

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



Online Irrigation Education for Homeowners



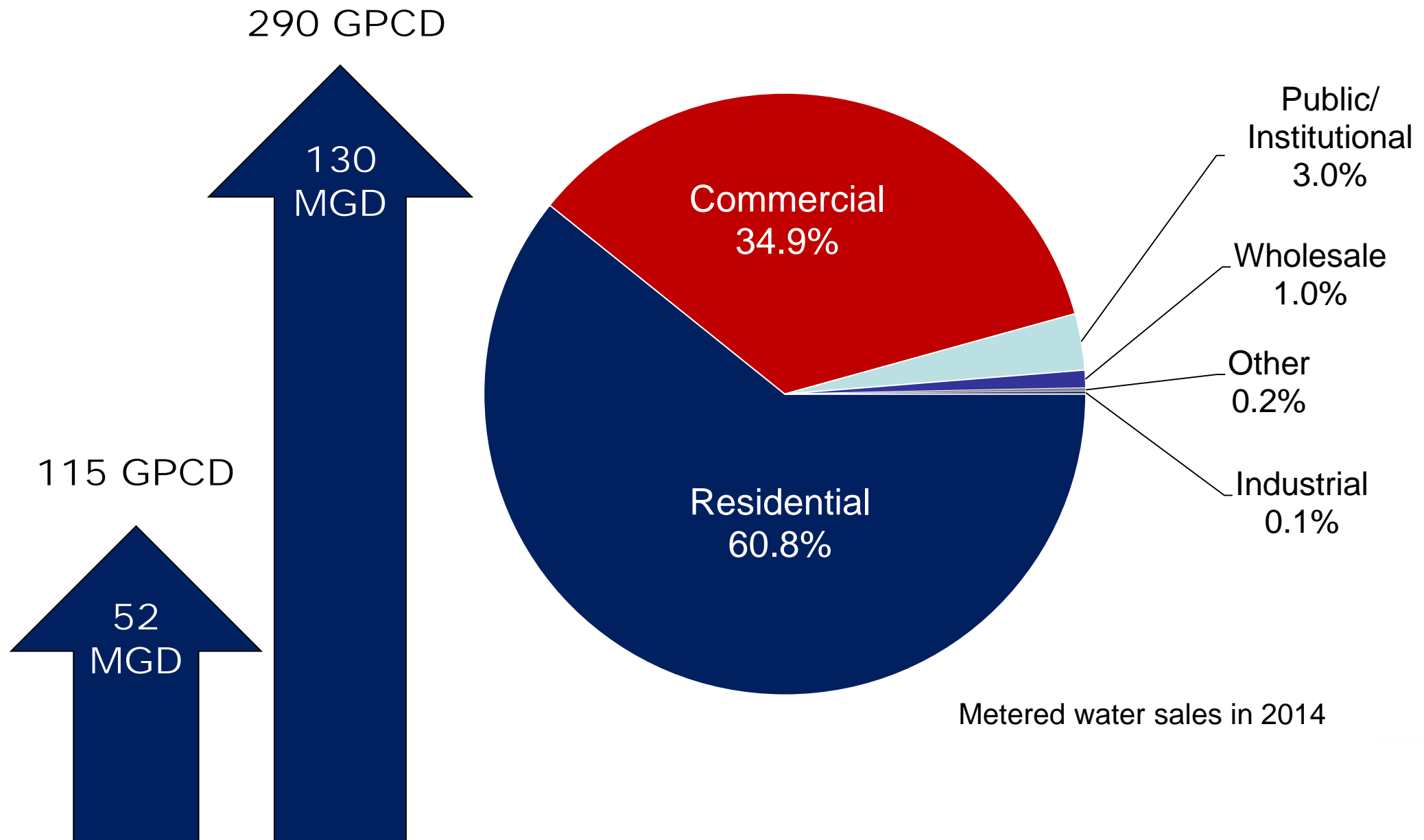
Abby Owens

Sustainability & Environmental Education Supervisor

City of Plano



Water Use in Plano



Homeowner questions

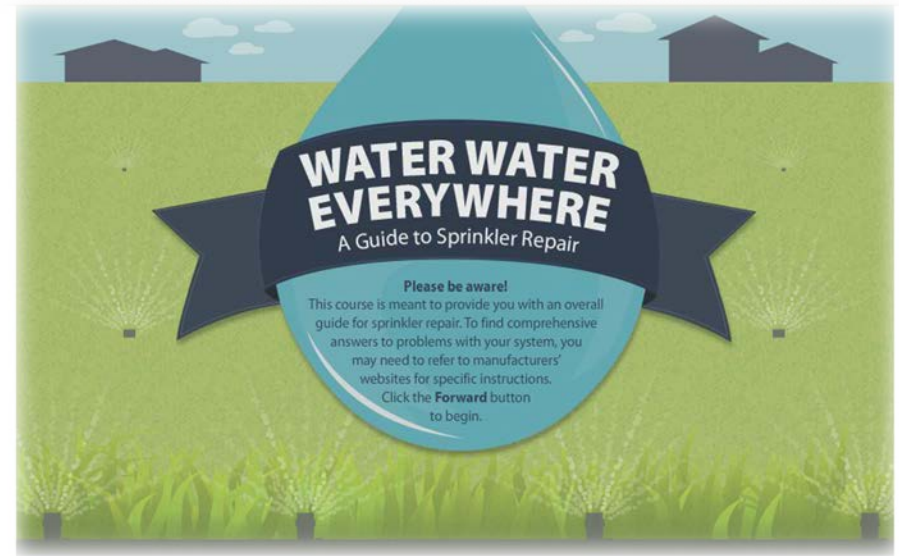
- How does a sprinkler system operate?
- How do I identify problems in my system?
- What is cycle and soak watering?
- How do I determine run times for my sprinkler?
- How do I program my system to cycle and soak watering?

Course Learning Objectives

1. Identify the main parts: meter, backflow device, valves, pipes and sprinkler heads
2. Identify common problems and how to repair: damaged sprinkler heads, clogged nozzles/filters and incorrect spray patterns
3. Identify problems that require more advanced repairs
4. Understand cycle and soak watering and how to determine correct watering times

The Development

- City of Plano
 - Content outline, screen ideas, interactive elements, scripts, photos, videos....
- MLink Technologies:
 - Discovery content
 - Prototype images
 - Scripts
 - Alpha, Beta, Charlie...
- Process took 1 year and cost was \$15,000



Sprinkler System Overview

Make the water flow through the sprinkler system by clicking each part.

