

Peer to Peer 1

Connect. Collaborate. Grow. 

ROOTED IN REALITY: TREE HEALTH AND LANDSCAPE TRANSFORMATIONS



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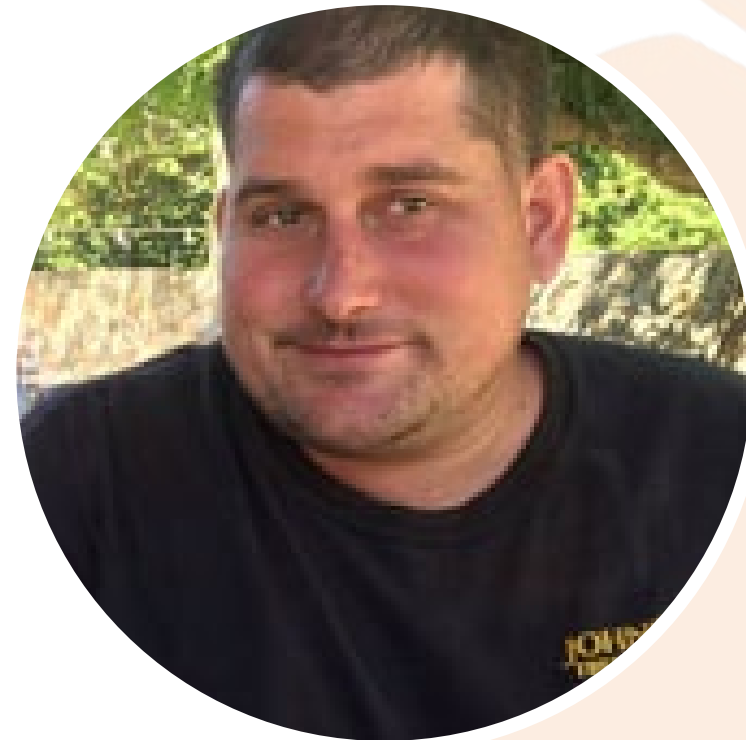
Moderator:
Kris Loomis
Sonoma Water



Kristin Bowman
East Bay Municipal Utility
District



Joanna Solins
UC Cooperative Extension



Andrew Johnson
Johnson's Tree and Garden



Eric Santos
HydroPoint

Why do trees need protection during lawn conversions?

Trees, heat, and water

Joanna Solins
Environmental Horticulture Advisor

May 28, 2026

Urban trees provide important benefits



- Cooling
- Energy savings
- Stormwater control
- Improved health and wellbeing
- Aesthetic value
- Habitat provision
- Noise reduction
- Privacy

Urban heat is a serious public health threat

- Building materials absorb sunlight and release heat
- Urban canyons trap heat
- Human activities generate waste heat
 - Driving
 - Air conditioning
 - Facility operations
- Heat-related illness and death



Johns Hopkins Magazine



UC Cooperative Extension
University of California
Agriculture & Natural Resources

Trees provide cooling

- **Transpiration**

- Plants take up water from the soil and release it from their leaves
- Surrounding air is cooled as water goes from a liquid to a vapor
- *This is also how lawns provide cooling

- **Shading**

- Limits the amount of solar radiation reaching surfaces
- Cools surfaces substantially
- Reduces radiant & reflected heat
- Improves thermal comfort



Trees mitigate heat impacts of lawn conversion

Lawn

Waterwise

Unshaded



Shaded



Protecting existing trees is key



- Large trees provide the most benefits
- New trees can take decades to match benefits of existing canopy trees
- Existing trees require water
 - Growth and health
 - Cooling mechanism
- Trees that were historically well irrigated can be less tolerant of water restriction
 - Physiological adaptations
 - Root structure

Increased heat & reduced water can harm trees

- Rocks, pavement, and bare ground surfaces can be >20 °C hotter than lawn
 - Hardscape radiates heat
 - Increased soil temperatures slow root growth
 - Water demand increases at higher temperatures
- Heat stress is amplified by water stress
 - Transpiration stops with inadequate water
 - Loss of cooling
 - Tissue damage



Sacramento study: London planetree canopy health was similar for lawns and drip irrigated landscaping



a

a

b

$n = 388$

Proper irrigation and root protection are key to maintaining existing shade trees

