HOW TO PLANT

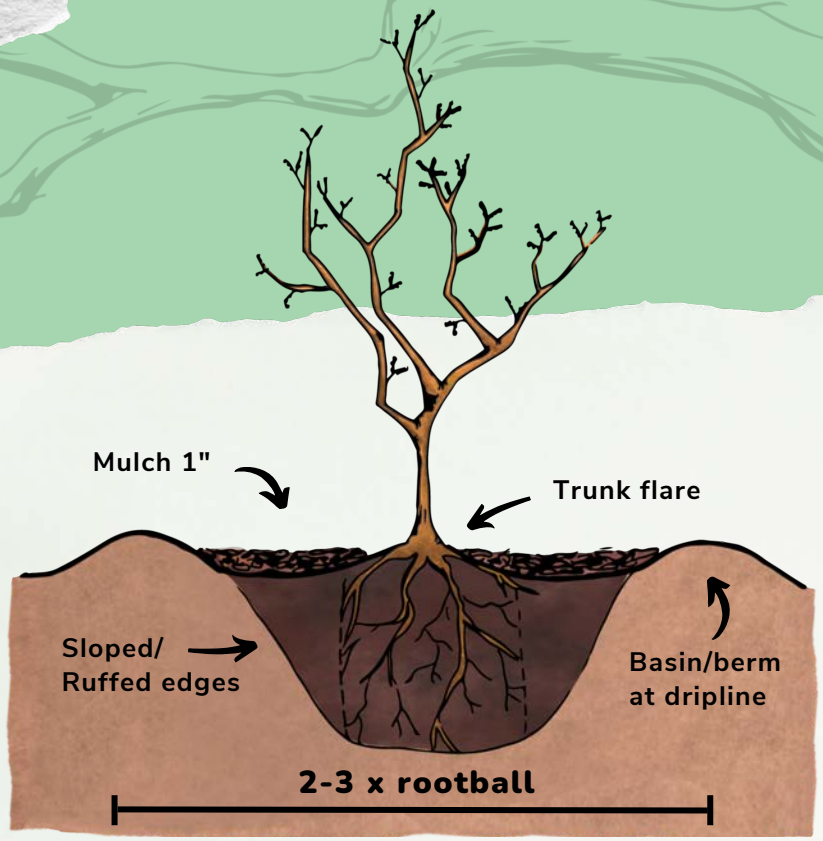
Planting a tree is done in three steps:
Dig the hole, Plant the tree, Make the basin.

1

- Check for caliche before digging by filling hole and letting it drain.
- Dig hole 2-3x as wide as pot.
- Dig the hole so that the trunk flare is 1"above ground. A good rule of thumb is to place the first lateral root, at soil level to allow for soil settling. Don't plant too deeply or moist soil can collect at trunk and cause rot.
- Slope and break up the edge of planting hole to allow root growth outward.

2

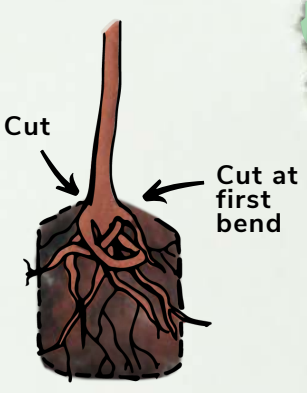
- Hug pot to loosen dirt inside pot and use gravity to remove tree from pot. Take care to keep the root ball together.
- Gently or strongly prune the roots. Loosen roots that are growing downward or circling and direct them outward, cutting as needed.
- Backfill with native soil and make sure the tree is positioned so that it is straight. Do not add compost to backfill.
- Gently compress soil around root ball to ensure stability.



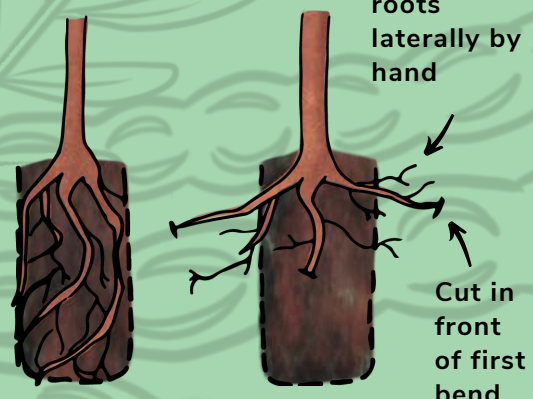
3

- Use some of the remaining soil to build a small berm on the downslope side of the tree to enable rainwater capture and retention of water when hand watering.
- Ensure that the basin extends beyond the dripline.
- Add mulch in basin to 1 inch, but don't allow it to touch the trunk of the tree.
- Water-in the tree immediately after planting to help settle the soil.

