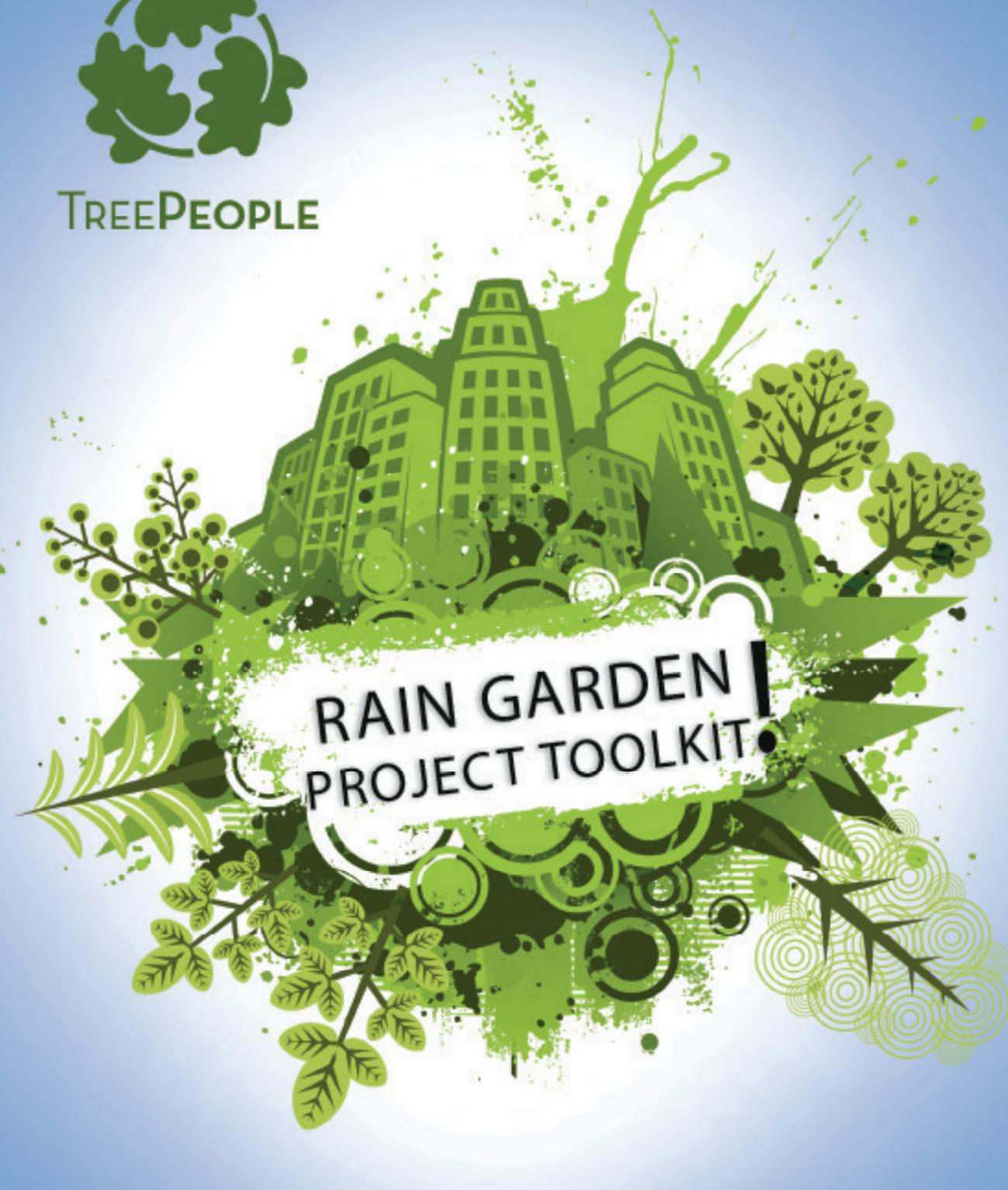
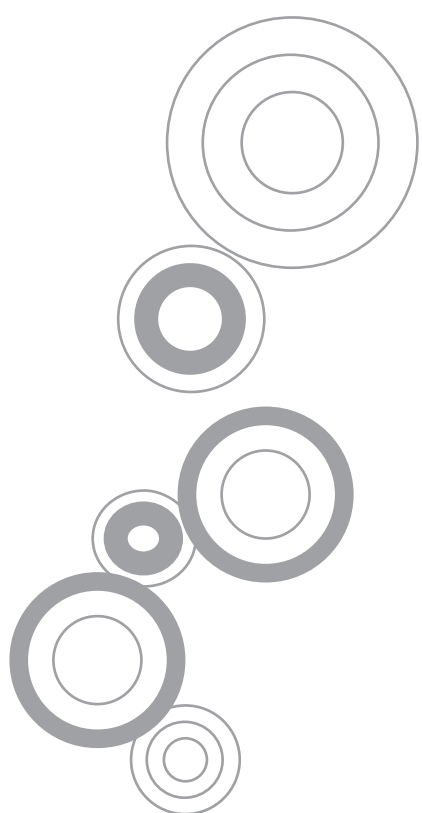




TREEPEOPLE

A vibrant green graphic illustration on a blue background. It features a central cluster of stylized buildings, trees, and foliage. A white banner with the text 'RAIN GARDEN PROJECT TOOLKIT' is draped across the middle. The design is decorated with various green elements like leaves, branches, and circular patterns, all set against a backdrop of green splatters and a bright sun-like glow.

**RAIN GARDEN  
PROJECT TOOLKIT**



TreePeople's School Greening Program

# Rain Garden Project Toolkit



# Who We Are

## TreePeople

TreePeople is an environmental nonprofit that unites the power of trees, people and technology to grow a sustainable future for Los Angeles. Simply put, our work is about helping nature heal our cities. TreePeople's mission is to inspire, engage and support people to take personal responsibility for the urban environment, making it safe, healthy, fun and sustainable and to share the process as a model for the world.

## Shifting Los Angeles From Grey to Green

TreePeople is helping to shift Los Angeles from using grey and polluting ways of handling our energy and water to using green nature-based solutions. We provide tools, programs, and education to empower Angelinos of all ages to participate in growing an ample tree canopy that cools hot urban neighborhoods and in retrofitting our landscapes to harvest rain and conserve and clean precious water. The result? A more secure local water supply, cleaner air, reduced carbon emissions, more habitat for birds, bees and animals, and a greener, healthier and more sustainable future for us all.

## Founded by a Teenager!

TreePeople's founder, Andy Lipkis, was a teenager when he started the organization in the early 1970's. Since then, nearly two million trees have been planted in wilderness areas, neighborhoods and school campuses in Southern California by volunteers. We've continued to place young people at the center of our work by developing one of the largest environmental education programs in the United States. Our programs for youth create opportunities for leadership, community service and fun.

## TreePeople's Project Toolkits for Groups

TreePeople's Project Toolkits are designed to assist teens, youth groups, youth group leaders, and teachers by providing instructions, tools, and support materials that not only teach about critical environmental issues in their community but provide the tools to take action to address them.