Tree Protection Strategies

Removing Sod Lawns within the Drip Line

A Guide for Sustainable Landscape Conversion

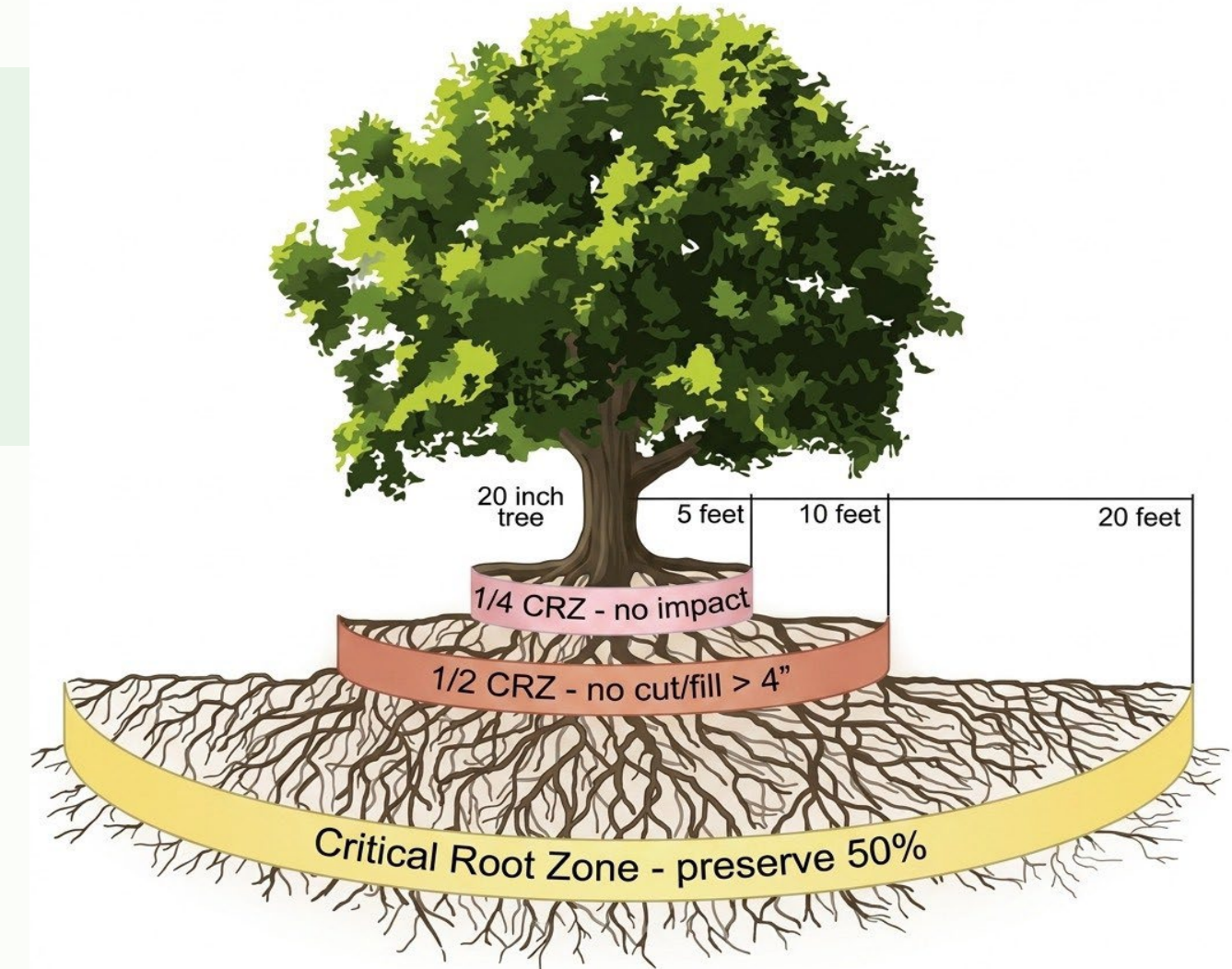
Understanding the Critical Root Zone (CRZ)

- **The Drip Line:** The outermost circumference of a tree's canopy where water drips onto the ground.
- **The "Feeder" Roots:** Most active roots are found in the top 6 to 12 inches of soil, often extending far beyond the drip line.
- **The Conflict:** Standard sod removal tools (like sod cutters) are designed to peel off the top 2-3 inches of soil—exactly where fine roots reside.

Fact: Damaging 25% of a tree's root system can lead to significant decline or death over 3-5 years.

The Critical Root Zone - Development Impact Zones

Example: 20 inch diameter tree



The Dangers of Traditional Removal

- **Mechanical Damage:** Sod cutters can slice through primary lateral roots, leading to instability and nutrient loss.
- **Soil Compaction:** Heavy machinery used for lawn removal crushes soil pores, cutting off oxygen (O_2) to the roots.
- **Hydrological Shock:** Rapidly changing the ground cover alters the moisture retention levels the tree has adapted to.



The "Lawn Move" (Sheet Mulching)

The safest way to remove sod around trees is not to "remove" it at all, but to decompose it in place.

- **Step 1:** Mow the grass as short as possible.
- **Step 2:** Lay down 2-3 layers of plain brown cardboard (remove tape).
- **Step 3:** Thoroughly wet the cardboard.
- **Step 4:** Apply 3-4 inches of arborist wood chips.

Benefit: Zero root disturbance and adds organic matter to the soil.



Manual Removal Technique

If you must remove the sod (e.g., for grade changes or immediate planting):

- **Hand Tools Only:** Use a sharp spade or grape hoe rather than a motorized sod cutter.
- **Work Outward:** Work from the trunk toward the drip line.
- **Shallow Cuts:** Angle the spade horizontally to skim the grass off without digging deep.
- **Root Care:** If you encounter a root larger than **1"** (2.5cm) in diameter, **do not cut it**. Clean the soil around it and cover it immediately.



The Golden Rules of Tree Protection

- **Never use a Sod Cutter** inside the drip line of a high-value or mature tree.
- **Do not pile soil** against the trunk (root flare). This causes rot and "girdling" roots.
- **Hydrate:** Water the tree deeply before and after the transition to mitigate stress.
- **The 4-Inch Rule:** Keep mulch at least 4 inches away from the actual tree trunk to allow the bark to breathe.