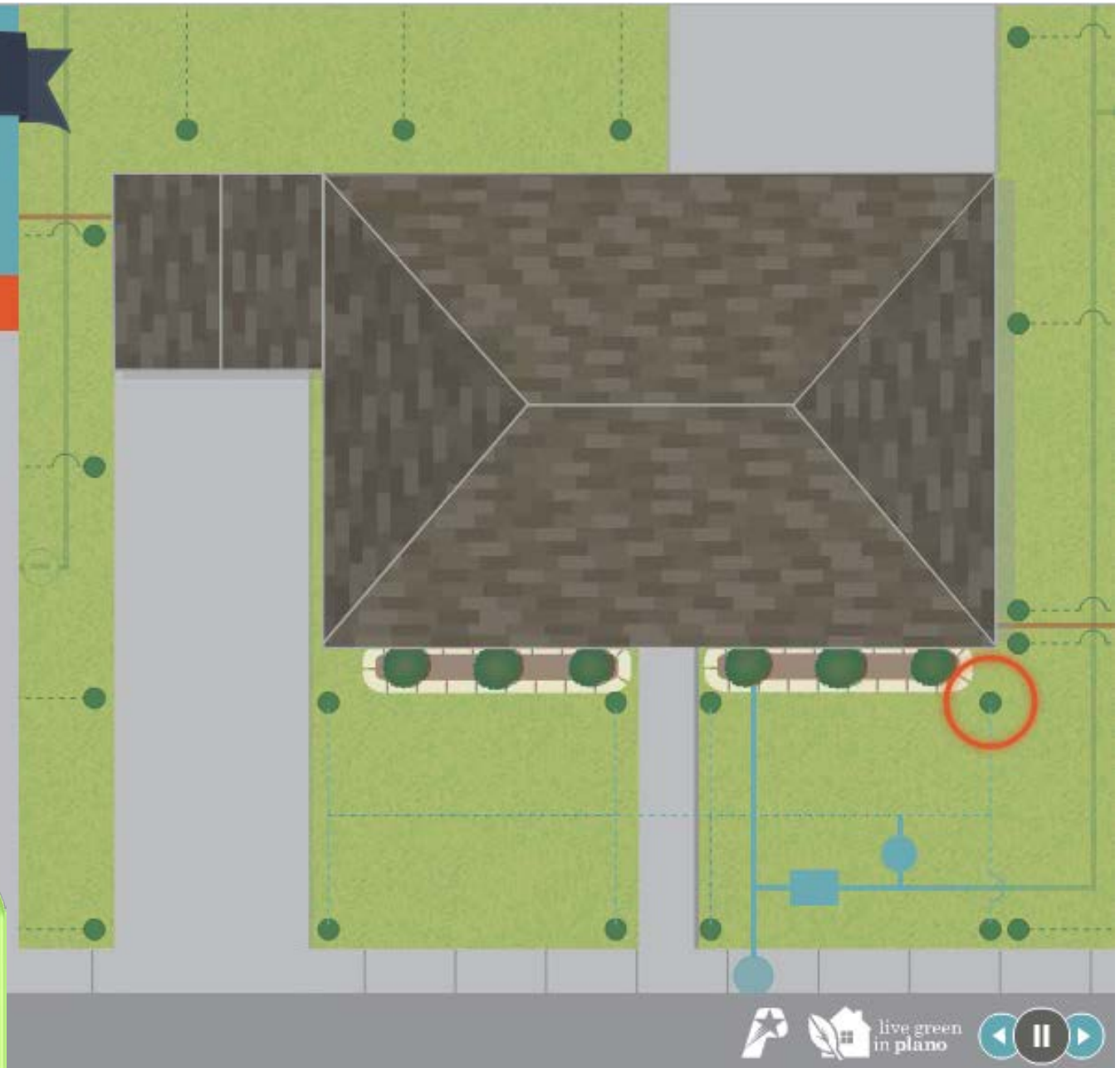
Pipes

Pipes are the water highways of your sprinkler system and include horizontal pipes and vertical risers.



Overview of:

- Water meter
- Backflow device
- Valves
- Pipes
- Sprinkler heads



Spot the Problem!

Click each image to identify problems and fix them.



Damaged Sprinkler Heads



Clogged Nozzle or Filter



Incorrect Spray Pattern



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Damaged Sprinkler Heads

Click the type of sprinkler head you have.
When you are finished, click the Forward
arrow to continue.



Spray Head



Rotor Head



Damaged Sprinkler Heads

Spray Head

Click each section to learn more.

► How to Identify

► Supplies

► How to Fix Video

◀ Back



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Damaged Sprinkler Heads

Spray Head

Click each section to learn more.

► **How to Identify**

► Supplies

► How to Fix Video

◀ Back



- If your system is running, damaged sprinkler heads will bubble or gush water.
- If your system is off, you can still identify damaged sprinkler head by looking for missing or leaning heads or heads whose caps are not level with the ground.



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Damaged Sprinkler Heads

Spray Head

Click each section to learn more.

► How to Identify

► Supplies

► How to Fix Video

◀ Back



Gloves and Shovel



Riser



Flush cap



Replacement
sprinkler head



Needle
nose pliers



Nozzle
and filter



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Damaged Sprinkler Heads

Spray Head

Click each section to learn more.

► How to Identify

► Supplies

► How to Fix Video

◀ Back



1. Carefully dig around the sprinkler head to expose the PVC pipe the sprinkler head is attached to.
2. Unscrew the damaged sprinkler head and riser. You may need to use needle nose pliers to unscrew the riser.
3. If the sprinkler sits too high or too low you may need to purchase a different riser to prevent future damages. The optimum sprinkler height when retracted should be level with the soil, not the top of the grass.
4. Install new equipment and replace the sod around the new sprinkler head.
5. Turn the water on to flush dirt and debris out of the line for about 15 to 30 seconds. This is easier if you remove the nozzle from the sprinkler.



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Spot the Problem!

Click each image to identify problems and fix them.



Damaged Sprinkler Heads



Clogged Nozzle or Filter



Incorrect Spray Pattern



Spot the Problem!

Click each image to identify problems and fix them.



Damaged Sprinkler Heads



Clogged Nozzle or Filter



Incorrect Spray Pattern



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Spot the Problem!

You have spotted all the problems and your system is now functioning properly! Click the **Forward** arrow to continue.