## Rain Garden Project Toolkit

This tool kit explores the growing water need in Los Angeles and the importance of collecting and/or infiltrating what little rainfall we get. This exploration will help determine how your group can help both the quality and quantity of our water by designing and installing a rain garden of native plants.

### How it works

#### STEP 1: LEARN

Conduct the Instant Expert activity.

- Use the Instant Expert Activity sheets for a fun and informative, hands-on activity to explore the topic of water.

#### STEP 2: ASSESS

Map your site and assess the needs of the project.

- Use the *Project Assessment Tool* to map and explore your site.
- Use your map, and the *Rain Garden Project Readiness Survey* to determine what is needed to complete the project.

#### STEP 3: CREATE A RAIN GARDEN OF NATIVE PLANTS

- Follow the guidelines to create a rain garden at your site.
  - Confirm Site Appropriateness
  - Choose Your Plants & Design Your Rain Garden
  - Finalize Your Plans & Get Permission
  - Prepare For Your Event
  - Create Your Rain Garden
  - Maintain Your Rain Garden

#### STEP 4: MAKE IT COUNT

Make your rain garden count by mapping it on TreeMapLA.org. This also allows your group to measure the environmental benefits of your rain garden.

#### STEP 5: SHARE WHAT YOU DID

Share your project through TreePeople's various social media sites (see page 3) including the Project Toolkit Facebook Group and completing a final report.

## HOW TO GET SUPPORT

If your group is planning to use this or another TreePeople Project Toolkit, and would like support, send an email to [education@treepeople.org](mailto:education@treepeople.org)



## TreePeople Support

TreePeople staff are available to support groups working on projects in the following ways:

- **Visit your group.**  
Once your group has completed Step 2, a TreePeople staff person can make a site visit to help launch your project.
- **Answer questions.**  
If your group has questions that are not answered in the Toolkit, TreePeople staff can help.
- **Stay connected.**  
We encourage your group to join us on Facebook and other social media (see instructions below) and stay connected. Share your group's process and learn what other groups are doing.
- **Event day support and acknowledgement.**  
Depending on your project, TreePeople staff can help provide event day support, tools, acknowledgement and more.

## Stay Connected!

### Facebook

Join our Project Toolkit Facebook Group to share experiences, post photos, ask questions, and find inspiration. This is a closed and private group. TreePeople will invite you to join. We also encourage setting up your own Facebook group and inviting your mentor to join. Registered TreePeople EcoClubs get an official badge for their profile.

### Twitter

Follow us @tpyouthprojects for the latest news, upcoming workshops, events, tips, suggestions, nursery sales and more!

### Pinterest

As you transform your school or community site check out our Pinterest page for inspirational photos of campus greening, rain gardens, native plants and more! [pinterest.com/tpgreytogreen](https://pinterest.com/tpgreytogreen)

### Instagram

Along the way share your photos on Instagram. Be sure to tag #TreePeopleLA

### TreePeople Blog

Visit our TreePeople blog to stay connected with the TreePeople community and if you'd like, share your club's story for publication. [blog.treepeople.org](http://blog.treepeople.org)

### TreePeople YouTube

Check out our How to Videos and more at [youtube.com/user/TreePeople1](https://youtube.com/user/TreePeople1)

# INSTANT EXPERT ACTIVITY

## Learn the Value of a Rain Garden

### It's Water Quality and Quantity!

#### Procedure

1. Divide up into four working groups.
2. Each group has 15 minutes to do the following:
  - Receive one *It's Quality and Quantity!* topic sheet with instructions and information on a water-related issue.
  - Read the information on the topic sheet. Learn about and discuss the specific topic related to water.
  - Using poster paper, answer and illustrate the answers to the questions listed on the topic sheet to create an infographic.
3. Once complete, each group presents their infographic, sharing what they have learned.
4. As a whole group, discuss the need to restore the watershed and how they will work with TreePeople and the Administration and Maintenance staff of their site to complete a project.

#### Other Options

- Read each *Topic Sheet* as a group and discuss.

#### MATERIALS

- *It's Quality and Quantity!* topic sheets (copy pages 5 - 8)
- Poster paper - 1 per group
- Markers - 1 set per group

#### WORDS TO EXPLORE

Definitions for these and other words can be found in the glossary on page 43.

- absorption
- asphalt
- berm
- climate-appropriate
- compaction
- debris
- dependent
- dormant
- hardscape
- impervious
- import
- irrigation
- landscape
- mulch
- native
- non-native
- permeate
- percolation
- runoff
- semi-arid
- sustainability
- watershed

## START HERE!

Rainfall is scarce in Los Angeles and the city's need for water is growing. Unfortunately, the city is covered in concrete and asphalt that leave few places where rain can soak into the ground. Instead, water flows across hard surfaces, picking up oil, trash and pesticides. This polluted runoff flows through streets into storm drains and concrete rivers that lead to the ocean. As a result, rainfall – a natural resource that could be used to add to local water supplies – is wasted, while our rivers and ocean get polluted. The need to capture rainwater is a matter of both water quantity *and* quality.

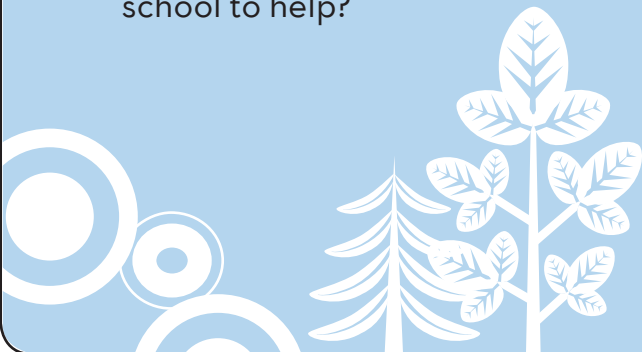
### ***Your Instructions:***

1. As a group, read and discuss the information on the right.
2. Use a large sheet of paper and markers to create an infographic that answers the following:
  - What should we know about the land area of schools?
  - Why are these areas a problem when it rains?
  - What is an action we can take at school to help?

# It's Quality and Quantity!

## SCHOOL FLOODING

- School campuses are part of the urban water cycle. The land area of the school directs water from sprinklers, faucets and garden hoses across the campus almost every day.
- On most schools, the land area consists mainly of concrete and asphalt, as well as lawn/dirt areas that are so compacted from being walked upon, they no longer absorb water.
- When it rains, these areas receive a lot of water with nowhere to go, accumulating into large pools around the campus. This creates muddy or flooded areas, and sometimes causes water to flow across concrete into classrooms.
- Sculpting the land to create a swale – a shallow trench, like a creek – can help reduce or eliminate flooded areas. Water is redirected into the swale where it can be absorbed.
- Lined with rocks and native plants, these areas are lovely native plant gardens when it is sunny, and functional rain gardens when it is not.