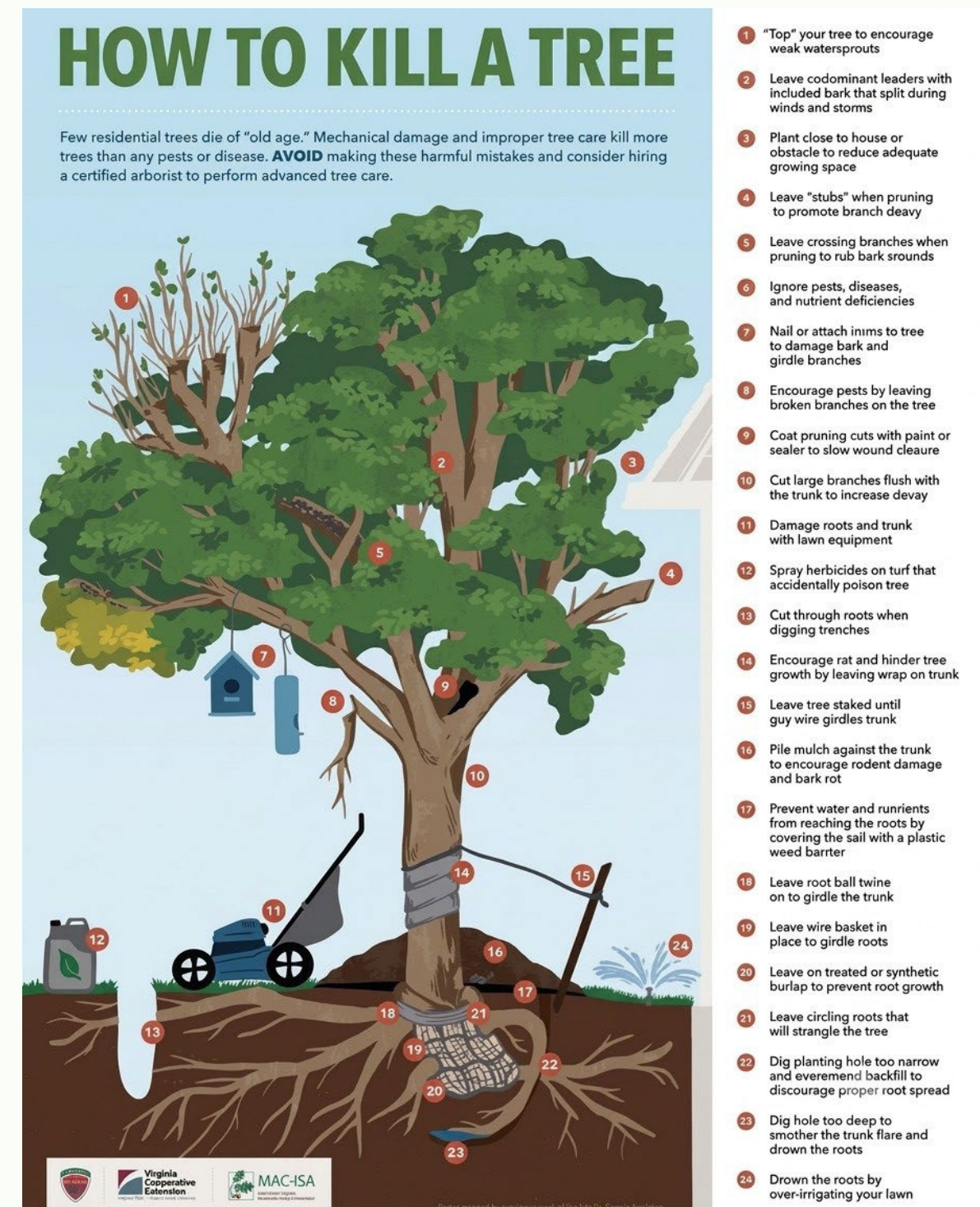


Summary: A Living Transition

Removing a lawn is a great way to save water, but the tree is your most valuable landscape asset.

- Prioritize **Sheet Mulching** over physical removal.
- Avoid heavy equipment under the canopy.
- Treat the Critical Root Zone as a "No-Dig" sanctuary.

**Healthy Roots =
Healthy Canopy**





Tree Preservation

Irrigation and Water Management Best Practices For Tree
Preservation during AB 1572

Eric Santos, (CLIA, CGIA, CIC, CID, CIT, CLWM, CAIS)
HydroPoint - VP of Professional Services

Key Water Management Differences

Lawns

- Very high evapotranspiration rates
- Shallow roots (4" – 6")
- High tolerance to excessive watering
- High tolerance to compaction

- Shallow and Frequent

Trees

- Moderate evapotranspiration rates
- Relatively deeper roots (6" – 18")
- Slow decline to excessive watering
- More sensitive to compaction and oxygen deficit
- Deep and Infrequent
- Subject to runoff when watering deep
- Mulching = Less evaporation (UC Davis

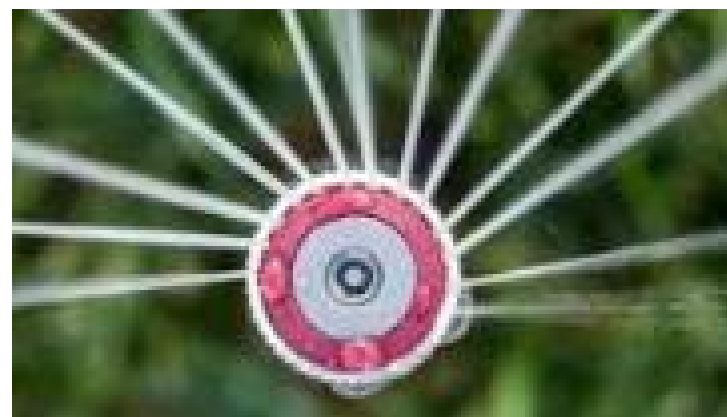
Established Trees - Deep Watering Methods & Tools