Girdling roots



Don't cut more than 2-3 structural roots



Before **After**

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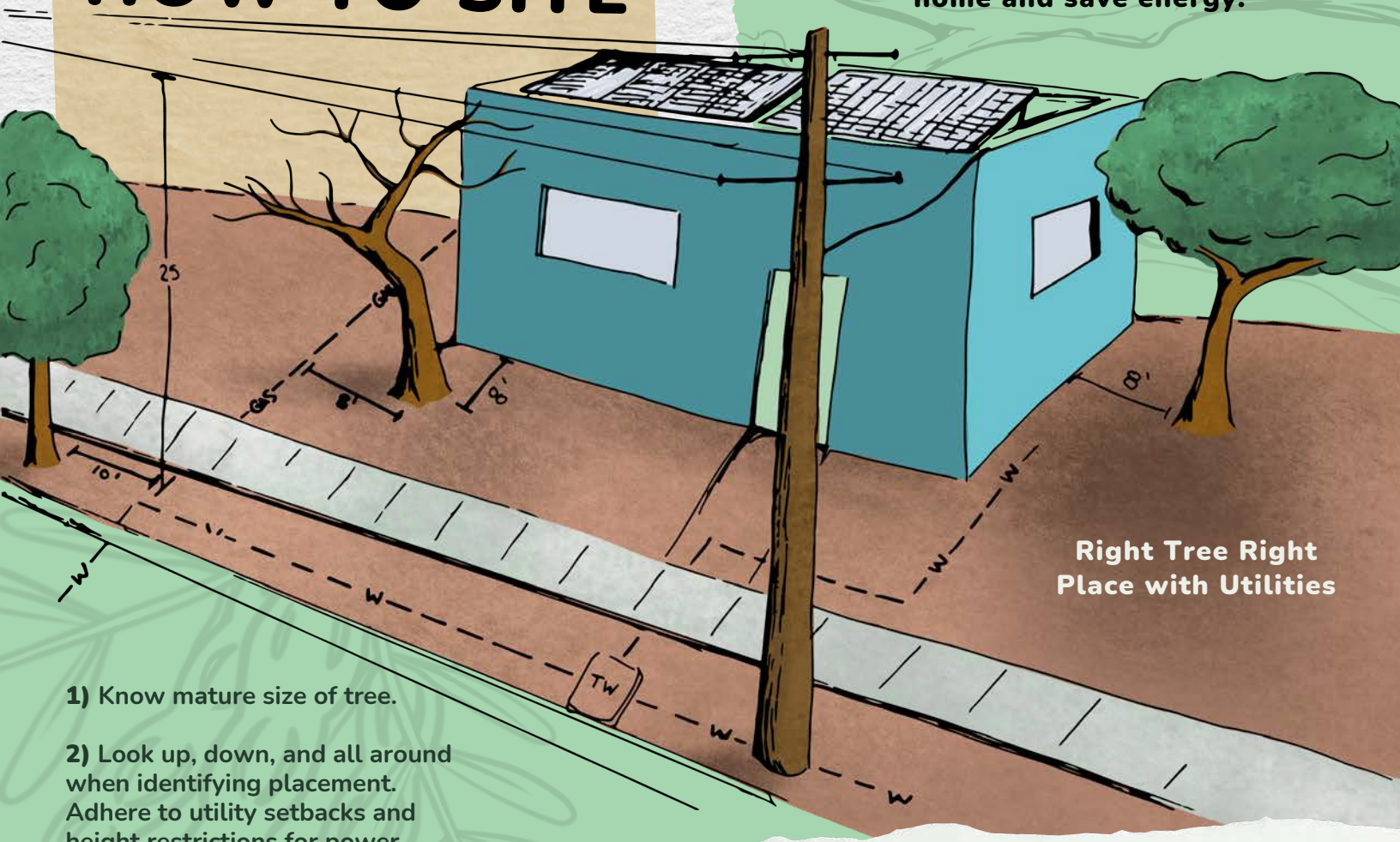
HOW TO SITE

Plant trees to shade and cool your home and save energy.



Right Tree Right Place with Utilities

1) Know mature size of tree.

2) Look up, down, and all around when identifying placement. Adhere to utility setbacks and height restrictions for power lines.

3) Choose locations for shading your home on all sides.

4) Deciduous trees can be placed on the South side to shade in the summer and allow warming sun in the winter.

5) Plant trees at least 8’ away from buildings or walls and shrubs 6’ away.

6) Plant in layers of shade using trees and shrubs together. This allows shading of the roof, windows, walls, and a/c units.

7) Plant NW and NE of house for summer sun and SE and SW for Winter sun.

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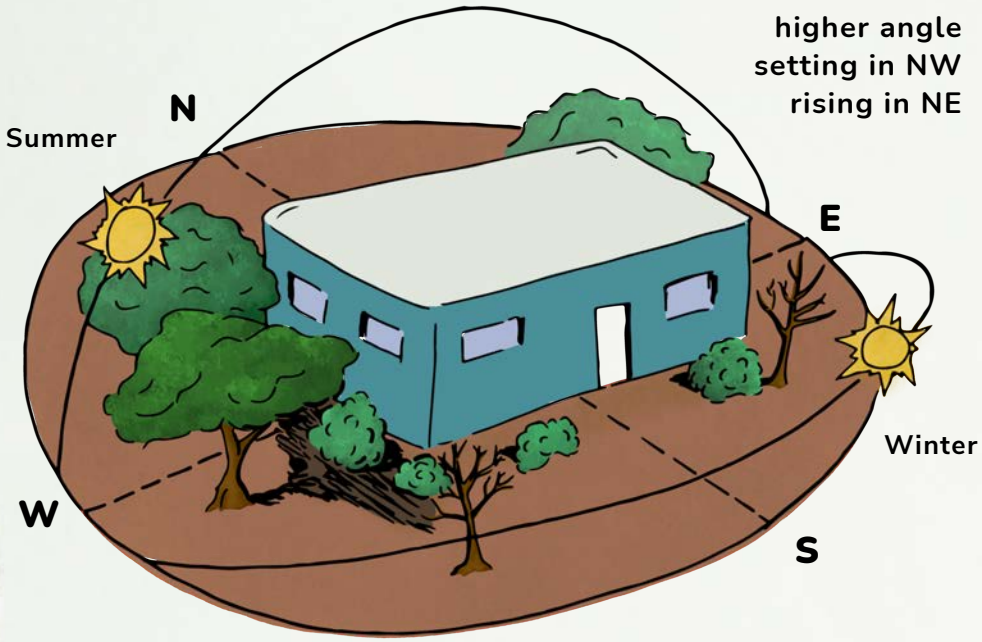
Tree Placement for Energy Efficiency based on Seasonal Sun patterns