Damaged Sprinkler Heads



Clogged Nozzle or Filter



Incorrect Spray Pattern



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Advanced Repairs

Click the icons to learn how to identify advanced repairs.

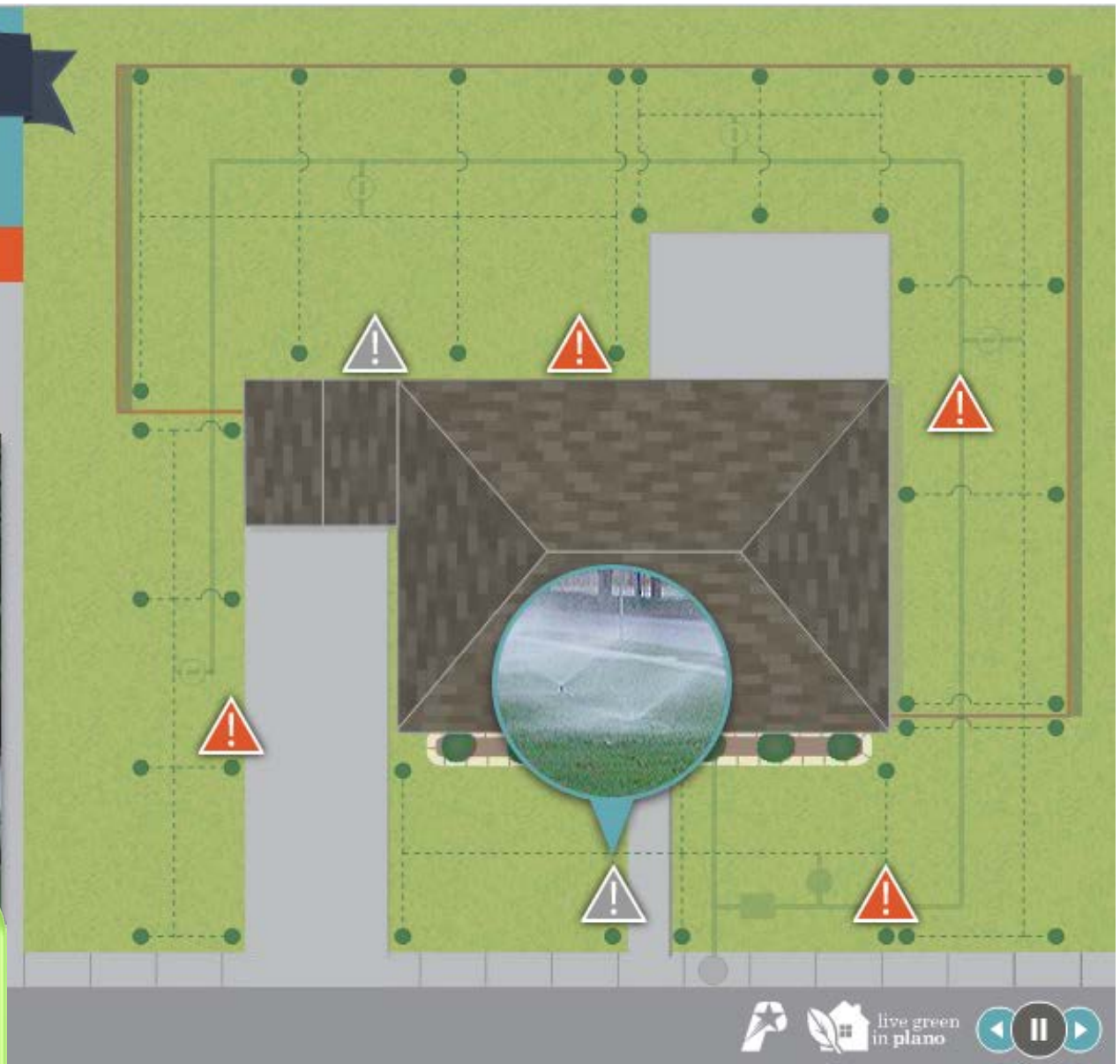
High Pressure

Every sprinkler in a zone creates a cloud of mist.



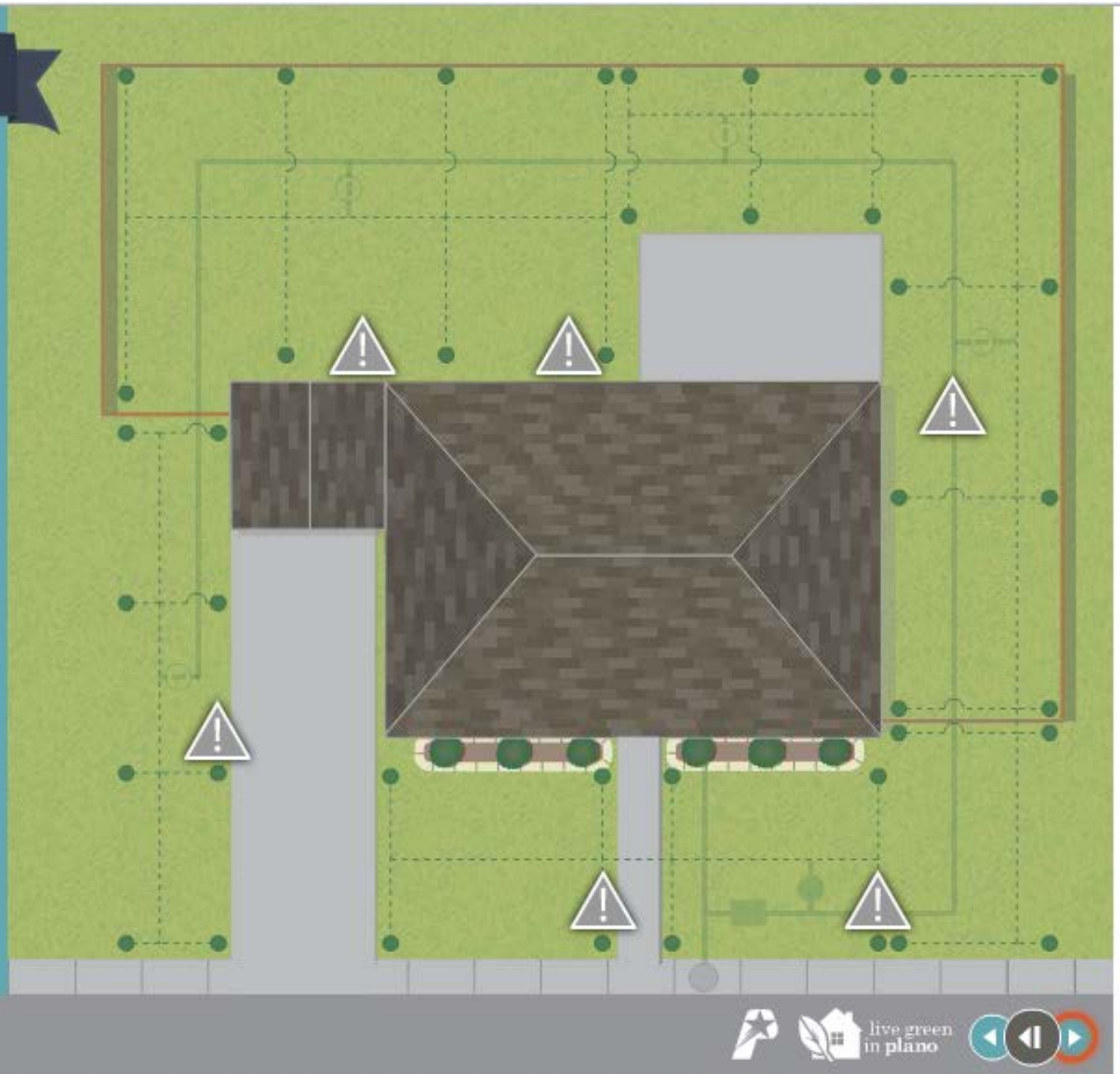
Advanced Repairs include:

