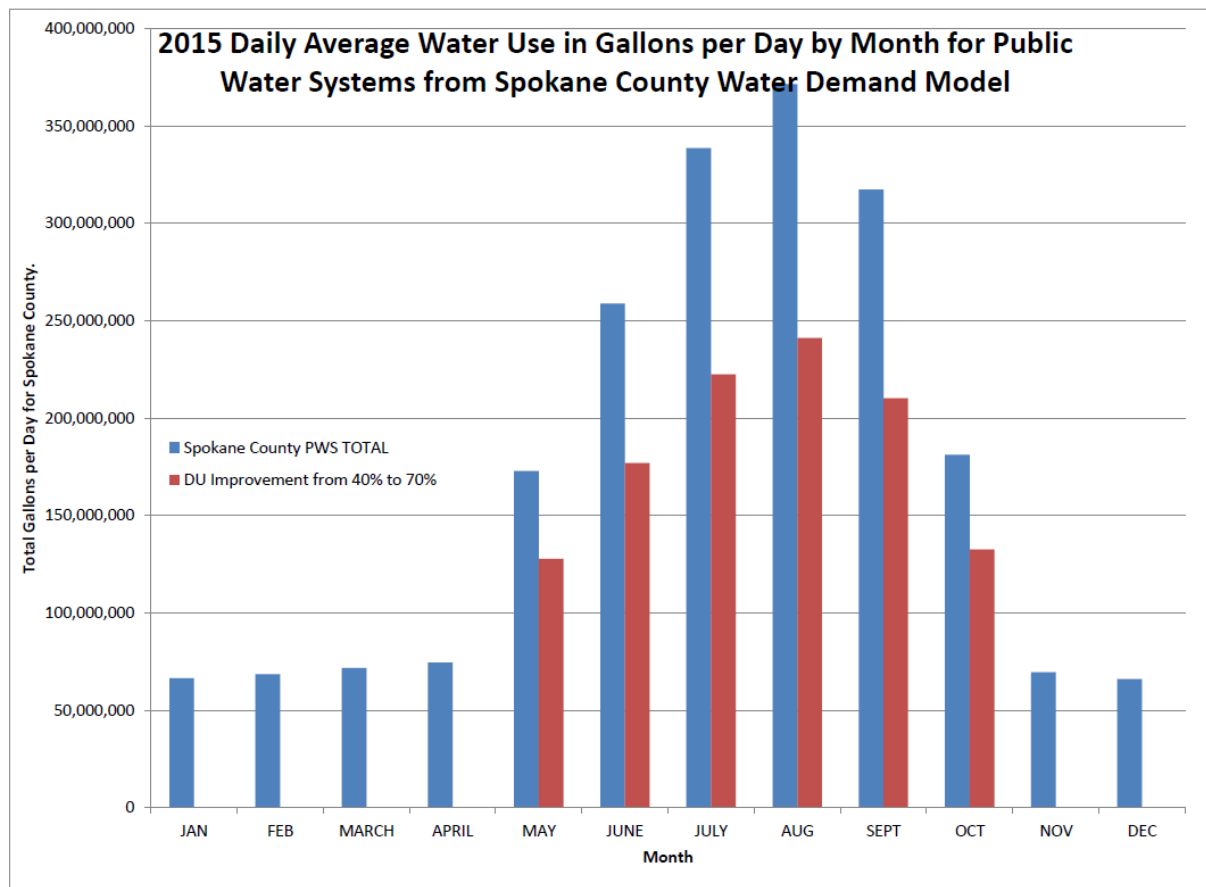
Do you realize that 50% to 70% of use is attributed to outdoor use, either irrigation, maintenance or recreation?



# WATER USAGE ACROSS THE SVRP AQUIFER TRIPLES DURING THE SUMMER



# IDAHO/WASHINGTON AQUIFER COLLABORATIVE



- WHAT IF WE COULD DOUBLE IRRIGATION SYSTEM EFFICIENCY?
- WE COULD CUT OUR PEAK USE BY A THIRD AT THE VERY LEAST!



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How often do you receive complaints from the public about this problem?

What issues can this cause?





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And we also see this very common theme, much to the annoyance of public water systems. Notice what is getting carried down the drain with the runoff. Remember, “Only Rain Down the Drain!”



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Abundant greenspace is a typical planning and development requirement. This can significantly affect public water systems. What can be done to alleviate the problem?



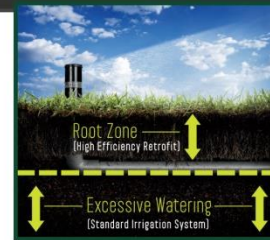
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EFFICIENCY & SUSTAINABILITY, THE NEW INDUSTRY STANDARD

Retrofit  
**ROI**  
LESS THAN  
12 MONTHS

Escalating water costs and recent advances in irrigation products have made water use one of the easiest areas to impact bottom lines. Using smart controller technology and high efficiency irrigation systems, companies can reduce the effects of water supply and demand on their business.



We as a community need to change our philosophy about water use. We need to protect quantity and quality for the future.



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So, what are we asking for? What do the water systems expect you to do?



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VS.



**TRADITIONAL SPRAY HEAD**

**FLOW (GPM) = 0.1 TO 5.52**

**EXAMPLE:**

TRADITIONAL 1.85 X 20 MIN = 37 GAL

MP ROTATOR 0.50 X 20 MIN = 10 GAL

**= 73% REDUCTION**

**MP ROTATOR**


**FLOW (GPM) = 0.17 TO 1.01**

First and foremost, we are basically asking for increased irrigation efficiency and reduced water use. This can be accomplished with simple, inexpensive choices.



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## Xeriscape and Low Water Use Landscape Designs



More images

### Xeriscaping

Xeriscaping is the process of landscaping or gardening that reduces or eliminates the need for supplemental water from irrigation.

[Wikipedia](#)

Consider alternatives to water hungry turf. There are an abundance of attractive, low water use landscaping methods.