Evergreen: leaves year-round

Deciduous: drops leaves in winter

Winter sun: lower angle in south

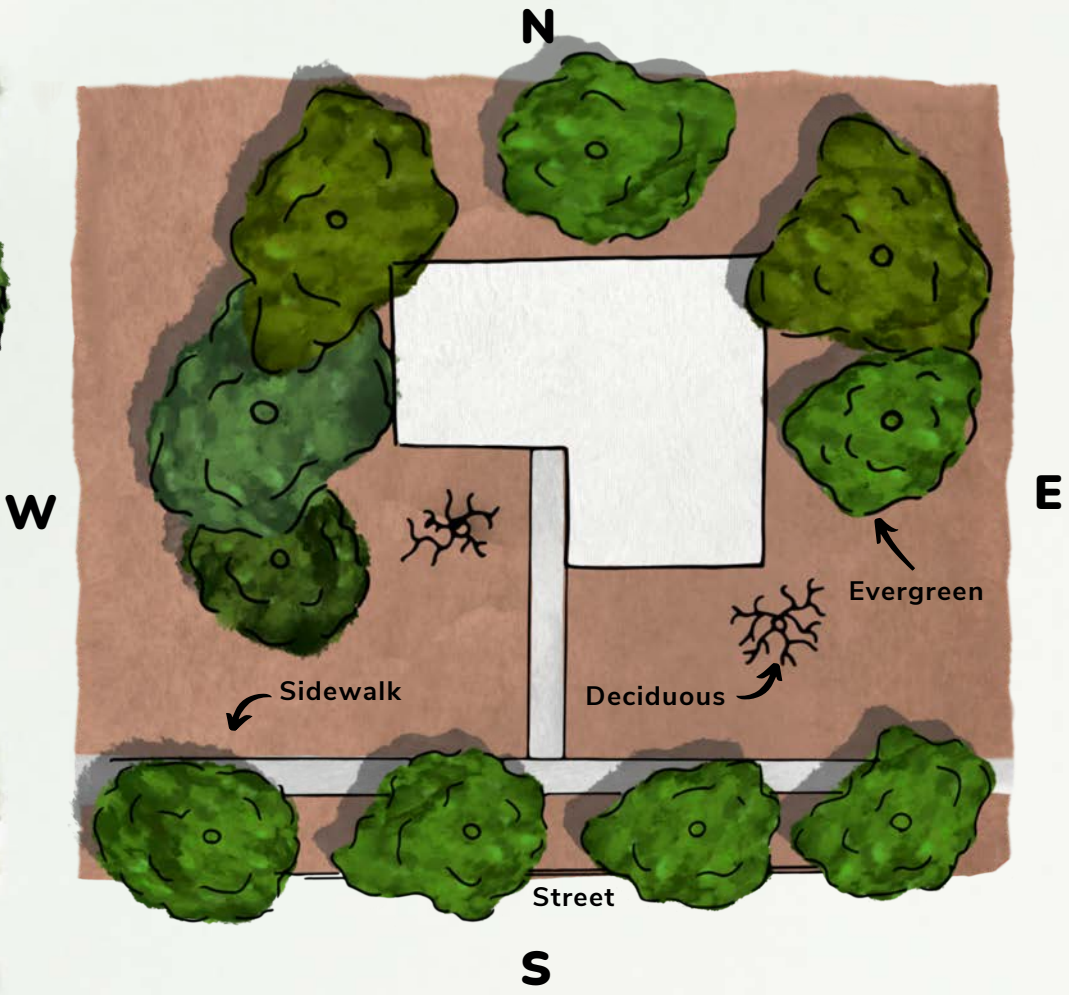
Summer sun: higher angle setting in NW rising in NE



Tree Overlap

15% Overlap
30' Trees = 5' overlap

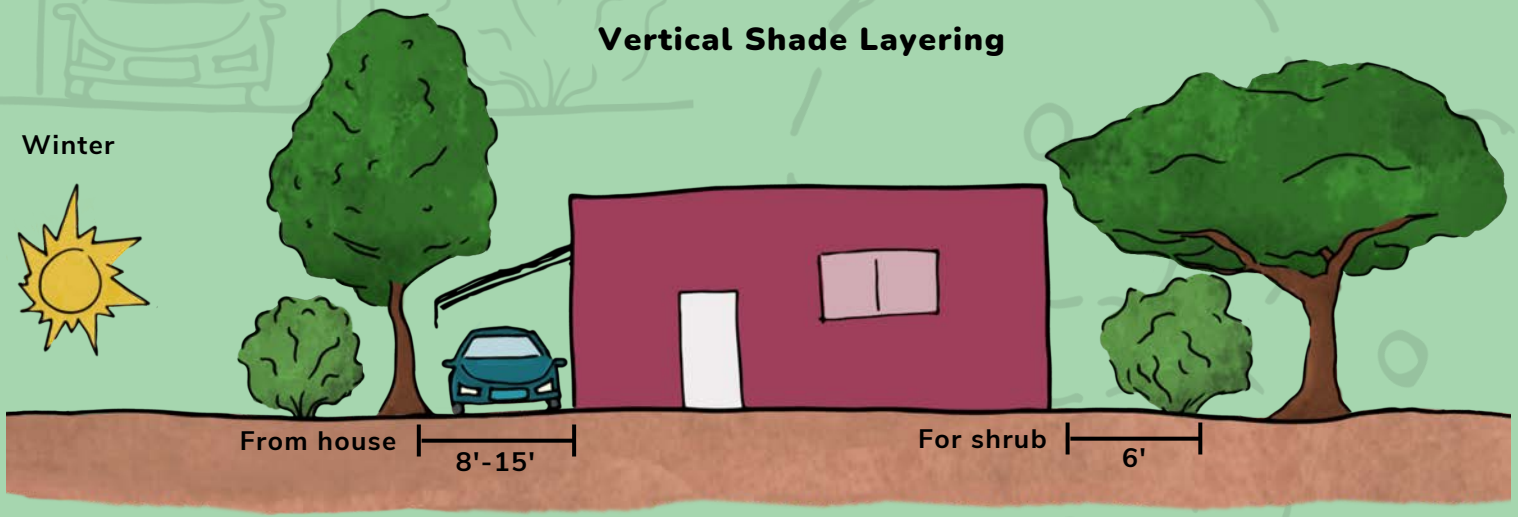
Tree Placement



Summer

Vertical Shade Layering

Winter



Bluestaking beforehand can help eliminate the need to take out the tree in the future for breaking utility lines with roots. Picking a smaller tree can eliminate the need to top the tree to avoid powerlines.

Planting the right tree in the right place comes down to several factors. Where you place your tree will determine whether you will be paying less for electricity or more for maintenance due to its size and shape.