## START HERE!

Rainfall is scarce in Los Angeles and the city's need for water is growing. Unfortunately, the city is covered in concrete and asphalt that leave few places where rain can soak into the ground. Instead, water flows across hard surfaces, picking up oil, trash and pesticides. This polluted runoff flows through streets into storm drains and concrete rivers that lead to the ocean. As a result, rainfall – a natural resource that could be used to add to local water supplies – is wasted, while our rivers and ocean get polluted. The need to capture rainwater is a matter of both water quantity *and* quality.

### Your Instructions:

1. As a group, read and discuss the information on the right.
2. Use a large sheet of paper and markers to create an infographic that answers the following:
  - What should we know about the rain water that falls on our roofs?
  - What are downspouts and how do they contribute to runoff?
  - What is an action we can take at home and/or in our community to help redirect rain and why?

# It's Quality and Quantity!

## DOWNSPOUT EXTENSIONS

- Every time it rains, millions of gallons of water hit roof tops all over Los Angeles. Most homes or buildings are designed to direct rain off of the roof - through gutters and downspouts - onto our driveways and streets.
- Downspouts are the vertical pipes along a building that direct water from gutters on the roof and then bend out like a “j” away from the building, directing the rain out onto driveways and streets creating stormwater runoff.
- As this water flows, it picks up pollutants such as automotive fluids, pesticides and trash and carries them to the ocean – where it is our biggest source of pollution!
- To prevent stormwater runoff, we can use a downspout extension (available at home improvement centers). It slides onto the end of the downspout and allows you to redirect the rain into a garden or other planted area.



## START HERE!

Rainfall is scarce in Los Angeles and the city's need for water is growing. Unfortunately, the city is covered in concrete and asphalt that leave few places where rain can soak into the ground. Instead, water flows across hard surfaces, picking up oil, trash and pesticides. This polluted runoff flows through streets into storm drains and concrete rivers that lead to the ocean. As a result, rainfall – a natural resource that could be used to add to local water supplies – is wasted, while our rivers and ocean get polluted. The need to capture rainwater is a matter of both water quantity *and* quality.

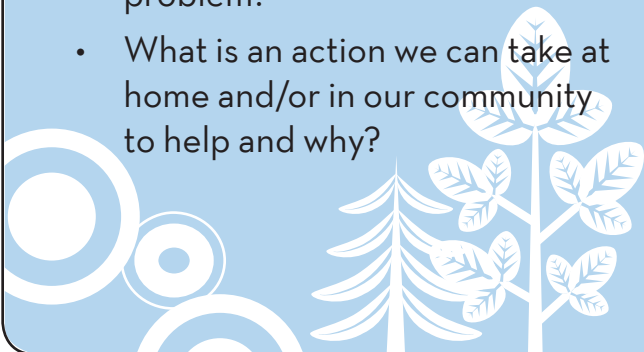
### ***Your Instructions:***

1. As a group, read and discuss the information on the right.
2. Use a large sheet of paper and markers to create an infographic that answers the following:
  - What do we need to know about the climate of Los Angeles?
  - Why are the outdoor landscapes of Los Angeles a problem?
  - What is an action we can take at home and/or in our community to help and why?

# It's Quality and Quantity!

## NATIVE PLANTS

- Los Angeles is characterized as a semi-arid Mediterranean climate of mild, wet winters, and hot, dry summers with little to no rain at all.
- Most of the outdoor landscapes of Los Angeles include non-native plants and grasses that require lots of water, especially during the summer when there is no rain.
- Most native plants from Mediterranean climates such as ours are adapted to conserve water. Some characteristics include: thick, small, waxy leaves to resist evaporation and deep, spreading roots.
- During the summer, when there is no rain, native plants often go dormant and don't need as much water.
- Planting natives at home and in the community requires less water, looks beautiful, supports wildlife, creates healthy soil, and is easier and cheaper to maintain.



## START HERE!

Rainfall is scarce in Los Angeles and the city's need for water is growing. Unfortunately, the city is covered in concrete and asphalt that leave few places where rain can soak into the ground. Instead, water flows across hard surfaces, picking up oil, trash and pesticides. This polluted runoff flows through streets into storm drains and concrete rivers that lead to the ocean. As a result, rainfall – a natural resource that could be used to add to local water supplies – is wasted, while our rivers and ocean get polluted. The need to capture rainwater is a matter of both water quantity *and* quality.

### Your Instructions:

1. As a group, read and discuss the information on the right.
2. Use a large sheet of paper and markers to create an infographic that answers the following:
  - What should we know about the rain that falls in Los Angeles?
  - Why is getting rain water into the aquifer so important?
  - What is an action we can take at home and/or in our community to help redirect the rain and why?

# It's Quality and Quantity!

## RAIN GARDENS

- In Los Angeles, when rain falls to the ground, most of it hits concrete and asphalt instead of getting into the ground to fill our aquifers (underground stores of water). As a result, we have to bring in water from far away, costing us a lot of money.
- In natural areas, when rain falls to the ground, it slowly seeps down into the soil. This process not only removes harmful pollutants, but also adds water to the aquifer.
- Ideally, we want to recreate this in our landscapes. By directing water into the ground, it helps to increase our local water supply (water quantity) while at the same time, preventing rain from flowing into the street – improving water quality.
- By redirecting rain from rooftops into a basin (a depression in the ground) that is created using a berm (a mounded wall of soil), then adding plants, it creates a “rain garden”.
- Rain gardens are a great garden solution that slow the rain, spread it out, and allow it to sink into the ground – adding much needed water to the aquifers below.