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## Drought Tolerant Native Plant Species

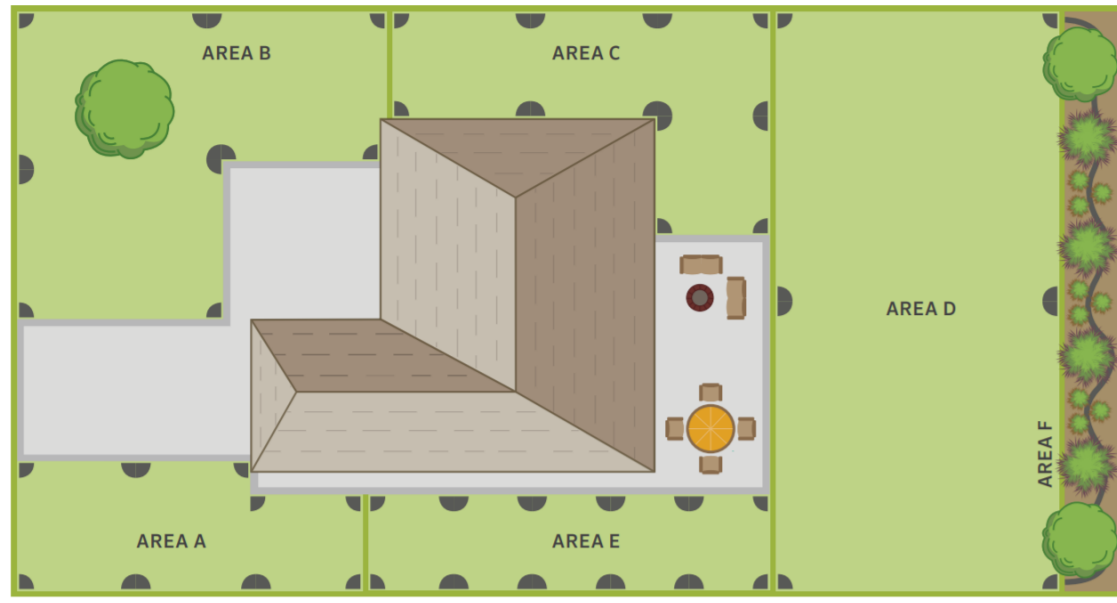


How about rock gardens and walking paths with drought tolerant native plant species?



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## Efficient Irrigation and Landscape Design



You will hear us repeated talk about efficient design and distribution uniformity. Make this a standard practice to help promote conservation.





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## Irrigation Components and Efficiency Options

### MP ROTATOR - PROVEN WATER SAVER



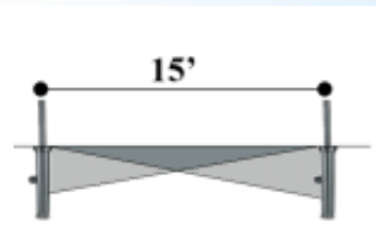
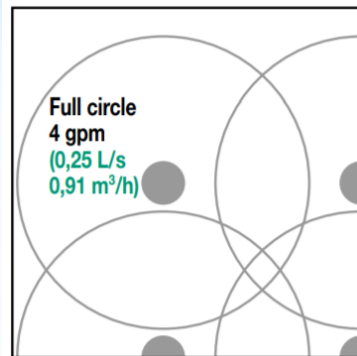
Consider using low water use devices, sensors and equipment. Most distributors are now offering these types of water saving features.



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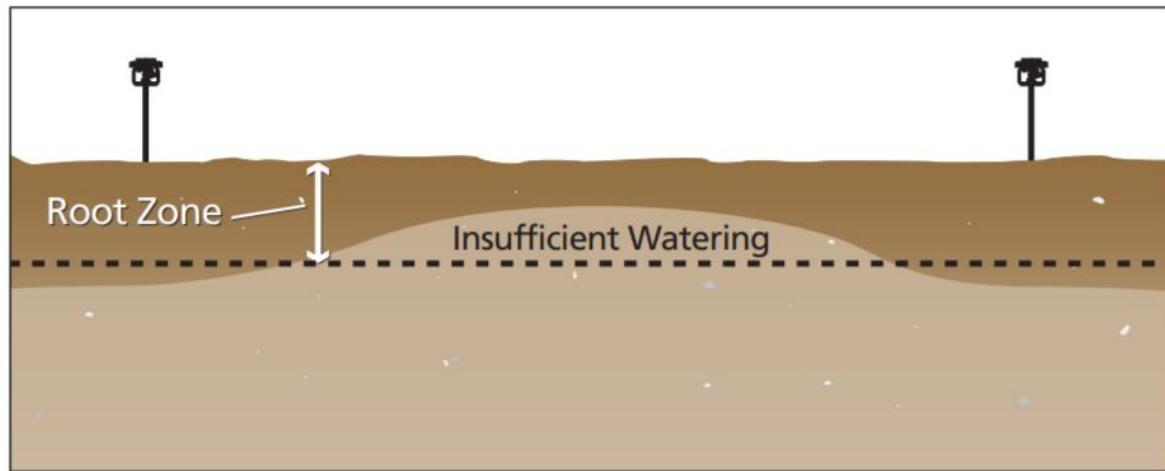
## DISTRIBUTION UNIFORMITY -

Distribution uniformity or DU in irrigation is a measure of how uniformly water is applied to the area being watered, expressed as a ratio to avoid confusing it with efficiency. The **distribution uniformity** is often calculated when performing an **irrigation audit**.

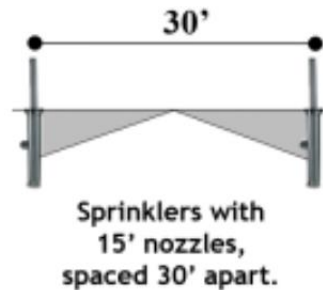


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## POOR DISTRIBUTION UNIFORMITY