- High pressure
- Low pressure
- Broken pipe
- Faulty rain/freeze sensor
- Distribution uniformity
- Faulty valve

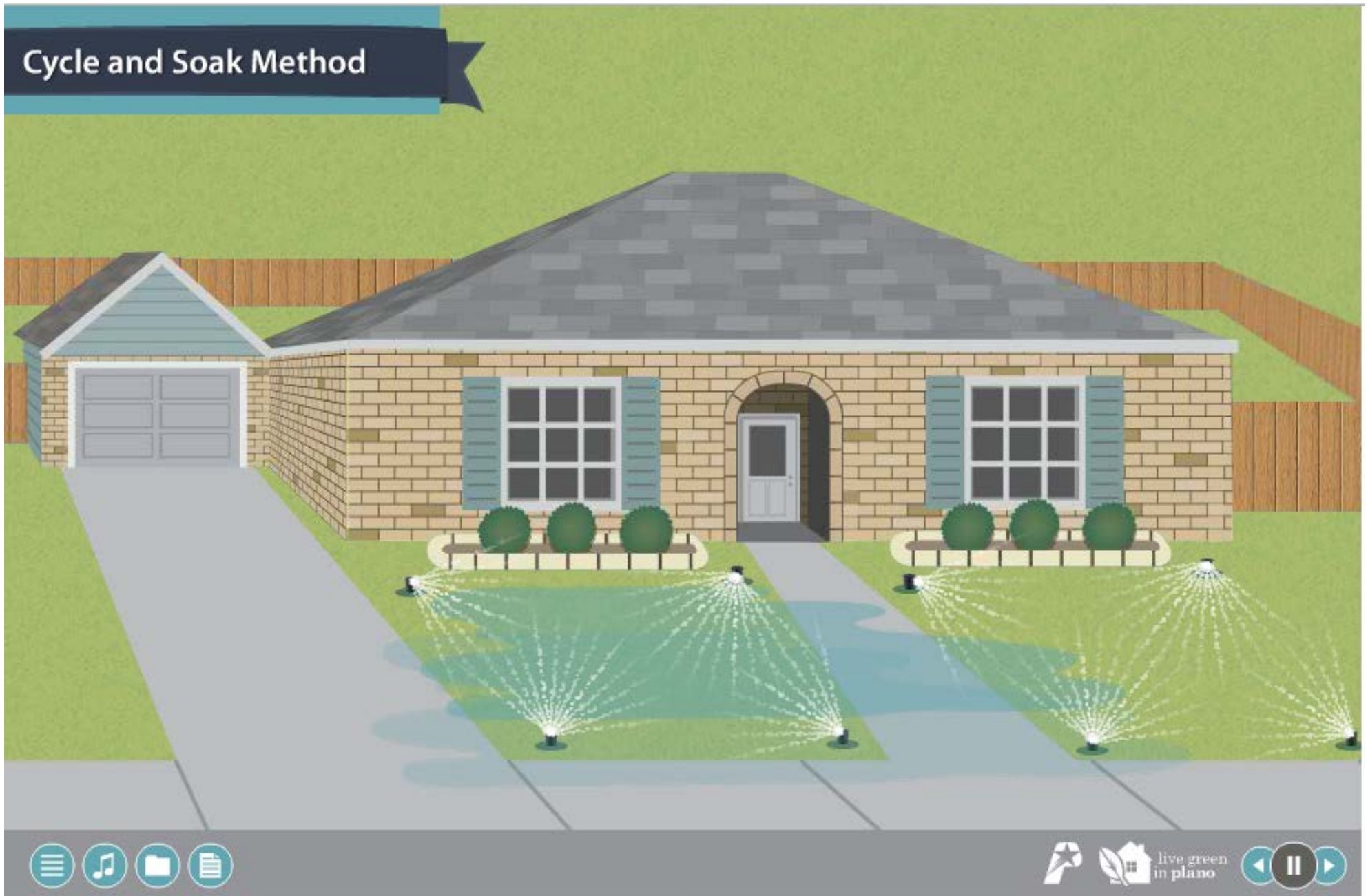


Advanced Repairs

Click the **Forward** arrow to continue.



Cycle and Soak Method



Cycle and Soak Worksheet

Notes

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Location	Front-right Sidewalk	Right Side Yard	Backyard Right	Backyard Left	Left Side Yard
Run Time					
Total Run Time:					

	Cycle 1	Cycle 2	Cycle 3
Start Times			



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Cycle and Soak Worksheet

Notes

- Typically, spray heads run for 3 to 10 minutes and rotor heads run for 10 to 25 minutes.
- Cycle 1 should start early in the morning on your scheduled watering day.
- If my Total Run Time is less than 60 minutes, add 60 minutes to the Start Time of the previous cycle.