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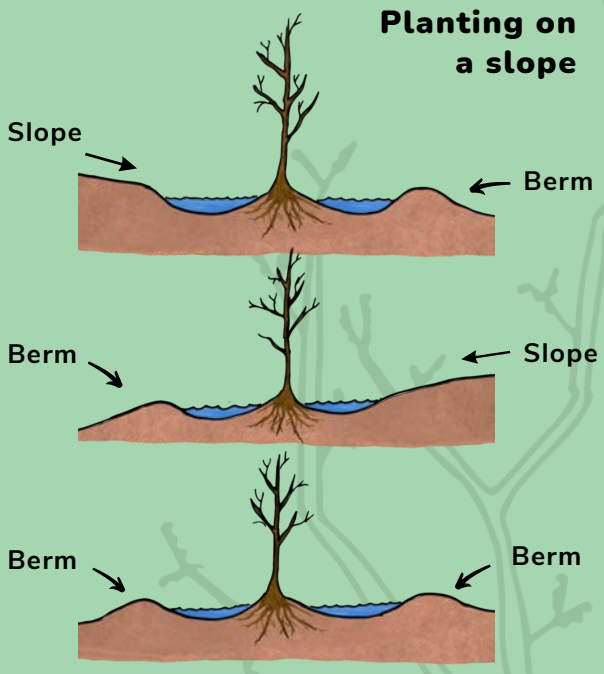
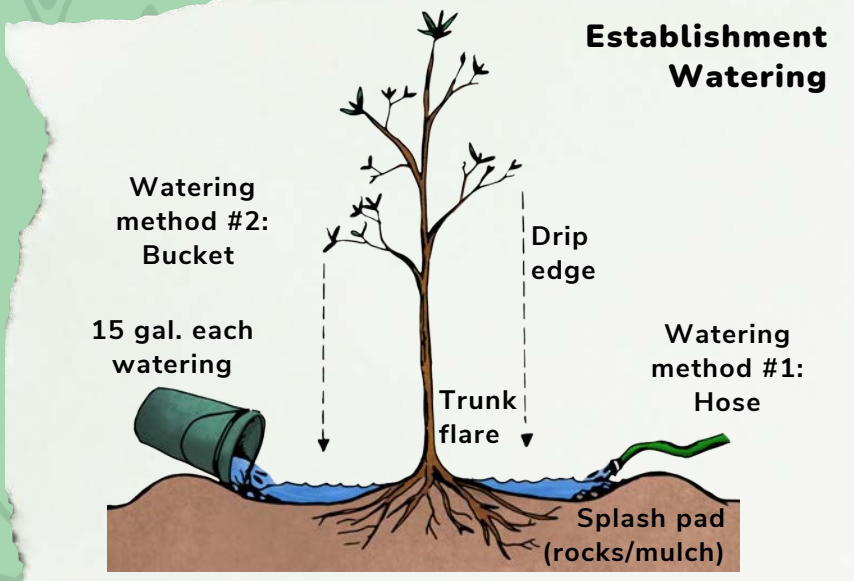
HOW TO WATER

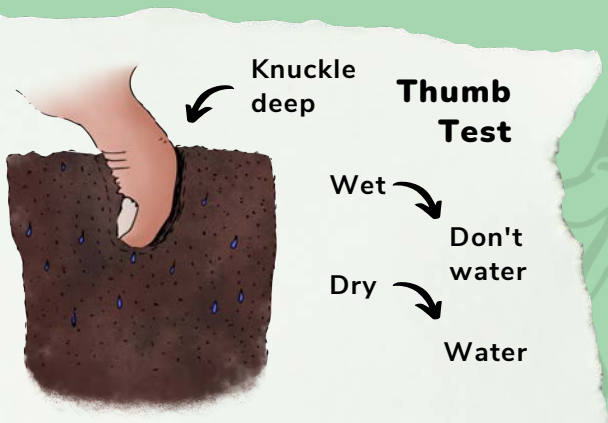
Plant trees to shade and cool the home and yard and save energy.

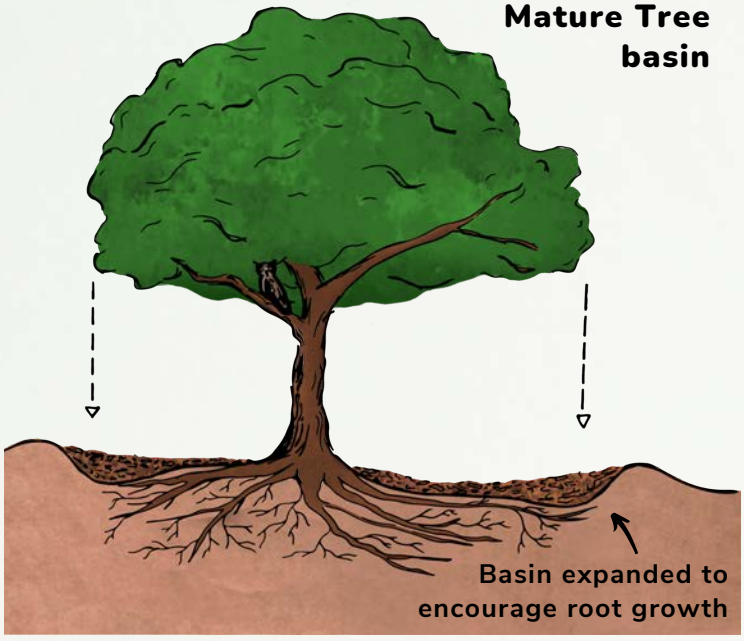
- Watering needs vary depending on the age of the tree, outdoor temperature, and rainfall.
- Winter: First planted - 2-3x per week for first month, then 2x a week.
- 1yr old - 1x per week.
- Summer: First planted - 3-4x a week for first month then 3x a week.
- 1yr old- 2x a week.
- After establishment, trees need deep, infrequent waterings.
- If hand watering, trees should get 15 gallons per watering.



- Allow basin with berm to fill completely each time. As tree matures move watering basin outward to meet drip line of tree. This helps spread the roots outward as well.
- Use the “thumb test” to determine if the soil is still wet or too dry if you are unsure how often to water. If it is soaking at thumb depth, then wait to water. If it is chalk dry, it definitely needs to be watered.
- Apply 1” of organic mulch in basin (leaf litter, straw, alfalfa, or wood chips) to help retain soil moisture. Leave trunk free from mulch.







Watering your new tree is the most important part of it’s survival. If you are unsure whether the tree needs water, test the moisture level just below the surface. If it is dry, it probably needs watering. On average water your tree twice a week with 15 gallons of water and increase or decrease this based on the weather.