**FIGURE 2:** Depiction of irrigation resulting in poor DU and insufficient irrigation in parts of the field



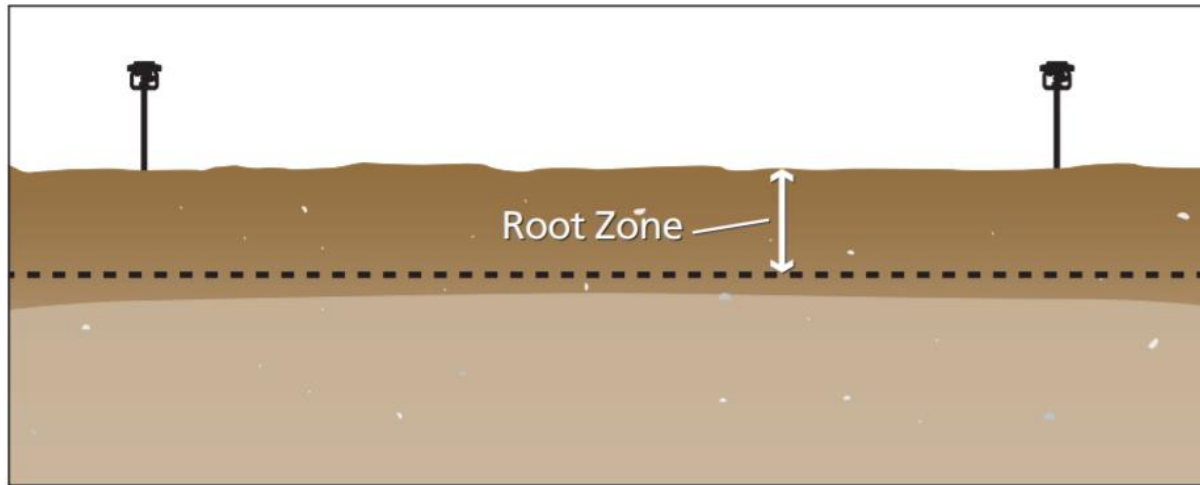
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An example of very poor DU

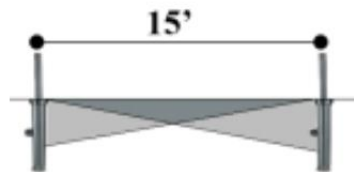


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## EXCELLENT DISTRIBUTION UNIFORMITY



**FIGURE 4:** Depiction of irrigation sufficiently watering the entire field with good DU and irrigation efficiency

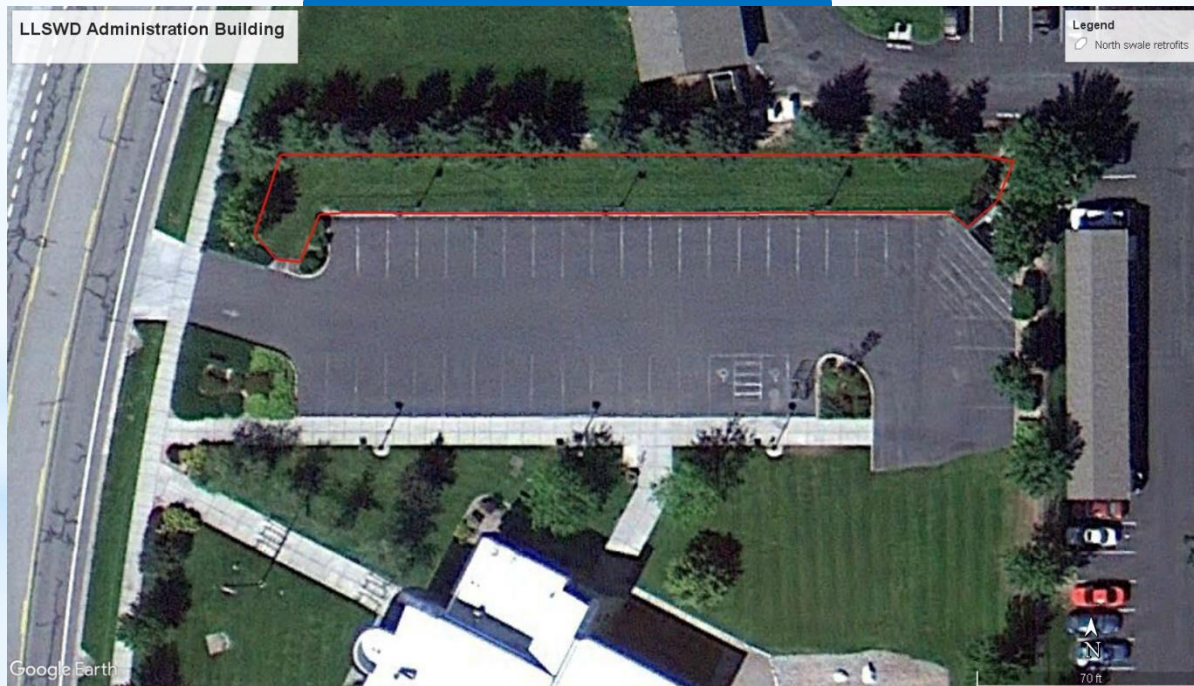


Sprinklers with  
15' nozzles,  
spaced 15' apart.



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An example of excellent DU



The red outline is a swale area that was retrofitted to improve efficiency

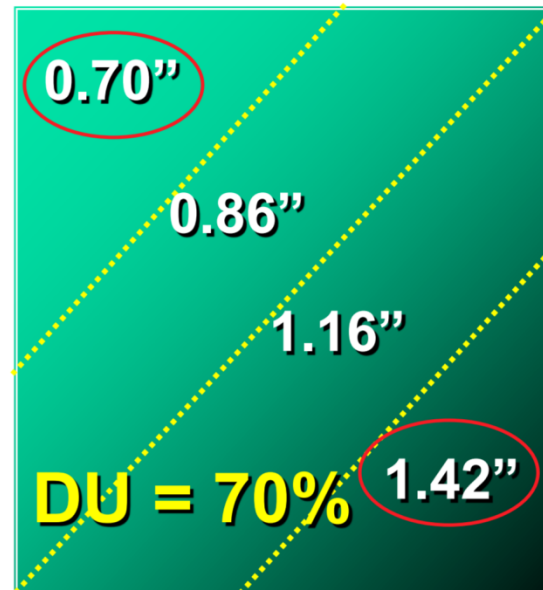
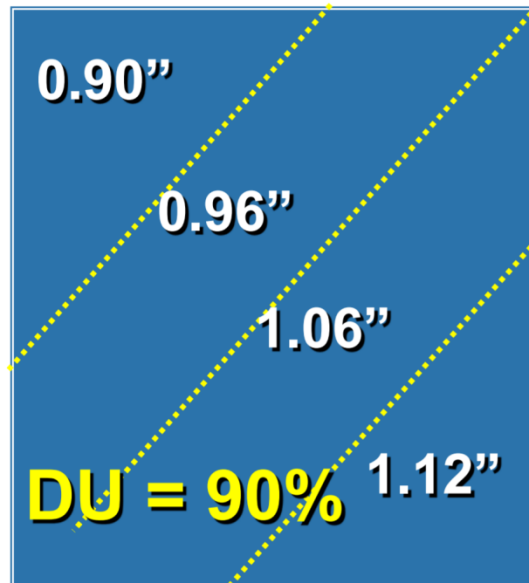