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Location	Front-right Sidewalk	Right Side Yard	Backyard Right	Backyard Left	Left Side Yard
Run Time	10 mins	10 mins	5 mins	10 mins	5 mins
Total Run Time: 40 mins					

	Cycle 1	Cycle 2	Cycle 3
Start Times	3:00 AM	4:00 AM	5:00 AM



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Cycle and Soak Worksheet

Click the highlighted areas to learn how to use the Cycle and Soak worksheet.

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Location	Front-right Sidewalk	Right Side Yard	Backyard Right	Backyard Left	Left Side Yard
Run Time	20 mins	15 mins	5 mins	25 mins	10 mins
			Total Run Time: 75 mins		

	Cycle 1	Cycle 2	Cycle 3
Start Times	3:00 AM	4:30 AM	6:00 AM

Notes

- Typically, spray heads run for 3 to 10 minutes and rotor heads run for 10 to 25 minutes.
- Cycle 1 should start early in the morning on your scheduled watering day.
- If my Total Run Time is less than 60 minutes, add 60 minutes to the Start Time of the previous cycle.
- If my Total Run Time is more than 60 minutes, add the Total Run Time to the Start Time of the previous cycle, plus 15 to 20 minutes. The extra time is flexible.
- 3:00 a.m. + 90mins = 4:30 a.m.
(75 mins + 15 mins)
- 4:30 a.m. + 90mins = 6:00 a.m.
(75 mins + 15 mins)



Cycle and Soak Exercise

Once you see water pooling in the grass or running off your lawn, click STOP to stop the sprinklers.

ZONE 1



Zone 1 Zone 2 Zone 3 Zone 4 Zone 5

Run Time

Total Run Time:

Cycle 1 Cycle 2 Cycle 3

Start Time

00:06

STOP



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Cycle and Soak Exercise

Once you see water pooling in the grass or running off your lawn, click STOP to stop the sprinklers.

ZONE 2



Zone 1 Zone 2 Zone 3 Zone 4 Zone 5

Run Time 6

Total Run Time:

Cycle 1 Cycle 2 Cycle 3

Start Time

00:06

STOP



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Cycle and Soak Exercise

Add the Run Times, enter in the Total Run Time, and click OK.

SYSTEM OFF



	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Run Time	<u>6</u>	<u>9</u>	<u>9</u>	<u>11</u>	<u>28</u>
Total Run Time: _____					
	Cycle 1	Cycle 2	Cycle 3		
Start Time	_____	_____	_____		

00:00

RESTART

RESTART

RESTART

RESTART

RESTART



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SYSTEM OFF

MANUAL
OFF RUN

< + >
-

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Run Time	6	9	9	11	28
Total Run Time:					63

	Cycle 1	Cycle 2	Cycle 3
Start Time	1:00	2:10	3:20

OK

Menu Music Folder Documents

Calculate Total Run Time

Set Start Times

Cycle and Soak Exercise

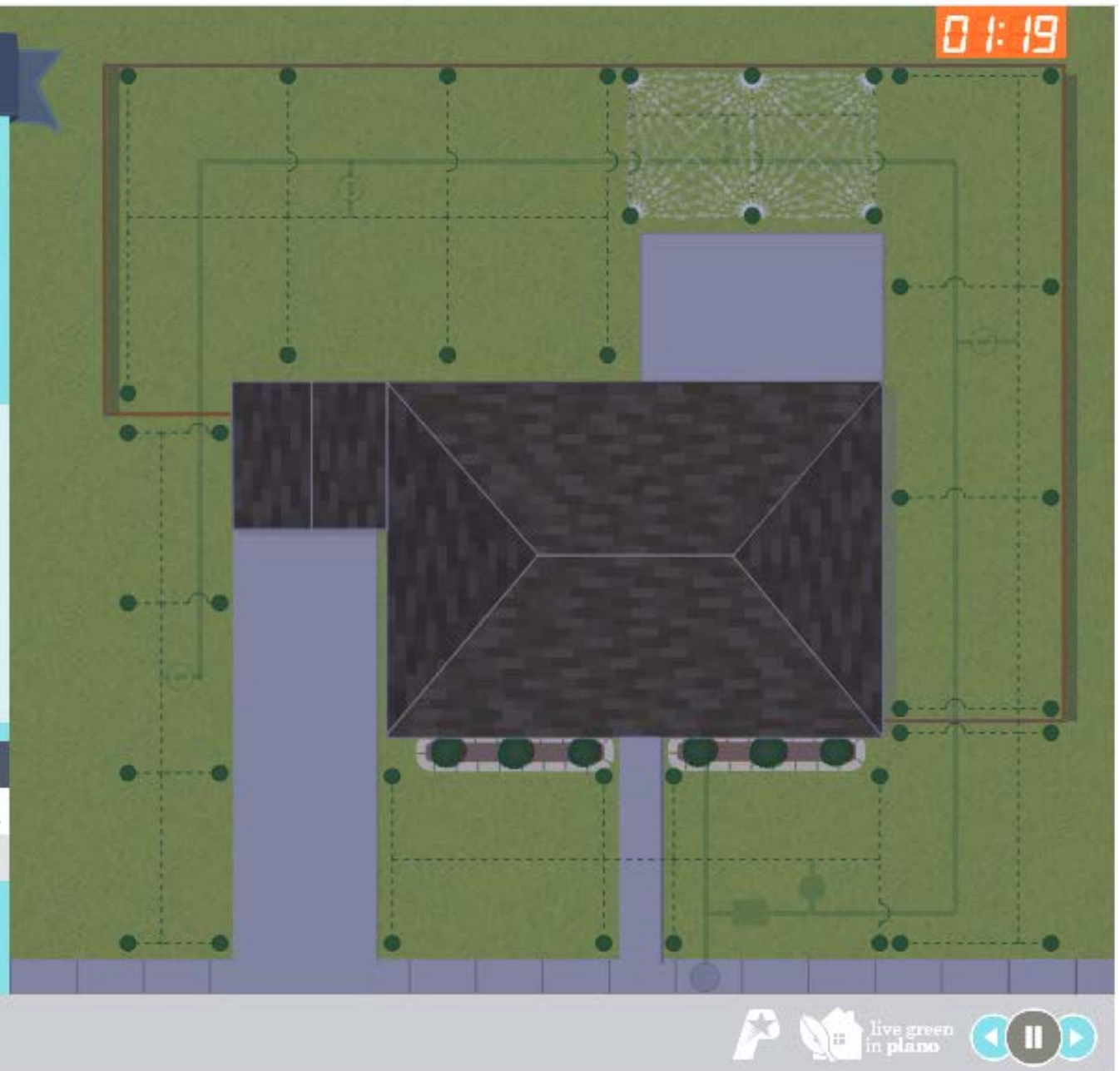
Click the arrows to review what has been programmed for each zone. Click RUN to run your system.