# MAP AND ASSESS YOUR SITE

## Create a map to find sites for a garden

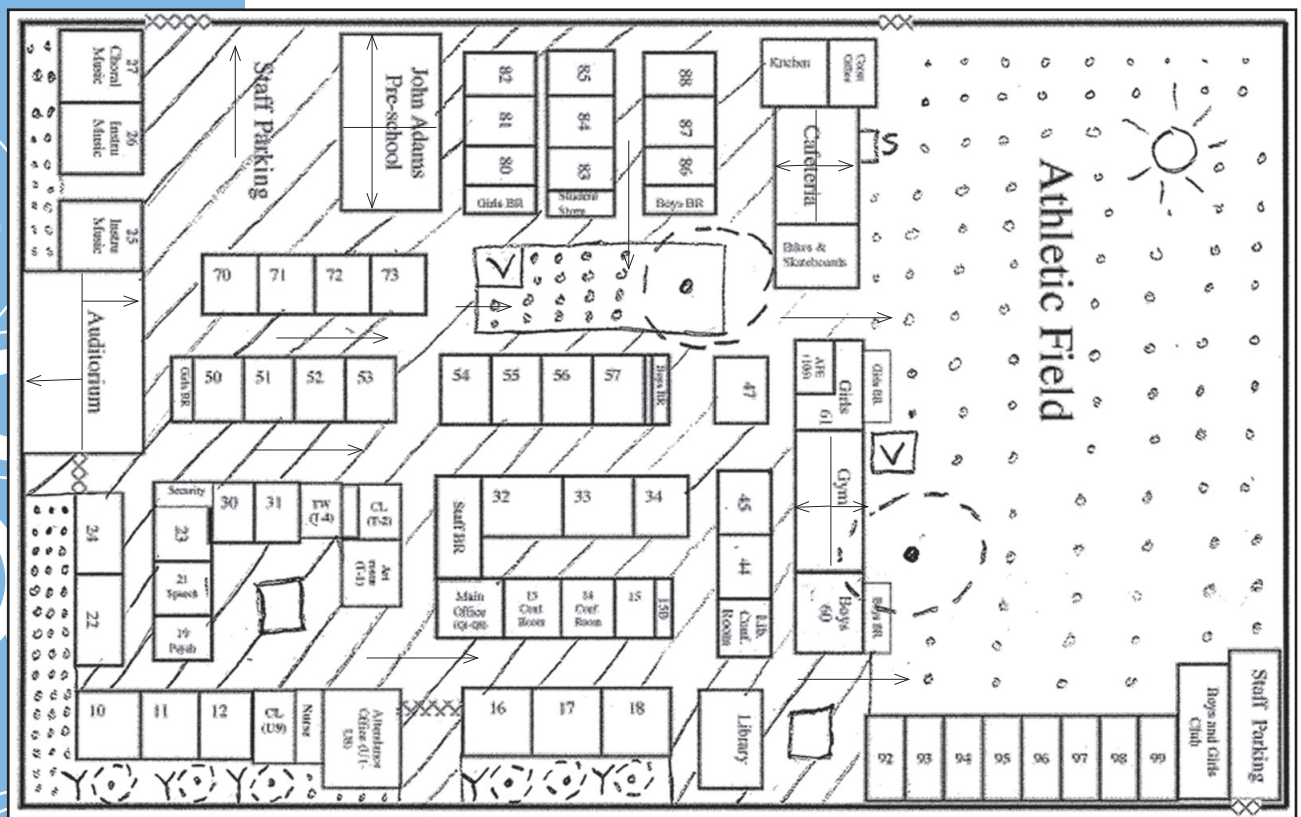
### MATERIALS

- Site Assessment Tool (copy pages 10 – 11)
- Map of the site
- Pencil

### Site Assessment Tool

#### Procedure

1. Work as one large group or divide up into working groups when assessing and mapping your site.
2. Create a map of the site by doing one of the following:
  - Use an existing map, removing any unnecessary information.
  - Download a map of the site from on-line.
  - Create your own map using a large sheet of paper.
3. Using the *Site Assessment Tool*, follow the instructions to identify specific elements of your site and include them on your map.



Sample Map



# TREEPEOPLE | Site Assessment Tool

The best place to start in growing a more sustainable landscape is by learning how to look at your site. Your goal will be to map and assess your site as the first step.

Follow the steps to determine the details of your site.

## 1. Create a map of your site

Draw a general outline of your site, including any streets. You can make a sketch or use a Google map.

- Orient and draw the map so that North is at the top of the page and South at the bottom.
- Include the outline of major buildings.

## 2. Add the following to your map

### ☐ Hardscape

This will be used for site information and possible places where water is flooding or running off.

These include:

- Parking lots
- Walkways
- Patios
- Any other areas of concrete and/or asphalt
- Mark these with diagonal lines.

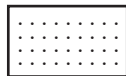


### ☐ Landscape

This will be used to determine places that may be converted into a rain garden of native plants.

These include:

- Turf/Lawn
- Gardens
- Areas of bare/compact soil
- Mark these with dots.



### ☐ Existing Trees

This will be used to determine shaded areas.

- For existing trees: draw a circle for the trunk and a dashed line for the drip line (the area the branches reach over the landscape).



### ☐ Recreational/Unused Areas

This will be used to determine areas that can be converted, used or avoided.

These include:

- Playgrounds and sports fields
- Vacant areas
- Label the area indicating what it is used for.

## ☐ Utilities

This will be used to determine where digging can occur.

If it is not obvious, then wait for help from a TreePeople mentor and/or Facilities Manager.

- Label the area with the type of utility (water/gas/electric).

## ☐ Water Sources

This will be used to determine where water can be retrieved to provide water for the garden.

These include:

- Spigots (for attaching a hose)
- Valves (for attaching a quick coupler quill)
- Mark spigots with “S”.
- Mark valves with a “V”.
- Label any other sources of water that can be used to fill buckets.



Spigot

## ☐ Areas of Sun Exposure

This will be used to determine areas that get full sun.

- Mark these with a sun.

## ☐ Water Flow

This will be used to determine where water may be diverted and infiltrated.

Locate high spots:

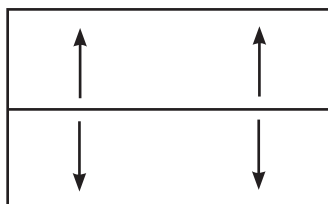
- Add the roof line of any buildings
- Water flows down from these areas

Locate low spots:

- Water drains to these areas
- Draw arrows that show the direction water flows
  - From roof tops
  - From downspouts
  - From faucets and sprinkler heads
  - From other high areas
  - To ditches or swales
  - To flat areas
  - To areas that puddle or flood
  - To other low areas



Water valve



Sample roof line with direction of water flow

# REVIEW YOUR PROJECT

## Do you have what you need?

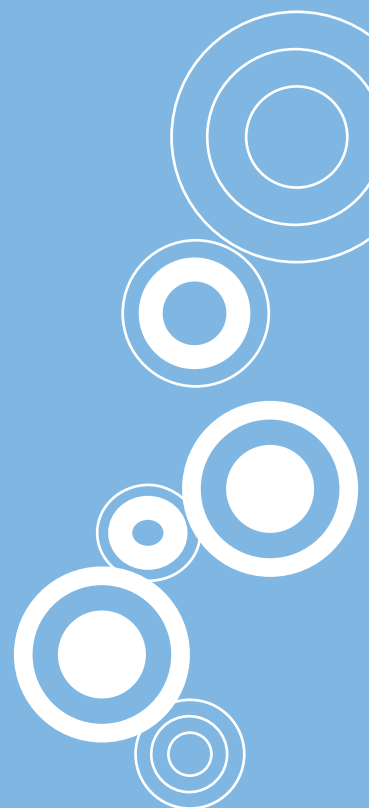
### Rain Garden Project Readiness Survey

#### Procedure

1. With your group discuss the project supported by this Project Toolkit:
  - Rain garden of native plants: A rain garden is a shallow depression planted with native plants that is used to direct rain into the ground and prevent it from causing flooding issues or contributing to urban runoff.
2. Using the map of your site and the *Rain Garden Project Readiness Survey*, thoughtfully answer the questions to determine if you are ready to start the project, and if not, what needs to happen.
3. Consider the following:
  - Location: If you have potential locations for your project mark these on your map and share with appropriate Stakeholders (Principal, Site Maintenance staff, etc.). This also includes your TreePeople Mentor who will give additional recommendations.
  - Available Resources: Do you have the materials or money raised to complete the project? If not, consider raising additional funds or ask for resources from local stakeholders. Discuss this with your TreePeople Mentor.
  - Permission: It is extremely important that the group has permission to do the project.
    - Make sure you have the support of an adult to assist your group through this part of the project.
    - There will be additional permission that must be obtained for projects on Los Angeles Unified School District property. This may also apply to other School Districts as well.
  - Commit To Care: It is important to consider the amount of time and commitment it will take to care for native plants until they are established.
4. Once the group has determined project readiness, you are ready to confirm site appropriateness.