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Water Consumption is a Major Issue with Irrigation

## Why Care about DU?

Example: Target application 1.0 inch water



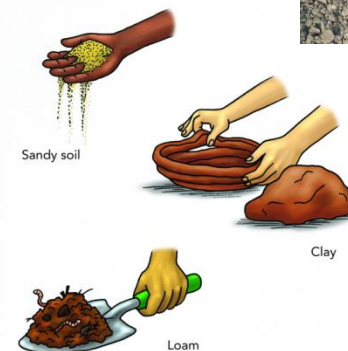
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## Soil Intake Rates - You may need soil amendments

Soil Texture	Water Available For Use Between Irrigations (50% of available water)	Intake Rate (inches/hour)*
Sand	0.5 inch/foot	1 – 3
Loam	1 inch/foot	0.3 – 0.8
Clay	1 inch/foot	0.01 – 0.2

\*Intake rate can vary greatly with soil structure and stability.

Source: Fundamentals of Irrigation, USU Extension





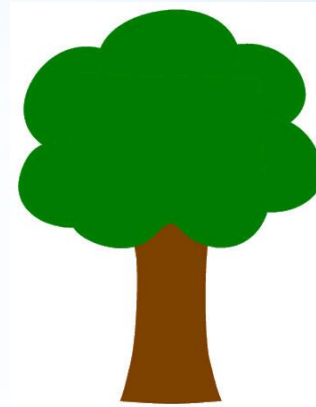
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## WETTED DEPTH REQUIREMENTS



- Turf generally requires a wetted depth of 12” to remain healthy.
- Plants and shrubs generally require a wetted depth of 18”.
- And trees generally require a wetted depth of at least 24”.

The difficulty is that these are usually incorporated into the entire landscape design without benefit of separate irrigation.



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## IRRIGATION AND LANDSCAPE DESIGN STANDARDS

- LANDSCAPE IRRIGATION INDUSTRY LACKS NATIONAL OR INTERNATIONAL STANDARDS FOR CONSTRUCTION AND OPERATION.
- MOST JURISDICTIONS DO NOT HAVE STRONG PROVISIONS FOR WATER EFFICIENCY WITHIN THEIR LANDSCAPE CODES.



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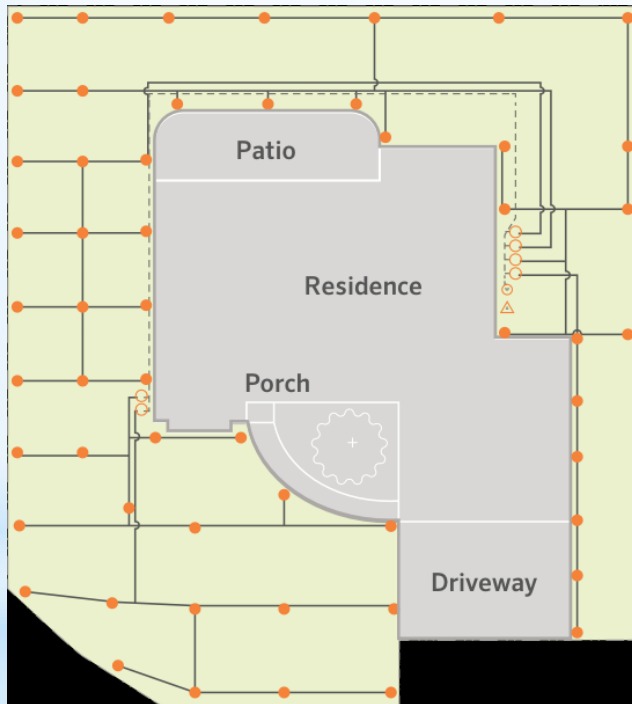


How many jurisdictions you work in actually require detailed irrigation and landscape design plans, especially for residential?

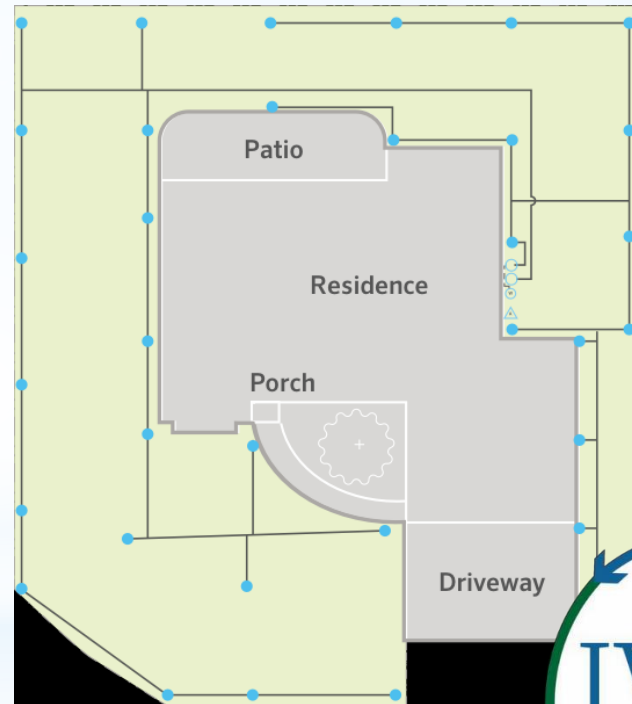


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DESIGN USING TRADITIONAL SPRAYS



DESIGN USING MP ROTATORS



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## IS WATER PRESSURE REALLY AN ISSUE?

The average water pressure for most homes and businesses is between 30 psi and 50 psi; most sprinkler systems are designed to use pressures of around 30 psi. You can measure the water pressure at your site with a flow meter or water gauge attached to an outdoor faucet. When determining your sprinkler needs, use the lowest pressure reading to ensure the best functionality.



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## IS WATER PRESSURE AN ISSUE?