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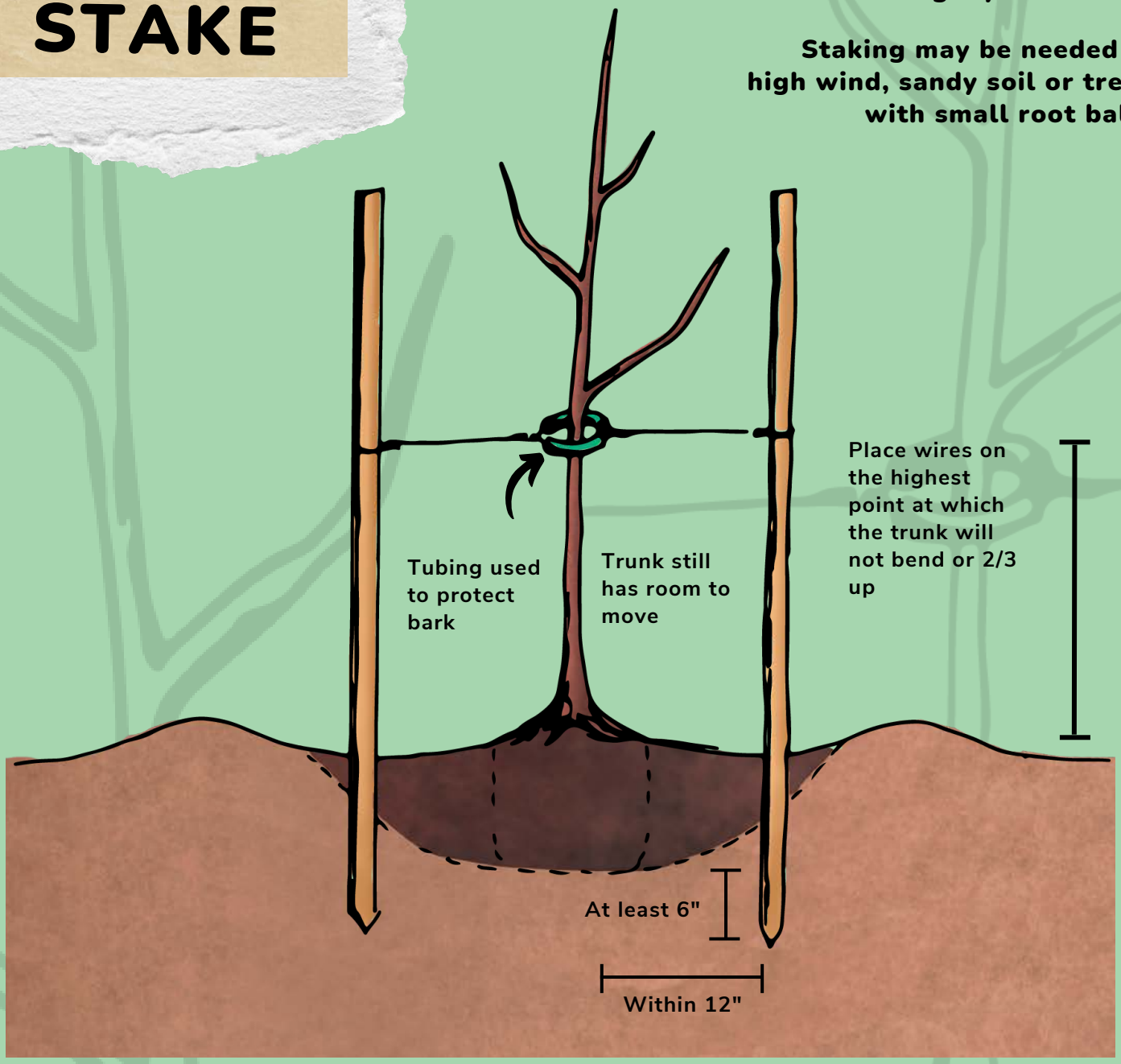
HOW TO STAKE

Staking should be avoided if possible. Staking can compromise the strength and integrity of the tree

Staking may be needed in high wind, sandy soil or trees with small root balls



- Staking may be needed in high wind, sandy soil or trees with small root balls.
- Nursery stakes should be removed at the time of planting.
- If staking is needed, assess after first growing season for removal or continued use.
- Ties should be placed along the trunk and should not interfere with branch growth and development.
- Use flexible, wide, flat material for your ties.
- Place the stakes equal distance apart from the trunk with the first stake on the side where the wind is most present and the second just opposite of that. Ties should be snug and allow a looped area that is tight enough for strength but loose enough for movement.

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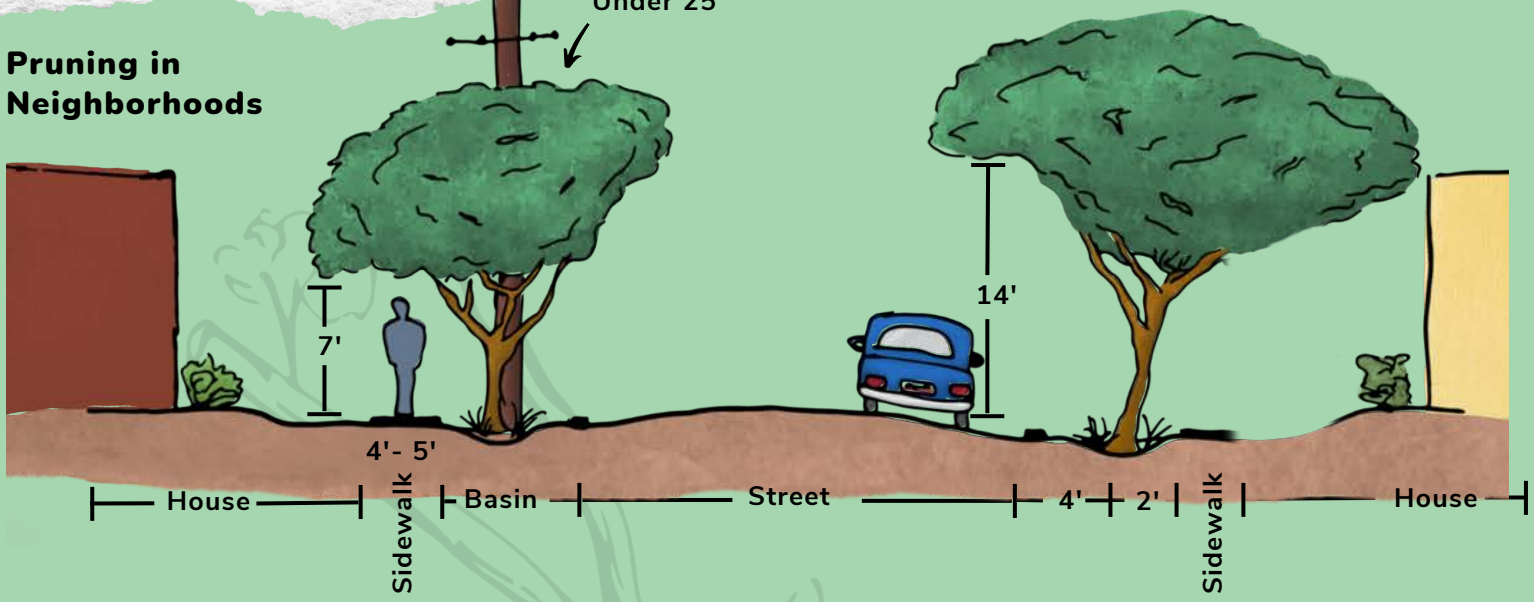
HOW TO PRUNE