Retrofit from Spray to Rotating Nozzles

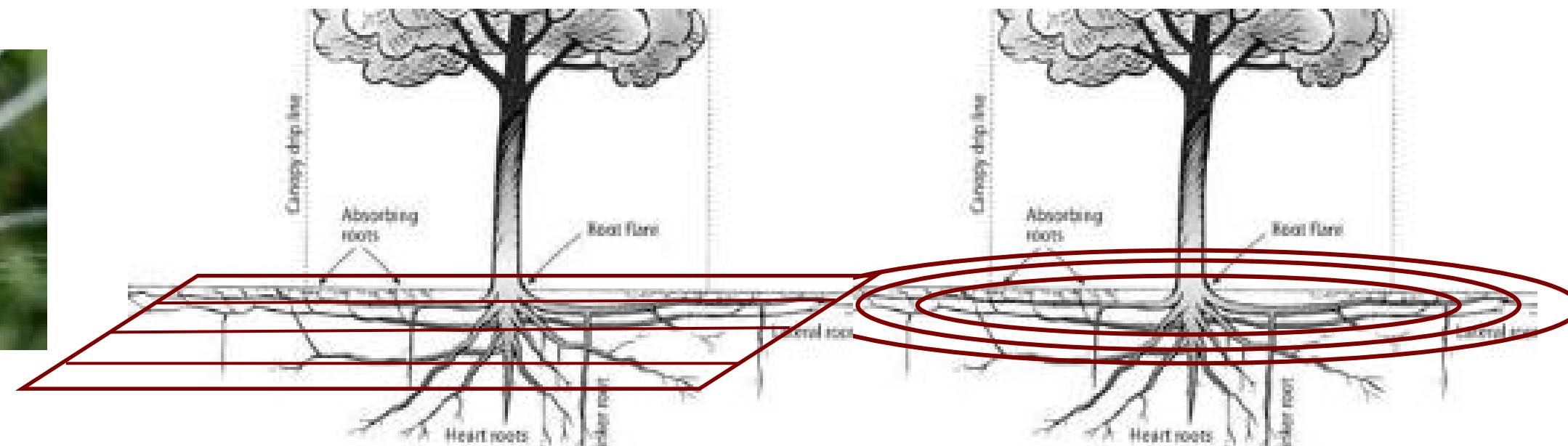
- Extremely low application rate compared to spray heads
- Less prone to runoff when deep watering
- Less susceptible to misting and wind drift
- Much more uniform application of water
- Able to apply water much further than spray heads
- Adjustable arc patterns
- Wide range of patterns
- Relatively easy conversion

Inline Drip - Grids, Rings, and Spirals

- Common emitter flow rates of 0.6 and 0.9 GPH
- Available in 12", 18" and 24" emitter spacings
- Soil type dictates emitter flow rate, emitter spacing, and row spacing
- Application rate varies by emitter selection and row spacing
- Low evaporative losses when covered with 3" of arbor mulch
- Place drip spirals and rings near the drip line, at least 50% of the canopy
- Spirals and rings can be extended and spacing modified easily
- Avoid water application near the trunk



UC IPM DAVID KIDD



Potential AB 1572 Scenarios

Possible responses to AB 1572 and how to best manage each scenario for tree health

Scenario 1 - Customer simply stops watering the lawn

Customer stops watering the lawn. The existing irrigation valve and heads intended for the lawn can be redirected as a method to water trees using the existing infrastructure but directed to applying water near the dripline.

Sections of lawn without trees should not be watered.