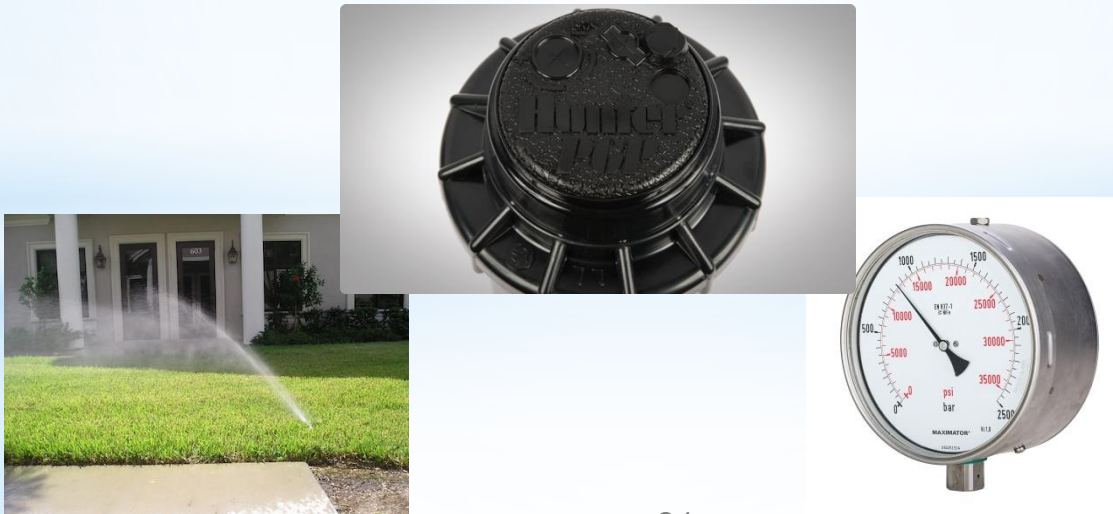
**Spray heads and rotators.** Most spray and rotator heads are designed to work their best at about 30 psi. When pressure is lower, the watering radius will be reduced, so you may need to place your heads closer together to get the coverage you need. Higher pressures - those above about 40 psi - will cause the head to mist or fog. Most systems have adjustment valves to help control misting. Pressure regulators installed along the main line can also be used.



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## IS WATER PRESSURE AN ISSUE?

**Rotors.** Rotors are designed to work best at pressures exceeding 30 psi. If your water pressure is already high, a rotor is a good choice for you; if your pressure is low or average and you need a rotor to water your landscape effectively, you can use a boost pump to increase pressure or adjust the spacing of your rotor heads to help make them more efficient.



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## IS WATER PRESSURE AN ISSUE?

**Drip heads (also called drip emitters).** These heads are designed to work best at about 20 psi. High pressures - typically those exceeding 40 psi or greater, but sometimes lower - can cause emitters to break apart.





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## DISTRIBUTION UNIFORMITY - DESIRABLE SPRAY PATTERNS

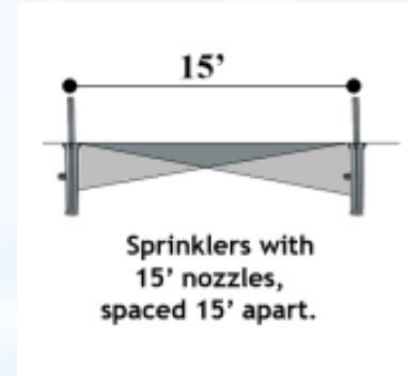
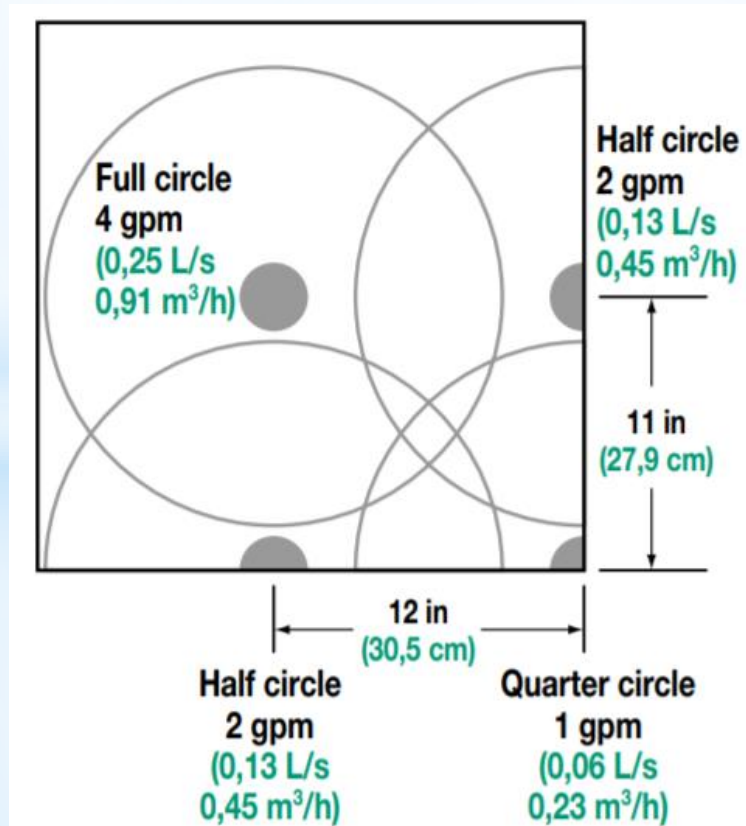
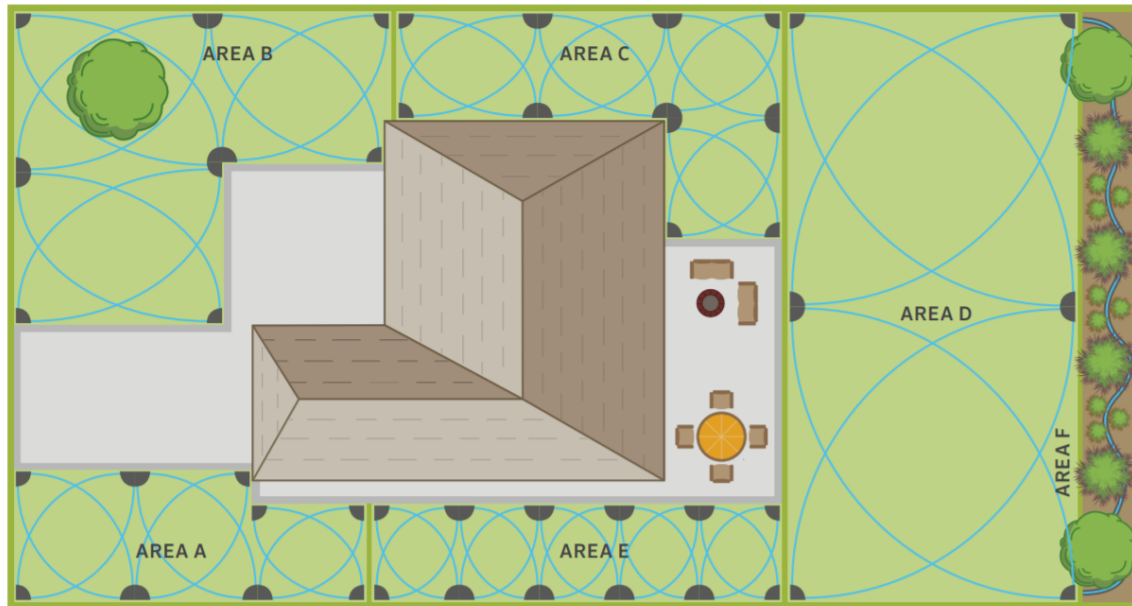