#### MATERIALS

- Rain Garden Project Readiness Survey (copy page 13)
- Map of the site
- Pencil





# TREEPEOPLE Rain Garden Project Readiness Survey

Use your assessment map to answer questions about your site and then additional questions to determine its feasibility.

Answer the questions below to determine project readiness.

## Do You Want to Plant a Small Rain Garden?

### ☐ Do You Have Location For A Rain Garden?

Look at your map. Are there areas that can redirect water? Look for:

- Downspouts from a rooftop that could be redirected to flow into a rain garden instead of a hard surface or drain.
- Areas where water flows across hard surfaces and pools up in a grass or garden area.
- Areas where pooled water creates muddy or flooded areas.

Are any of these areas located:

- In full or partial shade? Rain gardens should not be located in a shady area or under the canopy or roots of a tree.
- At least 5 feet from a building foundation?
- At least 3 feet from a sidewalk?

### ☐ Do You Have Available Resources?

Depending on the size of your project, you will need the following:

Native plants	\$3 - \$30 per plant depending on size and type
Mulch	Free
Downspout extension (if needed)	\$10 - \$30 depending on length, and includes elbow and screws
Pavers	\$3 - \$12 depending on number needed
Tools for installation event	Borrow for free from TreePeople
Soil/Landscape Fabric (LAUSD)	\$45 - \$60 depending on size of project

### ☐ Do You Have Permission?

Whether you want to create a rain garden at a school or a privately owned location you will need to have permission.

- Make sure you have the support of an adult to help your group through this process, and who can ensure there is general support for a tree planting or tree care project.
- Guidelines for getting permission are provided in this Toolkit on page 33.

### ☐ Can You Commit To Care?

A new garden requires care for the next year or two to get established.

- Can you work with school/maintenance staff to put together a maintenance plan for the garden?
- TreePeople offers technical assistance workshops for schools on how to provide on-going native plant care.

# CONFIRM SITE APPROPRIATENESS

## Important Questions To Ask

There are important questions to answer that ensures the location is appropriate for a rain garden. This includes:

- Will the soil drain the water properly?
- What is the size of the catchment area and rain garden?
- How will water be directed into the rain garden?

Follow the instructions on page 15-17 to answer these questions.

***Circle all that apply:***

### 1. Soil Drainage

Did soil drain properly?

Yes

No

### 2. Location

Based on the location of the garden, is it located at least 5 feet away from the foundation of a building?

Yes

No

Based on the square footage of the garden, is there space?

Yes

No

### 3. Conveyence

Is there a way to get the water to the rain garden?

Yes

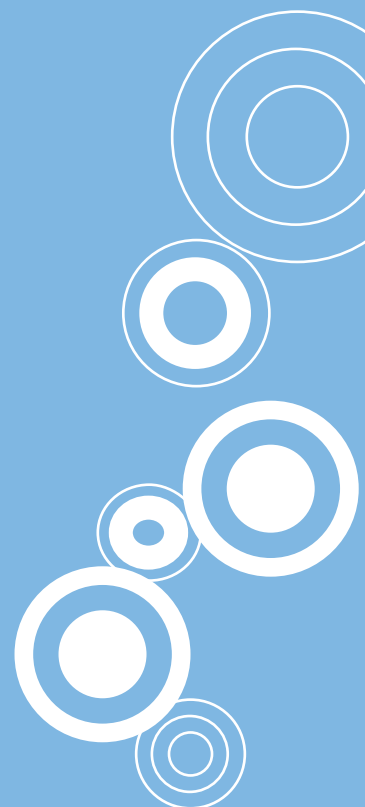
No

### REMEMBER

Make sure the site is:

- In full sun or partial shade
- Located away from the canopy of a tree
- At least 5 feet from a driveway or the foundation of a building
- At least 3 feet from a sidewalk

If the answers to the questions above are all YES, you are ready to determine the right plants for the site. Go to page 18.



## MATERIALS

- Trowel or shovel
- Bucket or hose
- Water
- Watch
- Pencil
- Paper

## Will Soil Drain Properly?

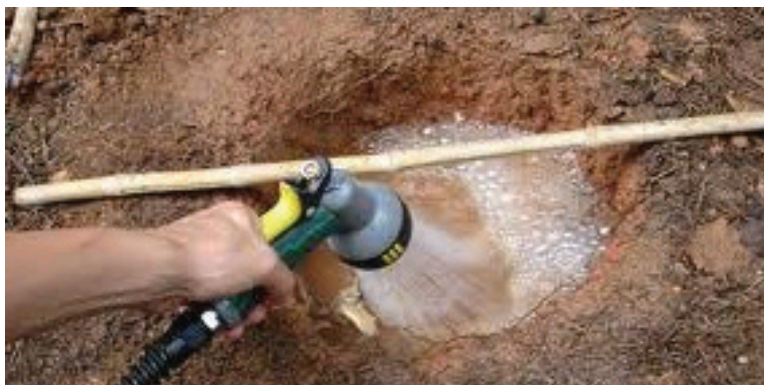
In the location identified for your rain garden you will need to determine if the soil drains properly. If not, the location is not appropriate for a rain garden.

### Soil Drainage Test

Follow the instructions to determine if the soil will drain properly.

- Dig a hole in the identified area – 6 inches to one-foot deep.
  - The hole should be wide enough so the level of the water can be seen easily.
- Fill the hole with water and let it completely drain.
- Fill the hole with water again and note the starting time.
- Note how long it takes for the water to completely disappear (5 minutes, 30 minutes, 1 hour, etc.)
  - If the water is draining slowly, note how much water is draining each 30 minutes. (1/2 inch every 30 minutes, etc.)

### Soil Test Results



- 0 – 4 minutes: You have fast-draining soil. This area is fine for trees.
- 5 – 15 minutes: Soil drainage is good. This is an ideal area for trees.
- 16 – 60 minutes: If soil is draining at least 1 inch per hour, the area is fine for trees.
- More than 6 hours: **This is NOT an ideal area for a rain garden. Try another site.**

## Is There Room For A Rain Garden?

There are a couple of considerations to determine if there is room for a rain garden.