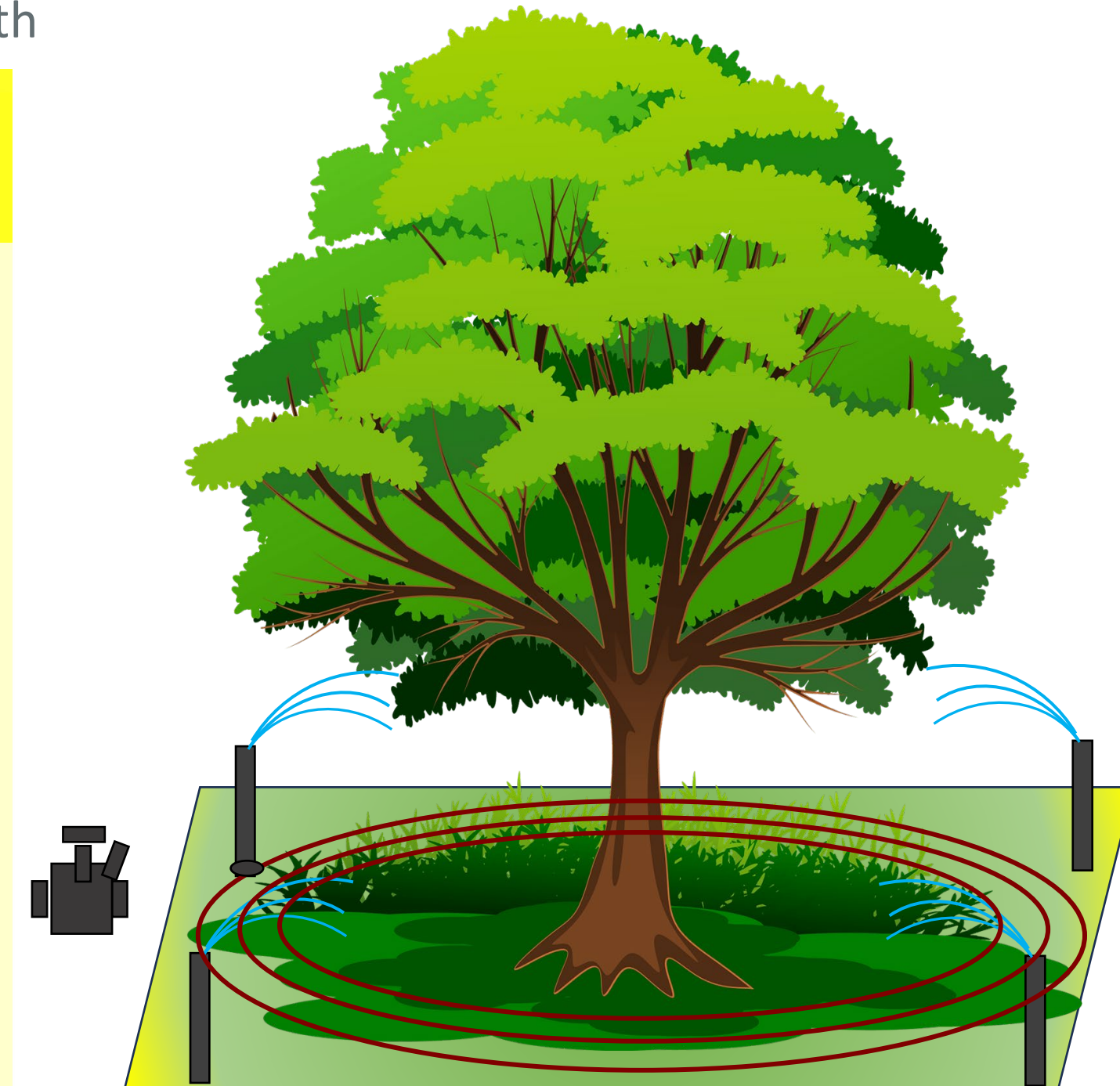
Primary Focus: Slowly transition from shallow frequent watering for turf to deeper and less frequent watering for trees while attempting to minimize runoff.

Tips: Gradually schedule infrequent, short, repetitive cycles for deep watering to minimize runoff.

Switch spray nozzles to rotating nozzles to reduce runoff.

Try to direct heads away from directly hitting the tree trunk

Customer can easily cap and convert overhead to drip spirals



Scenario 1

Focus of existing valve is now used to water tree instead of the lawn. Lawn areas not below tree canopy will show signs of stress as the system will be redirected on trees not lawn



Potential AB 1572 Scenarios

Possible responses to AB 1572 and how to best manage each scenario for tree health

Scenario 2a - Planting modifications with no irrigation mods

Lawn is removed or sheet mulched and the old lawn area gets replanted and mulched. In this scenario, minimal modifications are made to the system. The existing heads might be converted to rotating nozzles but the original lawn valve is now used to water both the new plants and the existing tree(s)

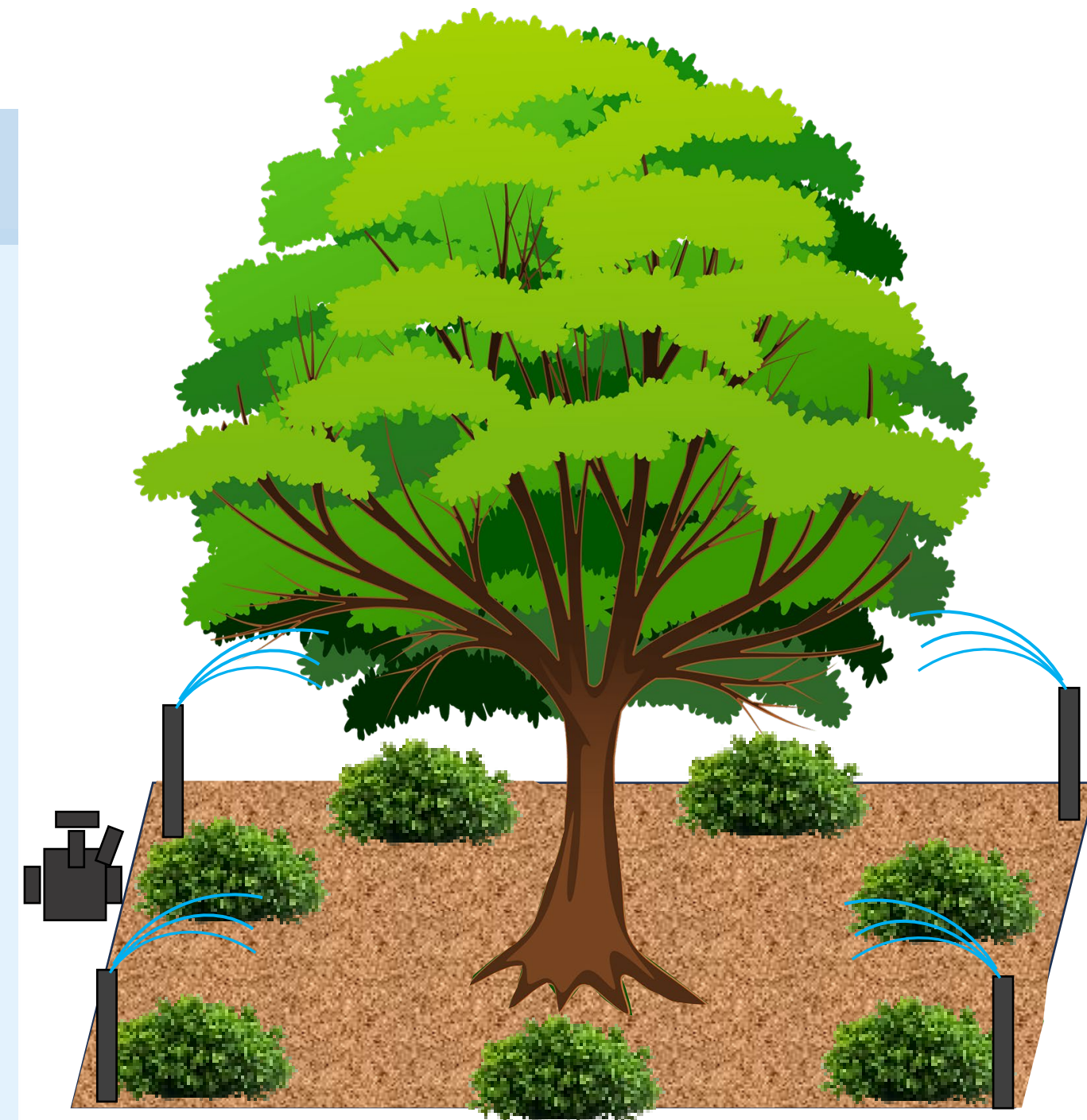
Goal: Gradually reduce watering from frequent shallow lawn watering to deeper less frequent watering for shrubs. Strive for deeper watering of shrub root zone without having runoff.