Figure 25: Matched precipitation rate sprinklers



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## PROPER DU SPRAY PATTERNS



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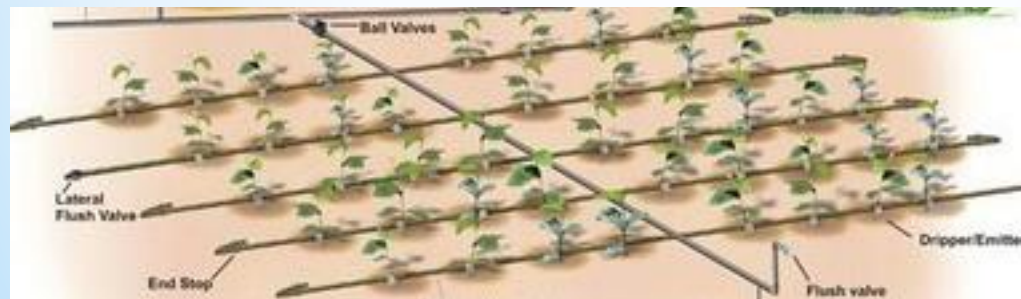
## Attaining maximum efficiency through drip irrigation systems

This system is good for a small yard or for watering individual plants. Drip **irrigation** is highly effective at supplying one to four gallons of water per hour directly to the soil. The advantage of drip **irrigation** over sprinklers is that there is little water loss due to evaporation or runoff.



 [wateruseitwisely.com > landscape-care > principles-of-xeriscape-design](https://www.wateruseitwisely.com/landscape-care/principles-of-xeriscape-design)

[Efficient Irrigation | Water Saving Irrigation Methods](#)



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Sprinkler head efficiency is key to better coverage while consuming less water



**MP ROTATOR - SMARTER, FASTER, AND BETTER**



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Soil moisture sensor based systems can save up to 20% in overall water use.



*WaterSense labeled irrigation controller*



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Soil moisture sensors can measure the soil moisture content and adjust irrigation rates



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## How much water does the customer's lawn actually need?

### WATER-WISE LAWN WATERING

- 1. How Much Water Does Your Lawn Need?** For lawns, water deeply but infrequently to encourage deep roots. The key to watering your grass is to apply enough water to soak down to the depth of the roots. The amount varies with soil type, but a good guide is to apply no more than one inch of water every time, which is enough to soak the soil to between six and 10 inches.
- 2. Measure Your Sprinkler Output** Without knowing it, you could easily drop up to 300 gallons of water in one hour and end up over-watering your lawn. Here's how to test your sprinkler output so you can adjust your watering time:
  1. Place six to eight shallow, flat-bottomed cans at scattered locations around your lawn. Tuna or cat food cans work well.
  2. Run your sprinklers for 15 minutes.
  3. Use a ruler to measure the depth of water in each can. Add all the numbers, and then divide by the number of cans to find the average output.
  4. This average number is your sprinkler number. It is the average amount of water your sprinklers apply in 15 minutes.
- 3. How long and how often should you water?** After you've calculated your sprinkler number in the previous step, you can calculate how long to run your sprinklers. Simply locate your sprinkler number in the chart below, and then find the corresponding watering time.  
*Sprinkler Run Time to Apply 1 Inch*

Sprinkler Number	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Watering Time(in Minutes)	75	50	37	30	25	22	19	16	15



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- UPGRADES DO NOT HAVE TO COST A FORTUNE.
- THEY CAN BE RELATIVELY QUICK, EASY AND INEXPENSIVE.





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EVEN SIMPLE ADJUSTMENTS CAN HAVE A SIGNIFICANT EFFECT ON IRRIGATION PERFORMANCE.



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## Agricultural Use

### On the Farm – Water-wise Irrigation

#### Tips:

- Install water flow meters to understand and monitor your water usage.
- Consider using low-spray (close to ground) or drip irrigation systems
- Use holding ponds as water supply.
- Use local weather data and computer software/apps to determine effective irrigation times.
- Level and contour-plow fields when possible.
- Capture water that runs off your fields for reuse.
- Consider creating berms between rows to reduce runoff.



#### Did you know?

Agriculture utilizes approximately 40% of all freshwater used in the United States.  
([www.worldbank.org](http://www.worldbank.org))



The SVRP supports considerable agricultural use. How do you think this affects our regional water supply?



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Have an irrigation audit performed by a certified auditor



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## Lawn and yard checklist:

Efficient irrigation upgrades

Proper installation and repairs

Effective pruning methods

Proper seasonal yard care and clean up



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PROGRAMS OUR NEIGHBORS ARE WORKING ON

## WATER EFFICIENT LANDSCAPE DESIGN



- Traditional turf landscapes require extensive watering, fertilization, and pesticide application.
- Drought-tolerant and water-smart landscaping can be designed to be aesthetically pleasing, save water, and protect the environment.