### Location

Depending on where water will be directed, it must be a minimum of 5 feet from the foundation of a building.

### Size

Depending on the size of the area where the water is coming from (the catchment area) you will be able to determine how big the rain garden needs to be.

To calculate the size of a rain garden, do the following:

1. Determine the size of the catchment area.
  - The catchment area is where the water is being directed from: a roof top or other hard surface.
    - Roof: Look on your map to determine what part of the roof you need to measure. It will be the part that slopes toward the downspout closest to the rain garden area.
    - Hard surface: This might be a parking lot or sidewalk. Measure the part that slopes toward the rain garden area.
  - Multiply the width by the length of the catchment area.
    - This measurement gives the square footage of the catchment area.
2. Determine the size of the rain garden.
  - The rain garden should be sized to capture at least  $\frac{3}{4}$  inch of rain that falls on the catchment area.
    - This measurement is 0.0625 feet.
  - The rain garden should be 6 inches deep.
    - This measurement is 0.5 feet.
  - Multiply the catchment area by rain fall (0.0625)
  - Divide by the depth of the rain garden (0.5).

### Here's the calculation:

Catchment area x Rain fall (0.0625)  
\_\_\_\_\_ = Size of rain garden  
Depth of rain garden (0.5)

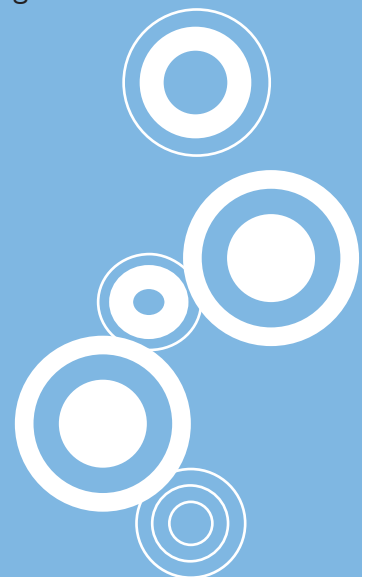
### Example: For a 400 square foot catchment area

Catchment area (400) x Rain fall (0.0625)  
\_\_\_\_\_ = 50 square feet  
Depth of rain garden (0.5)

### HOW MUCH WATER?

400 square feet x  $\frac{3}{4}$  inch of rain (0.0625 feet) = 25 cubic feet

25 cubic feet x 7.5 gallons = about 187.5 gallons!



## How Will Water Get to The Garden?

Depending on where the garden is located, you need to determine how the water will get to the garden.



### Is water coming from a downspout?

- A downspout extension can be used to direct water from a downspout into a rain garden.
  - A downspout extension is an additional piece of downspout connected to the end of the existing spout to make it longer.
  - Plants can be used to cover it.

### Is water coming from a hard surface?

- A swale can be used to direct water through the landscape to the rain garden.
  - Swales are u-shaped depressions (like a dry creek)
  - A swale must slope down from the water source toward the rain garden at a 1 - 2% grade (1 1/2 - 3 inches down for every 12 feet)
  - A swale must be at least 5 feet away from the foundation of a building.

### Do you need both?

Depending on where the rain garden is located, a downspout extension and a swale can be used together to convey rain water to the rain garden.

# CHOOSE YOUR PLANTS

## Creating a Plant Wish List

There are important questions to answer, that ensure your group chooses the right plants for the site. This includes:

- What is the soil type for the site?
- What is the climate zone for your area?
- Do you want evergreen or deciduous plants?
- What is the sun exposure for the site?

Follow the instructions on page 20-22 to answer these questions.

Fill out the chart below with your answers. Once complete, you will use the chart and the Recommended Low Water Use California Native Plants list (page 22) to help choose the right plants for your site.

***Circle all that apply:***

### 1. Soil Type

Clay

(Soil texture results were: clay, clay loam, sandy clay loam; sandy clay; silty clay loam; or silty clay)

Sand

(Soil texture results were: sand; loamy sand; sandy loam; sandy clay loam; or sandy clay)

Loam

(Soil texture results were: loam, loamy sand; sandy loam; sandy clay loam; sandy clay; silt loam; clay loam; silty clay; or silty clay loam)