CYCLE 1 ZONE 3



	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Run Time	6	9	9	11	28
Total Run Time:					63

	Cycle 1	Cycle 2	Cycle 3
Start Time	1:00	2:10	3:20



Cycle and Soak Exercise

Take a look at how your lawn will look in a few weeks. Click REPLAY to try again, or click the Forward arrow to continue.

PROGRAM ENDED



	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Run Time	6	9	9	11	28
Total Run Time:					63

	Cycle 1	Cycle 2	Cycle 3
Start Time	1:00	2:10	3:20

Zones Run Times:

Hmm...Looks like some zones aren't getting enough water and others are getting too much. When finding run times, stop the system as soon as you see water pooling in the grass or running off your landscape.

Cycle Start Times:

Your cycle start times were great! None of the start times overlap, so no cycles will be skipped.

REPLAY



Cycle and Soak Exercise

Take a look at how your lawn will look in a few weeks. Click **REPLAY** to try again, or click the Forward arrow to continue.

PROGRAM ENDED



	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Run Time	6	20	11	11	26
Total Run Time:					74

	Cycle 1	Cycle 2	Cycle 3
Start Time	1:00	2:30	4:00

Your lawn looks amazing—you chose good zone run times and set the cycle start times correctly. You've saved water and saved money on your water bill. Excellent work!

REPLAY



CONGRATULATIONS! You've completed

Water, Water Everywhere!
A Guide to Sprinkler Repair

For additional information,
click the links below or click **Resources**.

- [Current outdoor watering restrictions for City of Plano](#)
- [How to program your sprinkler controller](#)
- [Download the Cycle and Soak worksheet](#)



RESOURCES

Manufacturer Websites

Hunter Industries for Homeowners
Rain Bird for Homeowners
Irritrol for Homeowners
Orbit Irrigation
Toro Irrigation for Homeowners
K Rain Irrigation for Homeowners

Job Aids

Cycle and Soak Method Worksheet (PDF)
Sprinkler Repair Instructions (PDF)

Licensed Irrigation Professionals

Dallas Irrigation Association
TCEQ Licensed Irrigator Database
EPA WaterSense Certified Professional
Plano Outdoor Water Use

Other Resources

Texas AgriLife Irrigation Check-up (PDF)
Texas AgriLife Rain/Freeze Sensor (PDF)
Texas AgriLife Irrigation Check-up with
Catch Can
Southern Nevada Water Authority
Irrigation Controller Videos

Irrigation Supply Stores in Plano

Longhorn Irrigation
1205 Capital Avenue, Plano, 75074
Ewing Irrigation
1309 Capital Avenue, Plano, 75074
John Deere Landscapes
1200 Summit Avenue, Plano 75074





Spray Head

How to identify

Incorrect spray pattern occurs when sprinklers spray anything that is not your landscape. This may include fences, sidewalks, sides of houses, or into streets. Fix by adjusting the spray pattern, or moving plants.

Supplies

- Cloth
- Channel locks

How to Fix:

1. Turn on your sprinkler system so you can see the arc or spray pattern.
2. To prevent damage to the nozzle, wrap a cloth around the nozzle stem and turn the nozzle stem until it is spraying in the right direction. If the nozzle stem is difficult to twist, you may need to use channel locks to grasp the nozzle stem.

TIP: If your sprinkler has an adjustable arc nozzle, adjust the pattern of your sprinkler by twisting the adjustable cap at the top of the spray nozzle to avoid spraying hardscapes. You may need to refer to the manufacturer's website for more details on adjusting the pattern of your nozzle.



Rotor Head

How to identify

Incorrect spray pattern occurs when sprinklers spray anything that is not your landscape. This may include fences, sidewalks, sides of houses, or into streets. Fix by adjusting the spray pattern, or moving plants.

Supplies

Sprinkler key or flathead screwdriver

How to Fix:

1. Turn on your sprinkler system so you can see the arc or spray pattern.



Cycle and Soak Worksheet

Have you ever noticed water running off your lawn and onto sidewalks or the street? You may be watering incorrectly. North Texas clay soils have a hard time absorbing large amounts of water at once, so we recommend you use the Cycle and Soak method. This method delivers the right amount of water to your lawn over three cycles, helping you achieve a healthier lawn.