1 Why

- Determine your pruning goals and objectives before you cut.
- Reasons to prune: visibility, accessibility, clearing dead and diseased branches, tree form or structure.

Pruning in Neighborhoods



2 What to know about Pruning

- Forest trees do not need pruning, but urban trees require more care.
- Pruning is a process and should be accomplished over time.
- Don't top or remove the central stem, because the tree will never grow correctly.
- Don't prune for the first two years, especially lower branches which help strengthen and protect the trunk.
- Don't overprune, cut the minimum amount necessary.
- While pruning, wear protective equipment, especially for the eyes.

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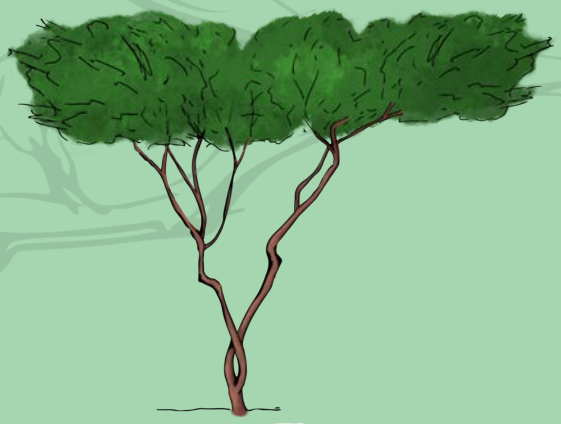
Lion tailing



Codominant Trunk

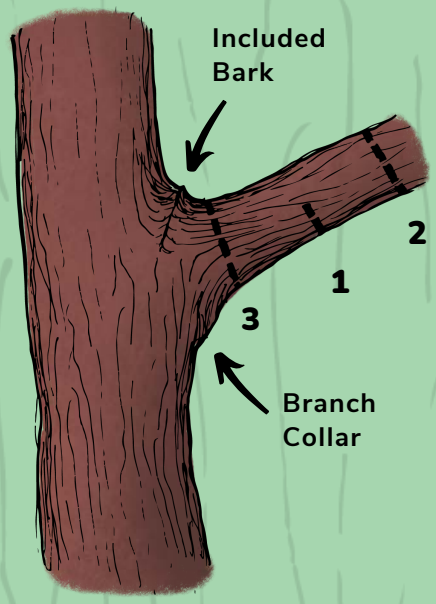
Topping

Timing: Pruning during late winter and early spring encourages growth and sealing of wounds. Most routine pruning can be performed any time of the year with little negative effect. Ideally, prune before the buds swell. Prune while dormant (November-March is best in Tucson). Be mindful of bird breeding seasons, most birds breed between February and May. Avoid pruning major limbs during the summer.

How

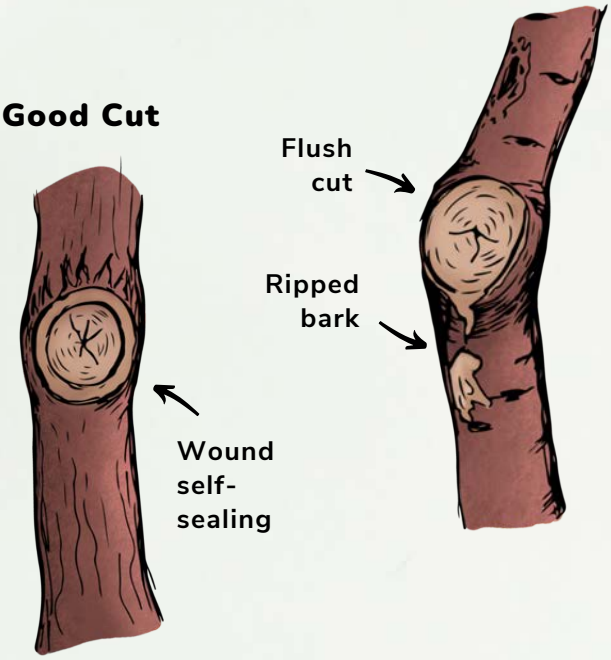
- Don't leave stub cuts. Prune target branches back to the next branch junction. Stub cuts result in dieback and it can be a point of entry for disease or insects.
- Use the 3 cut method on larger limbs.
- All cuts should be done at nodes or just outside the branch collar at a 90 degree angle. This allows sealing of the wound.
- Prune overcrowded, crossed or broken limbs, and dead or diseased limbs.
- Never cut the dominant leader or main stem.
- Many smaller reduction cuts can achieve the same result with less damage than pruning an entire branch.

3 Cut Method



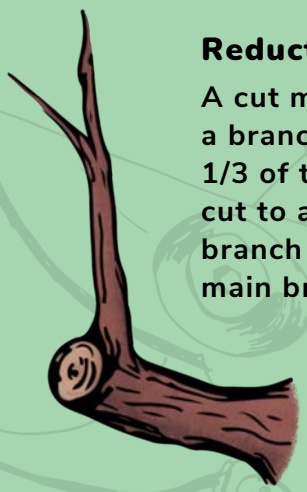
Dominant leader

Good Cut



Stub cut

Cuts made in the middle of a node. These cuts cannot self-seal, so they leave the tree open to disease and decay.