Tips: Shrubs will typically need watering to a 8"-10" depth, possibly 1 to 3 times per week in the peak season (exceptions apply). Use the same valve for deep tree root watering, 6" - 18" possibly 1 to 2 times per month just during the peak season.

Use multiple short consecutive cycles for deep watering with minimal runoff.

Smart controllers will require programming adjustments between shrub and tree watering

Some conventional controllers allow the same valve to be on 2 programs. This zone might be scheduled on a Shrub Program for shallow and frequent watering and again on a different Tree Program for infrequent, yet much deeper watering. The infrequent Tree Program will water past the shrub root zones which would be considered wasteful.



Scenario 2a

Existing valve with overhead are used to water new shrubs and existing tree(s)

Potential AB 1572 Scenarios

Possible responses to AB 1572 and how to best manage each scenario for tree health

Scenario 2b - Planting mods with minimal drip conversion

Lawn is removed or sheet mulched and the old lawn area gets replanted and mulched. In regards to the irrigation, in this scenario, The existing overhead is converted to drip and a single valve is used to water both the new plants and the existing tree(s).

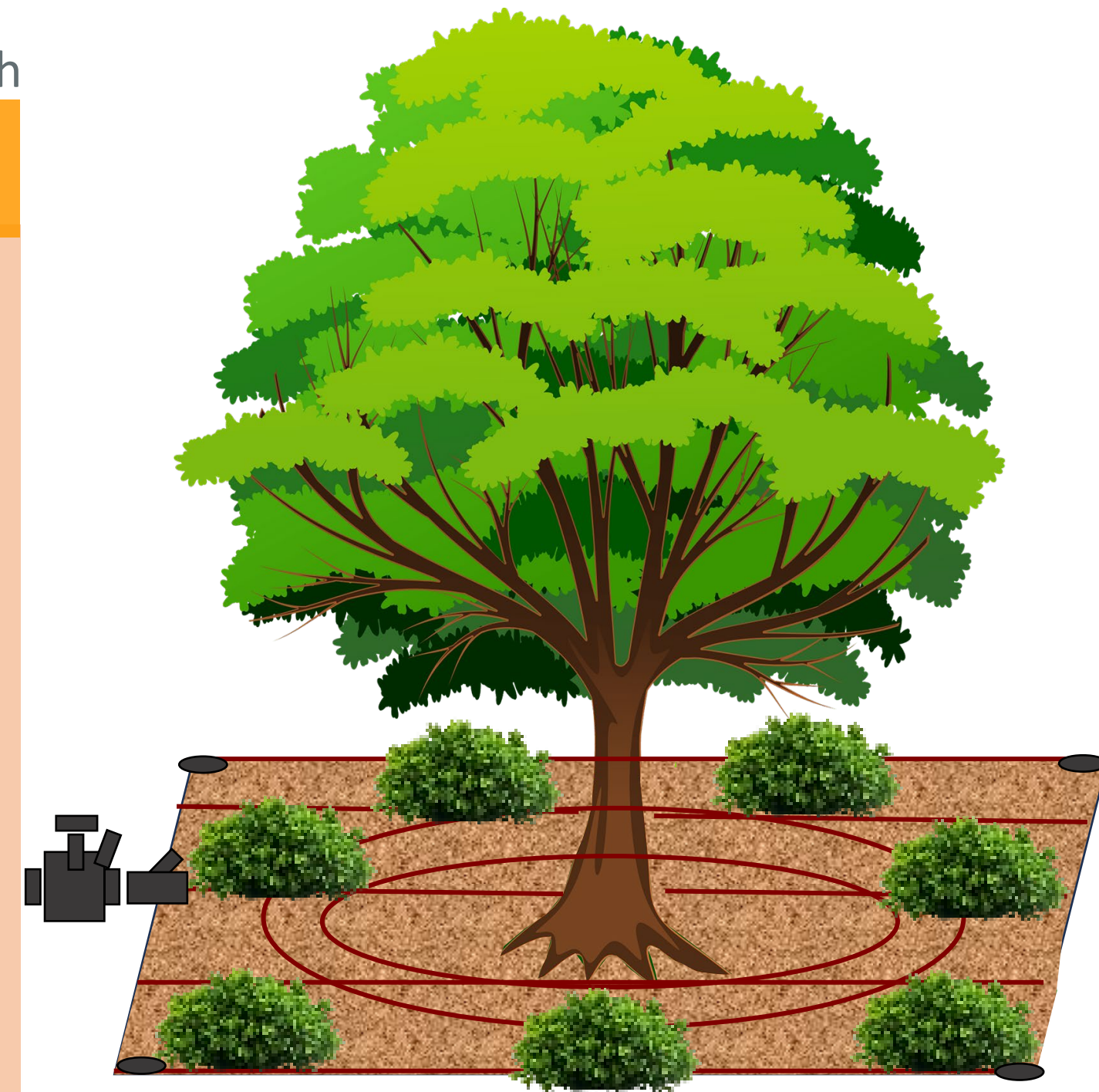
Goal: Slowly transition area to less frequent watering than needed by lawn. Strive for deeper and less frequent watering without having runoff.