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## Case Study: SpokaneScape

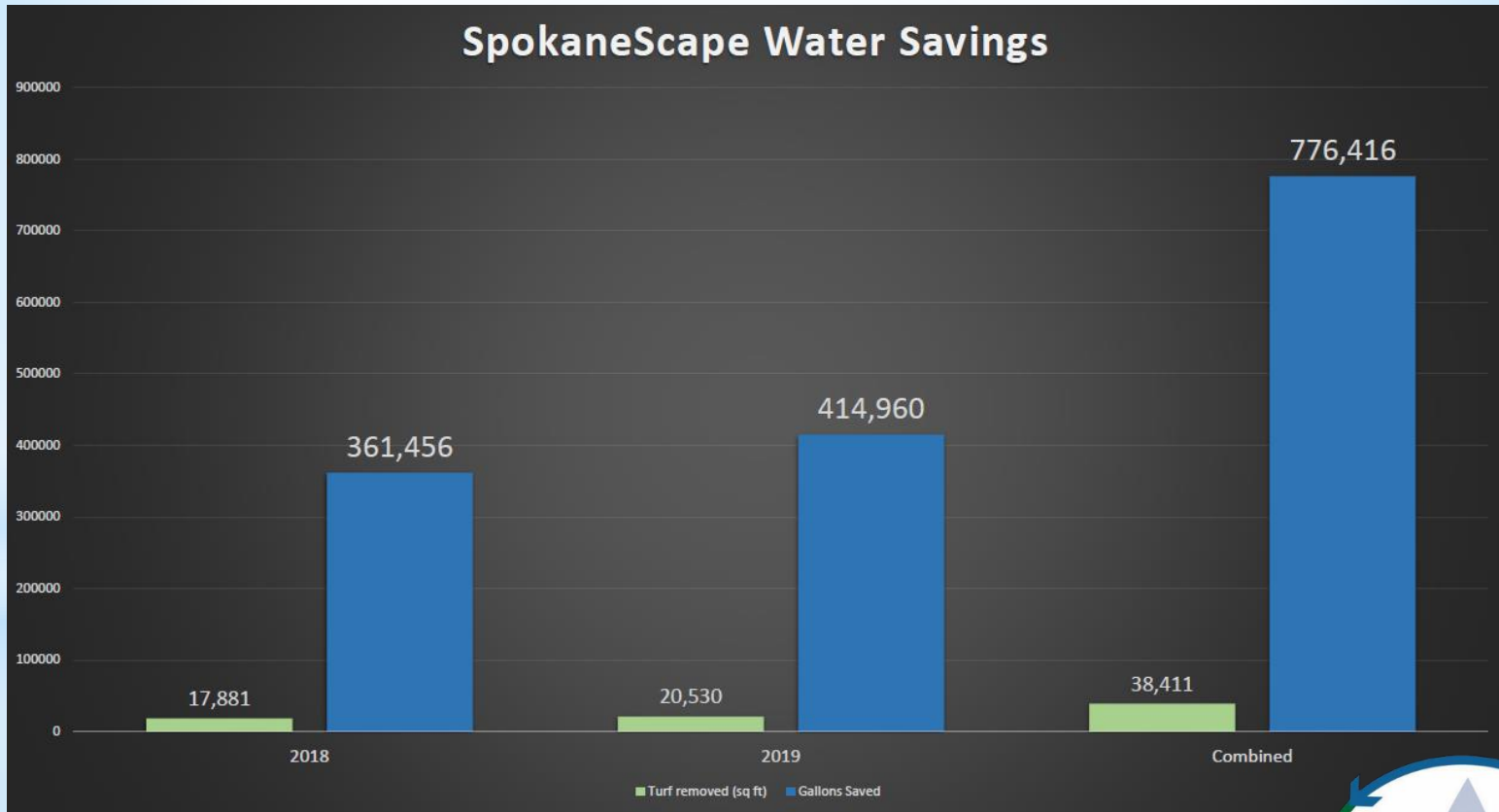
- The City of Spokane established a turf replacement rebate program for water customers in 2018
  - Incentivizes customers to replace turf with drought tolerant plantings, efficient irrigation and mulch.
  - Offers \$0.50/square foot for converted space, up to \$500



SpokaneScape is water-efficient landscape that has been designed specifically for the **unique climate of the Inland Northwest**- it's a landscape that **works for where you live.**



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\*SpokaneScape Saves: 133 gpd / 1,000sf



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\* PROGRAMS OUR NEIGHBORS ARE WORKING ON

## Wisescape®

### ...water efficient landscaping on the Palouse



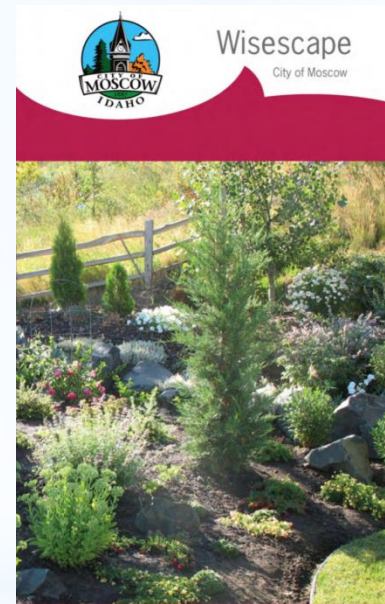
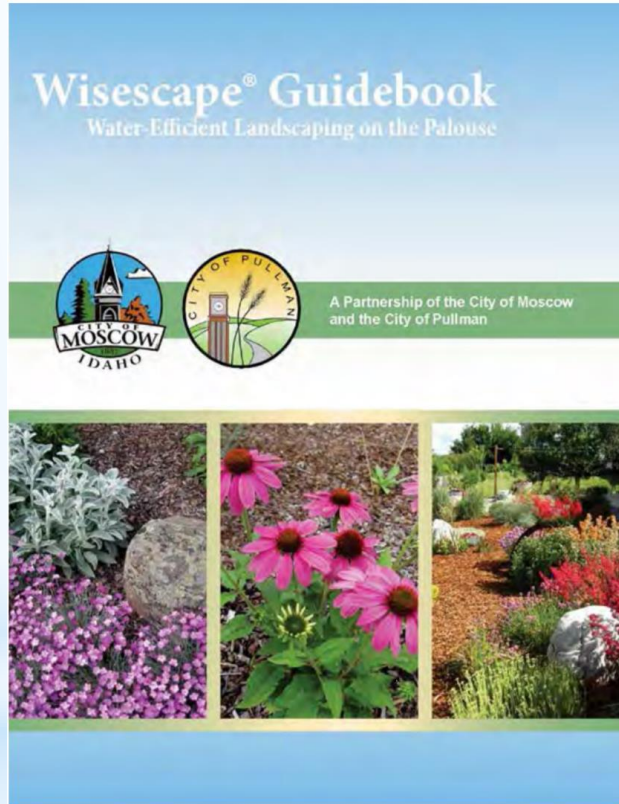
Contact: Nichole Baker, Environmental Services Coordinator  
Water Conservation and Sustainability  
[nbaker@ci.moscow.id.us](mailto:nbaker@ci.moscow.id.us) | 208-883-7114