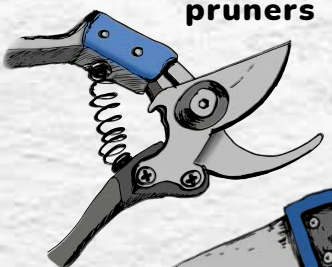


Reduction cut

A cut made at a node with a branch no smaller than 1/3 of the branch being cut to allow the smaller branch to take over as the main branch.

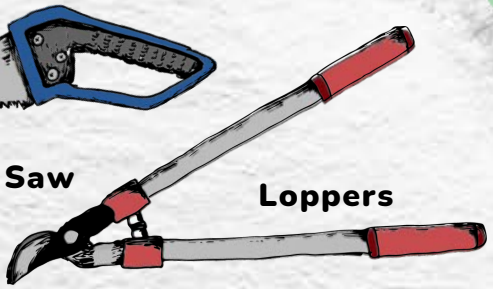
TOOLS

Bypass Hand pruners



Hand Saw

Loppers



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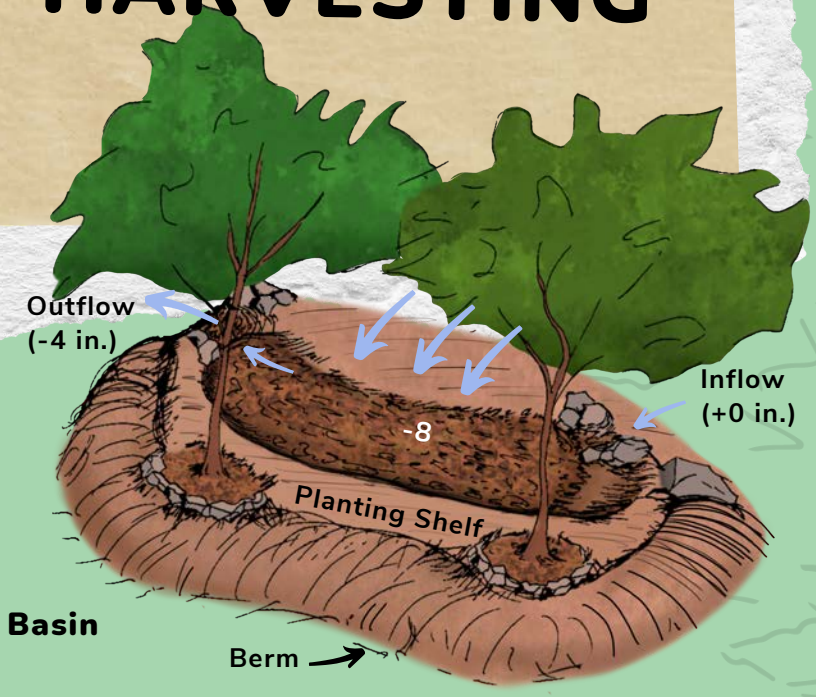
RAIN WATER HARVESTING



What is a raingarden?

- A rain garden is a sunken area in the landscape that collects rainwater from nearby surfaces such as a roof , street, or driveway, and allows the rainwater to soak into the ground. Raingardens act as giant sponges, using soil, plants, and mulch to soak up rain and store rain in the ground.

How do I harvest rain into my raingarden?

- Rainwater harvesting works with just gravity! Water flows from high points (like mountains and rooftops) to low points (like valleys, streets, and low areas in our yard). Raingardens change the topography (or surface shape) of the landscape to direct water where we want it to go! Raingardens are designed to redirect flows and SLOW, SPREAD, and SINK water into the ground.

What are the key ingredients of a raingarden?

While each raingarden is unique, all rain gardens are made with the same “basic ingredients” that help raingardens function, thrive, and provide many benefits! Learning these key terms will help you understand how raingardens function and how to care for them.

Swale

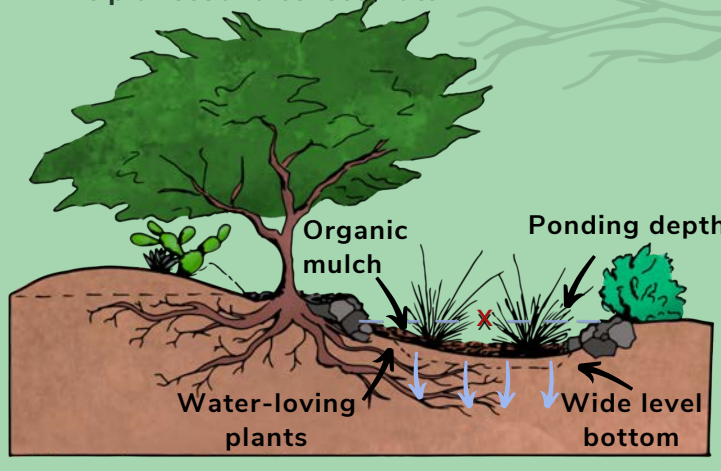
- Swales are very shallow trenches that move rainwater through the landscape. Unlike a trench, a swale is very wide and meandering with gently sloped banks, and meanders back and for (like a healthy river or stream) to move water slowly and prevent erosion.

Basin

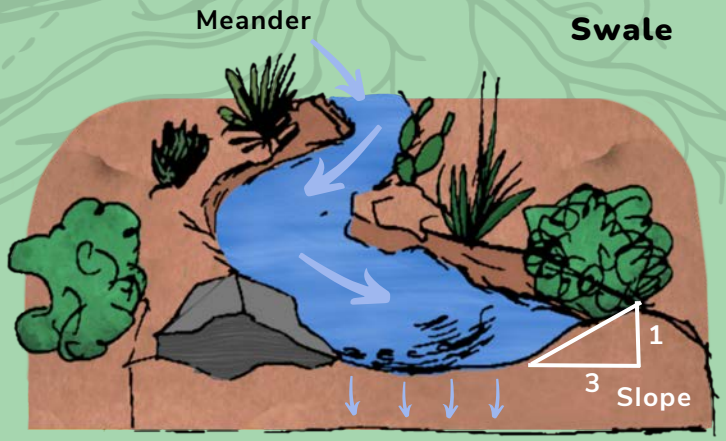
- A basin is a shallow, wide depressed area dug into the ground. Well-designed basins have flat bottoms where water can spread evenly over the ground and sink into the soil. The edges of basins should have gently sloping sides or be reinforced with rock to prevent erosion.