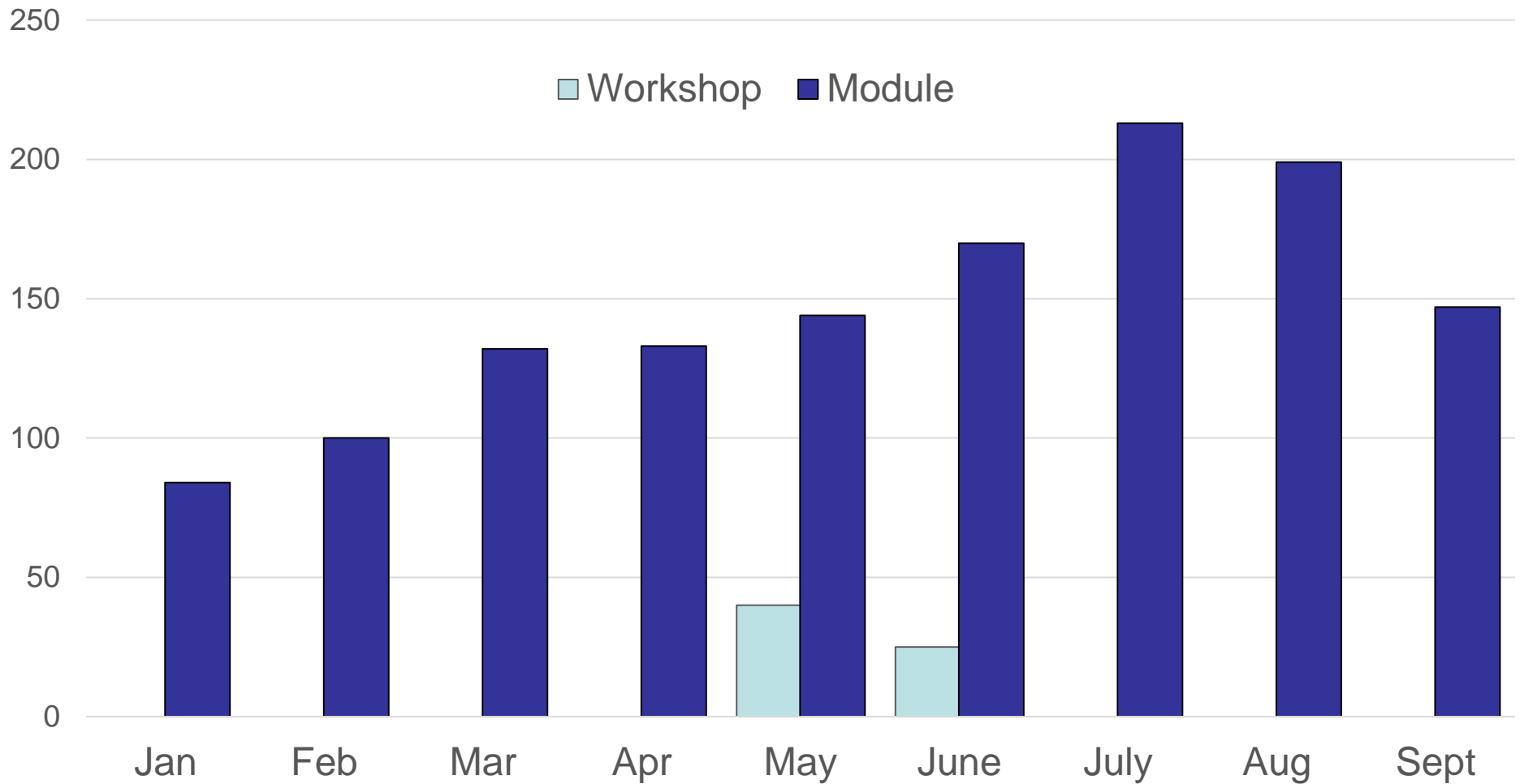
Cycle and Soak Steps

1. Manually run your sprinkler system for each zone and time how long it takes until you see water pooling in the grass or running off the landscape.
2. Program the run time for each zone into your controller.
3. Find the start times for each cycle. We recommend watering early in morning, so program cycle one to start around 1:00 a.m. To find start times for cycles two and three, find the total run time by adding up the run times of all your zones. You must leave at least 60 minutes between start times to allow the water to soak into the soil.
 - If the total time is less than 60 minutes, then program cycle two to start at 2:00 a.m., and cycle three to start at 3:00 a.m.
 - If the total run time is greater than 60 minutes, add the total run time to start time of the previous cycle. For example, if your total run time is 65 minutes, then add 65 minutes to 1:00 a.m., so cycle two would start no earlier than 2:05 a.m. and cycle three would start no earlier than 3:10 a.m.
4. Program the three start times into your controller.
5. Finally, observe your lawn and adjust your run times as needed. If you notice water pooling in the grass or running off the landscape, then you may need to adjust the run time for that zone.

	Zone1	Zone2	Zone3	Zone4	Zone5	Zone6	Zone7	Zone8
Location								
Run Time								
Total Run Time:								

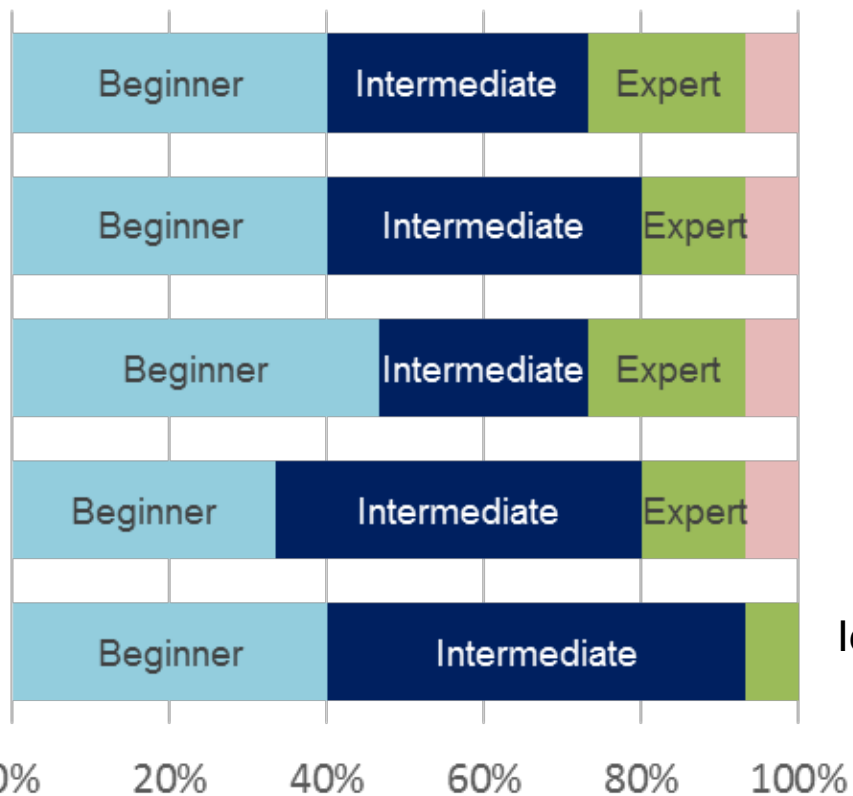
	Cycle1	Cycle2	Cycle3
Start Times			

Workshop or Online Module?