Tips: Select emitter and spacing according to soil type. Caution - A 12 x 12 grid with 0.9gph emitters applies water at a similar rate to overhead spray

Invest in appropriately designed drip zone control kits

Again, shrubs will typically need watering to a 8"-10" depth. Possibly 1 to 2 times per week in the peak season (exceptions apply). During the peak season, this same valve will need to be programmed for deep watering 6" to 18". Possibly 1 to 2 times per month in the peak season. Use multiple short consecutive cycles for deep watering with minimal runoff.

Again, as mentioned in the previous Scenario, some controllers allow the same valve to be on 2 programs. This zone might be scheduled on Program 1 for shallow and frequent watering and again on Program 2 for deep and infrequent watering. The deep and infrequent watering will water beyond shrub root zones which is inefficient.



Scenario 2b

New drip system is installed to water both the new shrubs and existing tree on the same valve

Potential AB 1572 Scenarios

Possible responses to AB 1572 and how to best manage each scenario for tree health

Scenario 3 - Planting mods and new 2nd dedicated tree valve (Efficient and Optimal Application)

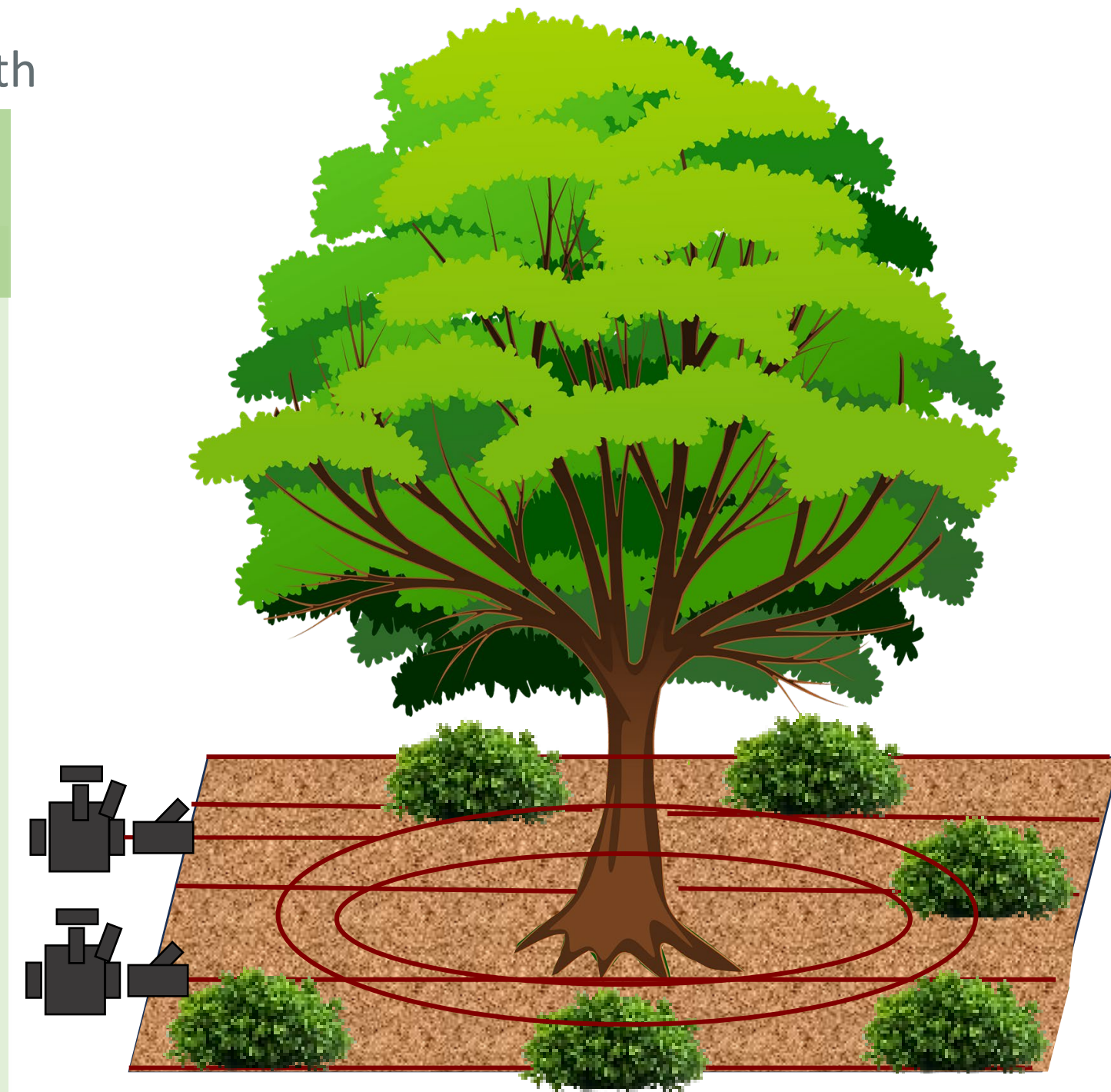
Similar to Scenario 2, Lawn is removed or sheet mulched and the old lawn area gets replanted and mulched. In Scenario 3, the existing valve is converted to water the shrubs but a second new valve is added for dedicated tree irrigation