### 2. Climate Zone

11

18

19

20

21

22

23

24

### 3. Evergreen or Deciduous/Semi Deciduous

Evergreen

Deciduous/Semi Deciduous

No preference

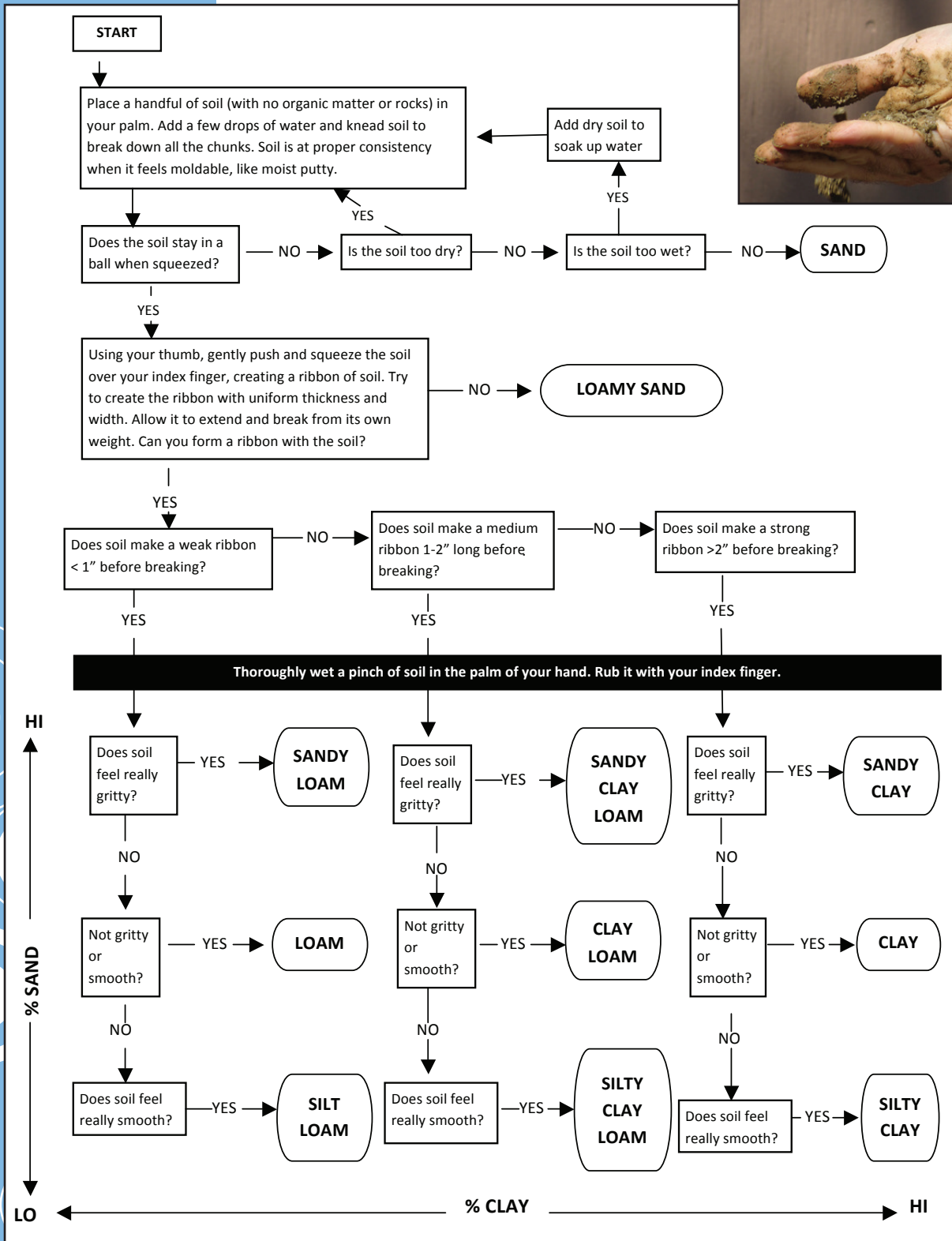
### 4. Sun Exposure

Sun

Partial Sun

# What is the Soil Type?

In the location identified for your rain garden determine the soil type to help choose the right plants for the location.



## What is the Climate Zone?

Climate zones are areas defined by seasonal temperature, rainfall, humidity, altitude and coastal influence.

- Los Angeles County Sunset climate zones vary from 11-24. Because of this broad range, it is important to know the climate zone of your area to provide the best conditions for the tree(s).
- To find the climate zone:
  - Consult a Sunset Western Garden book.
  - Go online at <http://www.sunset.com/garden/climate-zones/>
- Add this information to the chart.

## Evergreen, or Deciduous?

Consider the following when choosing whether you want an evergreen, deciduous/semi-deciduous plant, or either:

- **Evergreen:** Evergreen plants keep leaves all year.
- **Deciduous/Semi Deciduous:** Deciduous plants lose their leaves in fall or winter. Semi deciduous only drop part of their leaves for a short period of time.
- Add this information to the chart.

## What is the Sun Exposure?

Look at the site map and determine whether the site is:

- In full sun - it receives at least 6 full hours of direct sunlight.
- Partially shaded - it receives 3 - 6 hours of sun each day, preferably in the morning and early afternoon.

## MATERIALS

- Paper
- Pencil
- Recommended California Native Plant List (pages 25)
- Color copies of the Plant Template sheet
- Scissors
- Glue

## Create a Planting Plan

A variety of climate-appropriate and native plants can be used in your garden space. Selecting the right type of plants for the area and the right number of plants is important.

1. Make a scale drawing of the space you have chosen.
  - Using quadrille graphing paper (4 squares per inch), measure the length and width of your space using a scale of: 4 square = 2 feet.
2. Research and choose plants by using TreePeople's Recommended Low Water Use California Native Plants list. The plants used in the basin of the rain garden will be different than those used on the berm and surrounding area. These can receive more water.

### Top of the rain garden and surrounding area

- First, choose plants with similar water needs. Either low to very low water needs or moderate to low water needs. The plant list is arranged by water need. Look at the Plant List key for more detailed information.
- Next, use your completed **chart** with additional details, to narrow down the choices and determine the right plants for the site.
- Once you have a list of potential plants, look for photos of the plants on-line to get an idea of what they look like, and their color.

### Basin

- Choose one or two different types of plants for inside the basin of your rain garden. These will be listed separately on the plant list.
3. Group the plants and design your garden.
    - Using the Plant Templates on page 26-29, that are scaled to the mature width of the plants, cut out multiple copies of the plants you have chosen.
    - Using the plant cut outs, group plants considering the following:
      - What height you want your major shrubs to be. You want to consider their mature size and what they might block or shade in the future.
      - The templates indicate whether the plant is low, medium or high in height (reference the KEY or the plant chart for specifics).
      - Taller plants should go behind shorter plants.
    - Groundcovers and spreading plants are listed on page 29 with instructions for inclusion on your garden plan.
  4. Finalize your plan.
    - Either trace around the dots or adhere them to the page.
    - Create a key for your plan that indicates the plants you have chosen.
  5. Share your design.
    - Share your design with school administration.
    - This plan will be used as part of the Permission process on page 30.

## Recommended Low Water Use California Native Plants

### KEY

#### Soil Type

C = Clay      L = Loam      S = Sand      WD = Well drained

#### Climate Zone

- Refers to the climate zones in the Sunset Western Garden Book.
- Zones for the Los Angeles area range from 18 (lower areas of the San Fernando Valley, such as Arleta, North Hollywood, Van Nuys and Woodland Hills) to 24 (areas near the coast that have marine influence such as El Segundo, Hawthorne, Mar Vista and Santa Monica).
- The majority of the L.A. basin is zone 22.
- [www.sunset.com/garden/climate-zones/sunset-climate-zone-los-angeles-area-00418000067298/](http://www.sunset.com/garden/climate-zones/sunset-climate-zone-los-angeles-area-00418000067298/)

#### Evergreen, Deciduous, Semi-Deciduous

E = Evergreen. Plants with leaves all year.

D = Deciduous. Plants that drop all their leaves for the winter, or summer if drought-deciduous.

Semi D = Semi-deciduous. Plants that may drop all their leaves in a cold year or only some in a warmer year or if they are closer to the coast. They often drop their leaves in spring instead of fall.

#### Sun Exposure

S = Sun. Needs at least 6 full hours of direct sunlight.

P = Partially Shaded. Needs 3 - 6 hours of sun each day, preferably in the morning and early afternoon.

Scientific Name	Common Name	Soil Type	Sunset Climate Zone	Evergreen / Semi-Deciduous / Deciduous	Sun Exposure	Plant Size (height x width)	Notes
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### TOP OF RAIN GARDEN: Low to Very Low Water Needs (very low water needs in summer)

<i>Artemisia californica</i> 'Canyon Grey'	Canyon Grey California sagebrush	WD; C,L,S	11, 18-24	E	S	1' x 10'	A groundcover form of our native sagebrush. Fragrant silver-grey finely divided leaves. Drops leaves in extreme heat.
<i>Artemisia californica</i> 'Montara'	Montara California sagebrush	WD; C,L,S	11, 18-24	E	S	2' x 3-5'	A groundcover form of our native sagebrush with a mounding habit. Fragrant silver-grey finely divided leaves. Drops leaves in extreme heat.
<i>Bouteloua gracilis</i>	Blue grama grass; Mosquito grass	C,L,S	11, 18-24	D	S-P	2' x 1'	A warm season (winter dormant) bunch grass that spreads. Summer to fall flowers at ends of stems, hang at 45 degree angles and look like eyelashes. Can be used as turf or a small accent plant.
<i>Dudleya hassei</i> ( <i>D. virens hassei</i> )	Catalina Island dudleya	C,L,S	19-24	E	S	4-12" x 12-15"	A succulent that forms clumps of finger-like blue-green 4" stems. White and yellow flowers on 10-12" stems. Not for the hottest inland areas.
<i>Eriogonum fasciculatum</i>	California buckwheat	C,L,S	11, 18-24	E	S	4' x 4'	White to light pink flower from spring to summer turn rust-colored in fall. Small needle-like leaves. Very easy to care for. Butterflies and beneficial insects love it.