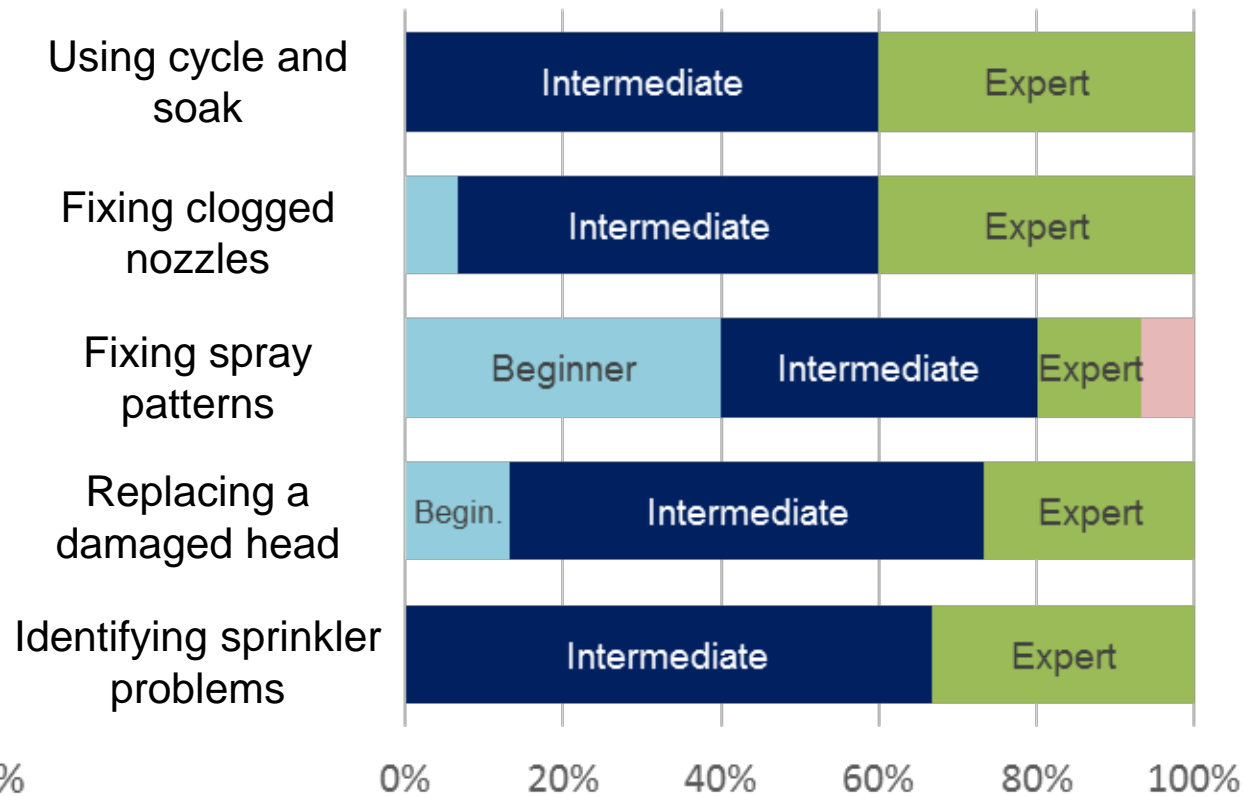


Rate your knowledge in the following areas

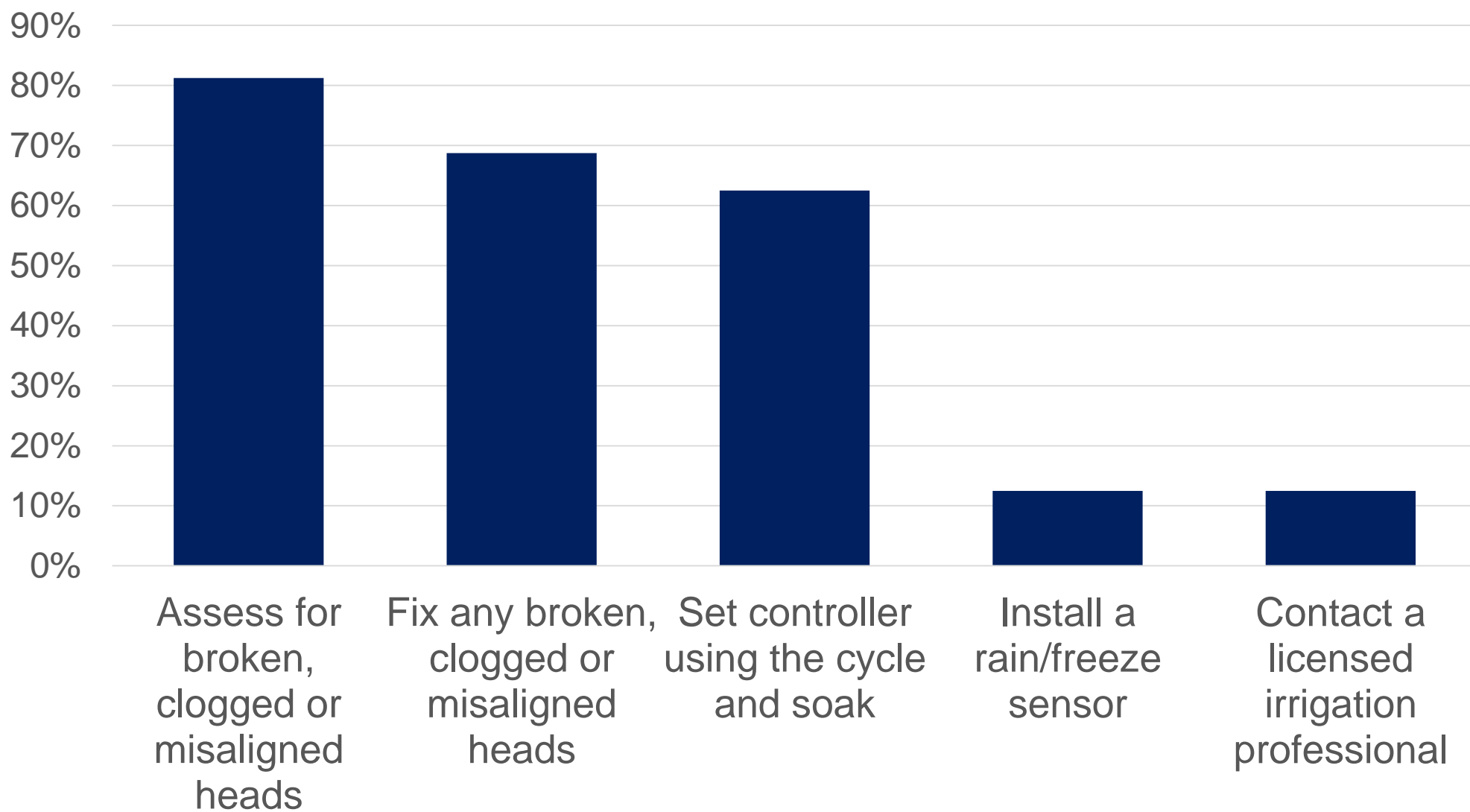
Before



After



What learners plan to do



plano.gov/modules

Online Learning Modules

Note: Maximize your browser window to ensure the full module is displayed on your screen.

Water Water, Everywhere

A Guide to Sprinkler Repair

Learn to identify and fix common issues with your sprinkler system.



Backyard Composting

Make your own compost pile right in your backyard!



Composting Food Waste

Learn how to turn kitchen scraps into garden gold!