Primary Goal: Water efficiently by watering shrubs and trees independently and appropriately by having individual control. Compared to Scenario 2, this is much more efficient because the shrubs do not get overwatered during the deep root tree watering that takes place during the peak time of the year.

Tips: Select emitter and spacing according to soil type. Caution - A 12 x 12 grid with 0.9gph emitters applies water at a similar rate to overhead spray

Often, during a drip conversion, not all the lawn valves are used. These spare valves can be converted to dedicated tree irrigation

New valves can also be added using wireless or Add-A-Zone devices



Scenario 3

A new separate valve is added to water shrubs and trees separately. New drip system is installed to water new shrubs and existing tree on the same valve

Established Trees - Factors to Determine Frequency and Duration

- Current local evapotranspiration rates (ET_o)
- Plant Factor (WUCOLS)
- Precipitation Rate / Application Rate / Efficiency
- Soil Type (AWHC and Infiltration Rate)
- Root Depth
- Management Allowable Depletion
- Slope
- Exposure
- Irrigation of surrounding understory plantings

Irrigation Scheduling Resources

- IA - Soil Moisture Balance
- ASABE - Drip Efficiency and Schedule Paper
- UCANR IPM – Irrigation of Trees and Shrubs
- Rain Bird and Hunter Resources



*Pro Tip: Apply water 5'-10' away from established tree trunks. Focus water near canopy perimeter or as close to dripline as possible
Always check soil moisture 6-12 inches deep before watering. Use a screwdriver or soil probe — if it slides in easily, the soil is still moist.*

Leverage Smart Controller technology and Dial It In! Maximize savings through fine tuning. WBIC's are water management tools

Long watering times can be challenge under watering restrictions. Drip covered in mulch can be done during the day (check local restrictions)

System Modifications and Maintenance



Bubblers should be modified for mature trees



Insufficient tubing on mature tree and too close to flare



5 Drip rings (500' of 6gph -12x18) at dripline– 30' dia canopy
Spray to Drip Retrofit Kits – up to 360 GPH ea



Tree roots can lift and kink drip tubing over time



Watering at the dripline can be challenging in urban areas



Protect feeder roots that are 6" to 18" deep

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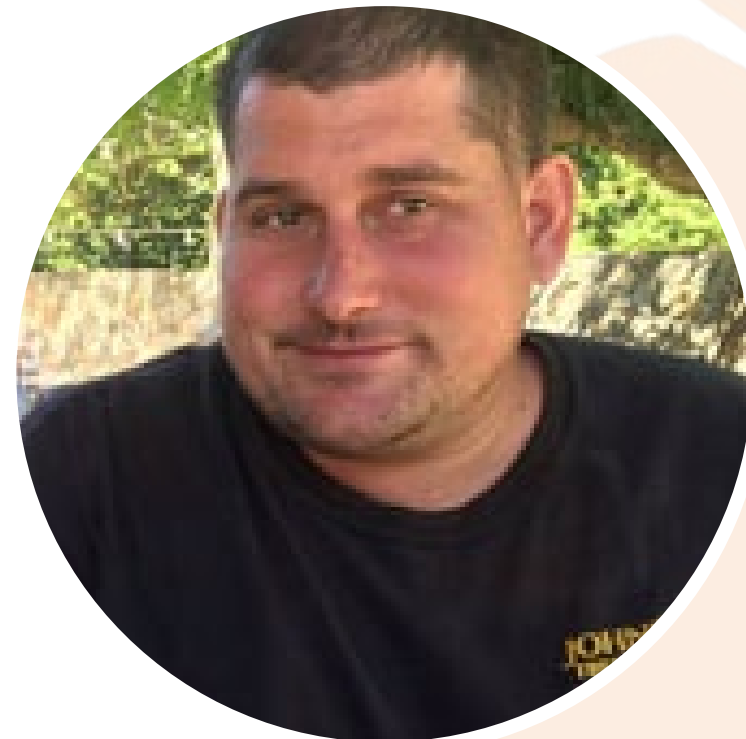
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COMING UP NEXT:

Optional Lunch and Learn: Introducing the Initiative to Streamline
Water Data Reporting (ISWDR CA)
| 12:30 PM- 1:15 PM | Napa Valley Ballroom

Yoga in the Redwood Grove
| 12:50 PM- 1:10 PM