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## \* Case Study: Moscow/Pullman Wisescape Program



# \* Idaho/Washington Aquifer Collaborative

## \* Moscow/Pullman Wisescape Program

### Wisescape Demo Garden Established in 2009

Before

After



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## \* Moscow/Pullman Wisescape Program



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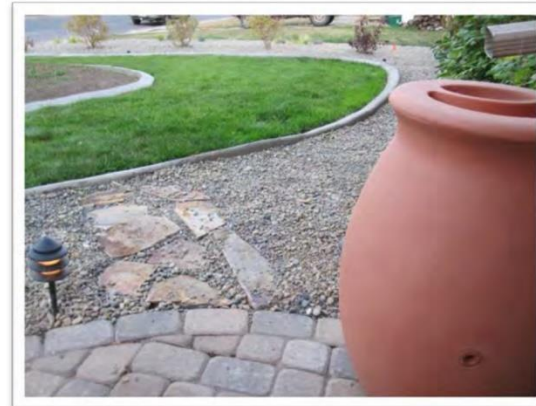
## \* Moscow/Pullman Wisescape Program

### Lawn to Wisescape® Rebate Savings

Traditional Lawn = 0.623 gal per ft<sup>2</sup>/wk



Wisescape = 0.263 gal per ft<sup>2</sup>/wk

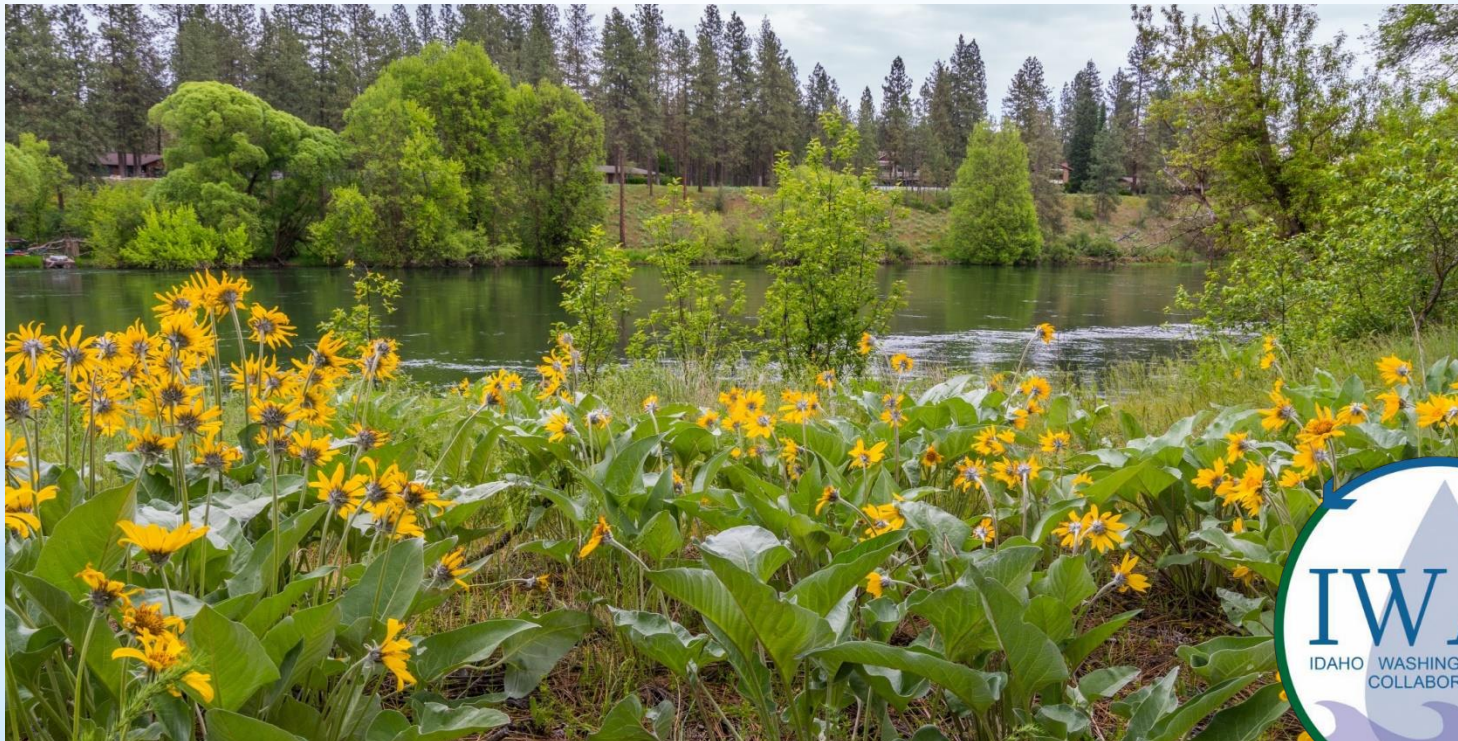


Annual household water savings for transitioned 1200 ft<sup>2</sup> = 9,300 gallons



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The Inland Northwest is different—our weather, precipitation, climate, and even culture are unique from other parts of the country. So, it only makes sense that to grow right, our landscapes need to be different too.



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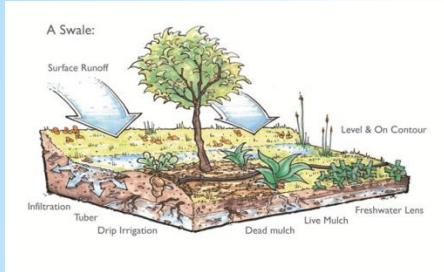
Other challenges water systems and developers still face



Parking Strips and Buffers



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## Roadside Swales



Ideas on methods and materials to reduce water consumption for swales?



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## Roadside Swales



A never ending source of amusement. We certainly don't want them to look like this, an eye sore for any community!





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## Roadside Swales



So we water them to death  
to keep them green!



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## Roadside Swales



Super saturated, what happens  
when we need them?



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## Roadside Swales



How do we reduce water consumption and yet keep them attractive without making more work of it?



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Thank you!

For more information, please contact us at  
[iwacinfo4@gmail.com](mailto:iwacinfo4@gmail.com)