Berm

- Berms are carefully placed and shaped piles of dirt. Berms should be at least 3 -4 x wider than they are tall. Shape berms with gentle slopes and compact them to prevent erosion. Use berms along the downhill edges of basins and swales to help direct and collect water.



Basin Section



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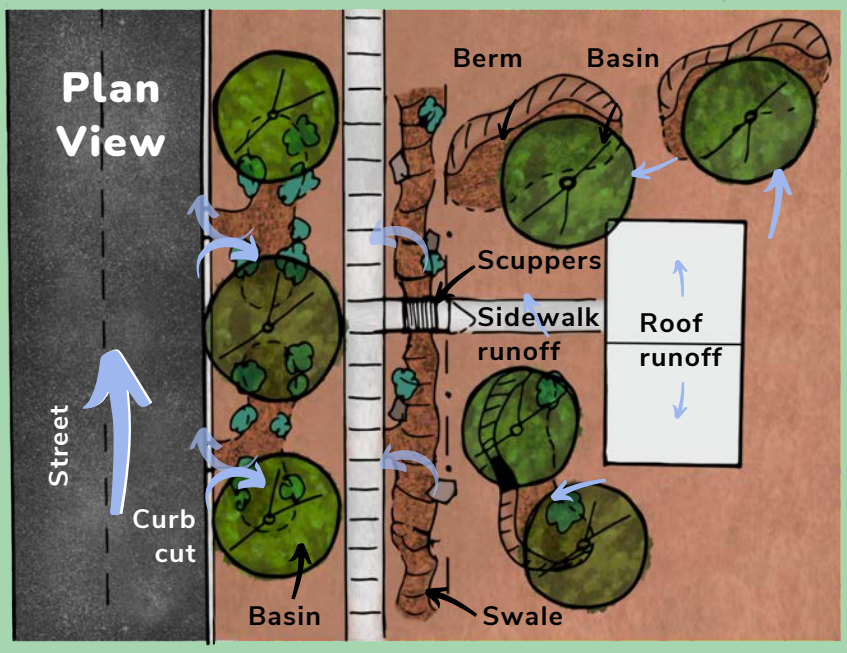


Planting Shelf

- When a raingarden is full of water, plants will get submerged. Some plants - like trees, cacti, and other woody stemmed plants - will rot or struggle if they are submerged. Creating a shelf for these plants to sit on(like a patio stoop or entryway stair step) in your basin provides a space where plants can directly access water without getting too wet.

Soil and Mulch

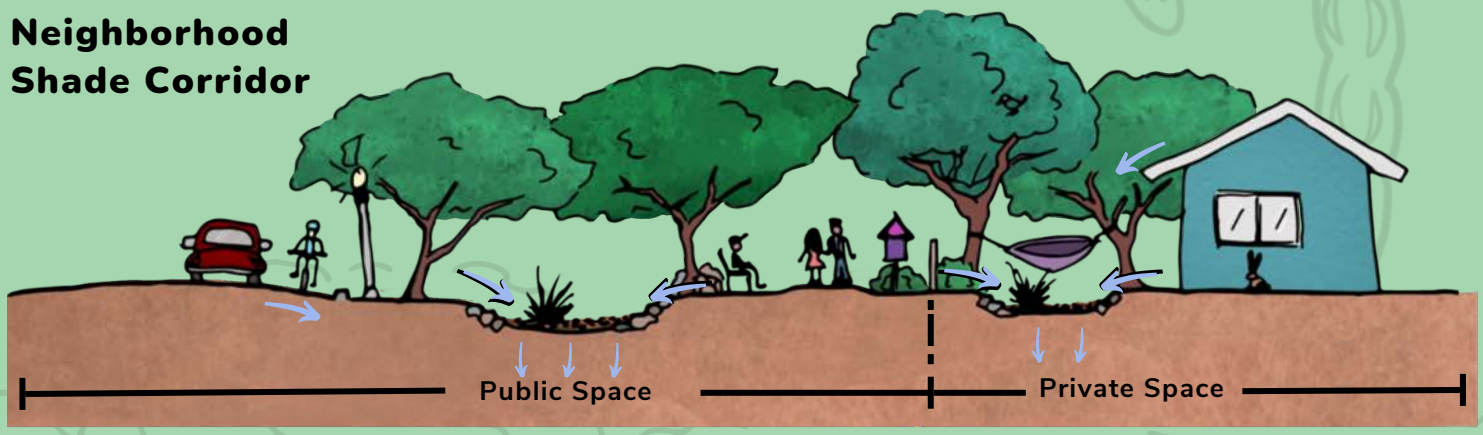
- In the desert soil exposed to the sun quickly dries out. To keep the soil moist, a raingarden needs a “blanket” of mulch (like leaves and wood chips) to protect the soil. This organic matter also adds “food” to the soil by providing nutrients to plants so they can grow strong and thrive.

Plants

- Plants are not aesthetic! Their roots keep soil in place and create small tunnels that help water soak into the ground.
- With the right plant selection you don’t need long-term irrigation. Do you see sprinklers in the desert? No! That’s because native plants thrive and survive on rainwater alone! Plant natives to save water and invite a happy, humming array of wildlife to your backyard. Sit back and enjoy the show!

Inflow / overflow

- Like a bath tub, every raingarden has to collect water and let water back out once it has filled up. Water enters a raingarden through an inflow and exits a raingarden through an overflow. These entry and exit points control how much water flows through your raingarden, as well as determining how much water your raingarden can hold during a storm. It is important to carefully place these entry and exit points and keep them clear of debris to ensure your raingarden holds and infiltrates water without causing flooding.



Where can I harvest rainwater in my neighborhood?

- In the Right of Way (ROW) - The streets of Tucson were designed to collect and drain water out of our neighborhoods. Instead of letting this free, beneficial resource go to waste, we can use it to transform our public spaces into usable, safe, and shady corridors. Street areas in front of private properties are a public space called the Right of Way! Work in your own right of way or with neighbors to build basins along your street!
- At your home - Build raingardens around your home to collect rainwater from roofs, sheds, driveways, and other hard surfaces. To soak up this water, plant drought tolerant trees and pollinator plants to grow shady green canopies to cool your home and reduce your energy and water bills.
- On public property or community property - See an opportunity for a raingarden in an empty parcel, public park, community garden, or other space? Connect with your neighbors and community partners to build raingardens that support cool, connected community spaces.

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