Scientific Name	Common Name	Soil Type	Sunset Climate Zone	Evergreen / Semi-Deciduous	Sun Exposure	Plant Size (height x width)	Notes
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## Low to Very Low Water Needs (very low water needs in summer) continued

<i>Eriogonum giganteum</i>	Saint Catherine's lace	WD; C,L,S	18-24	E	S-P	3-6' x 6'	Full sun near the coast, part shade inland. Fuzzy white-grey leaves. Large, white flat-topped flower heads from spring to summer turn rust-colored in fall. Butterflies and beneficial insects love it.
<i>Eriogonum grande rubescens</i>	island buckwheat; red buckwheat	WD; C,L,S	18-24	E	S-P	1-2' x 1-3'	Bright clusters of pink-red flowers from spring to fall. Leaves white and wooly underneath. Full sun near the coast, part shade inland. Butterflies and beneficial insects love it.
<i>Eriogonum umbellatum</i>	sulfur buckwheat	WD; L,S	11, 18-24	E	S-P	1' x 3'	Bright yellow, rounded flower heads from spring to summer. Dark to medium green leaves. Needs part shade in the valley. Butterflies and beneficial insects love it. For Zone 11, plant in the shade.
<i>Mimulus aurantiacus</i>	sticky monkeyflower	WD; L,S	18-24	Semi D	S-P	2-3' x 2-3'	Narrow sticky leaves. Bright orange, yellow, or red tubular flowers spring to summer. Many cultivars.
<i>Monardella odoratissima</i>	mountain pennyroyal; western coyote mint	WD; L,S	18-24	E	P	1-2' x 1-2'	Hairy grey-green leaves. Purple flowers summer to fall. Very fragrant! Great to grow under taller shrubs or trees.
<i>Nolina bigelovii</i>	desert beargrass; Bigelow's nolina	WD; L,S	11, 18-24	E	S	1-4' x 1-6'	Long slender leaves form clumps similar to yucca, but not sharp. Produces an 8' flower stalk with white flowers.
<i>Penstemon eatonii</i>	firecracker penstemon	WD; rocky L,S	11, 18-24	E	S	2-3' x 2-3'	Very showy, bright red tubular flowers from spring to summer. Native to the desert; does well in summer heat and drought once established.
<i>Penstemon heterophyllus</i> 'Margarita BOP'	Margarita BOP penstemon	WD; C,L,S	11, 18-24	E	S-P	1-2' x 2-3'	Heavy bloomer of deep purple-blue tubular flowers. Near the coast, plant it in the warmest locations.
<i>Salvia apiana</i>	white sage	C,L,S	18-24	E	S	2-4' x 3-6'	Large, stiff, white-grey, fragrant leaves. White flowers spring to summer displayed on long spikes (rather than whorls like other sages) on 6' flower stalks. Used in Native American ceremonies.
<i>Salvia clevelandii</i>	Cleveland sage	WD; L,S	18-24	E	S	4-6' x 3-5'	Very fragrant grey-green leaves. Bright lavender to purple-blue flowers spring to summer. 'Winifred Gilman' is the most popular cultivar. Many hybrids between Cleveland and Purple Sage such as 'Allen Chickering', 'Poza Blue', 'Whirly Blue and 'Aromas'.

Scientific Name	Common Name	Soil Type	Sunset Climate Zone	Evergreen Deciduous / Semi-Deciduous	Sun Exposure	Plant Size (height x width)	Notes
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### Low to Very Low Water Needs (very low water needs in summer) continued

<i>Salvia leucophylla</i> 'Bees Bliss'	Bees Bliss sage	WD; L,S	18-24	S	S-P	1-2' x 2-5'	An excellent sage groundcover. Lavender-pink flowers from spring to summer.
<i>Salvia mellifera</i>	black sage	L,S	18-24	E	S	5' x 5'	White to lavender flowers spring to summer. Fragrant leaves.
<i>Salvia spathacea</i>	hummingbird sage	C,L,S	18-24	E	P	1-1' x spreading	Large fragrant leaves. Big magenta flower heads that hummingbirds love! Best in dry, light shade.
<i>Sphaeralcea ambigua</i>	desert mallow, apricot mallow	L,S	11, 18-24	Semi D	S	2-3' x 2-3'	Bright orange flowers in spring to fall. Grey-green, small leaves. Drought deciduous.

### Moderate to Low Water Needs (low water needs in summer)

<i>Artemisia pycnocephala</i> 'David's Choice'	David's Choice sagebrush	WD; S,L	18-24	E	S	--1' x 2'	Silver-grey, feathery foliage on a mounding shrub. 18" flower spikes rise above the foliage.
<i>Asclepias fascicularis</i>	narrow-leaved milkweed	L, C	18-24	D	S-P	4' x spreading	White and pink small flower clusters. Seeds attached to white fluff. Can spread readily, but it's the best food source for the monarch butterfly caterpillar, also the Striated Queen caterpillar. Winter dormant.
<i>Asclepias speciosa</i>	showy milkweed	L, C prefers clay	18-24	D	S-P	2-5' x 3-5'	Large, furry leaves. Large, pink, round flower heads in late spring and summer. Seeds are attached to white fluff. Second best food source for the monarch butterfly caterpillar. Winter dormant.
<i>Calliandra eriophylla</i>	fairy duster	WD; L,S	11, 18-24	Semi-D	S	1-3' x 4-6'	Pink fluffy flowers February to June. 2", flat seedpods are outlined in red. Tiny, hairy, blue-green leaves.
<i>Carpenteria californica</i>	bush anemone	L,S	18-24	E	P	5-6' x 6-8'	Showy, 2-3" white flowers with yellow centers; look like camellias. Needs shade in the Valley.
<i>Ceanothus</i> 'Centennial'	Centennial ceanothus	WD; L,S	18-24	E	S-P	--2' x 4-10'	Intense, cobalt blue flowers late winter to early spring. Deep green, glossy leaves. Best near the coast, needs part shade inland.
<i>Ceanothus</i> 'Lemon ice'	Lemon Ice ceanothus	C,L,S	18-24	E	S-P	3-5' x 3-5'	Variegated leaves - green in the center and yellow around the edge. Light blue flowers in spring.
<i>Ceanothus</i> 'Skylark'	Skylark ceanothus	WD;C,L,S	18-24	E	S-P	4' x 6'	Compact, dense shrub with dark green leaves. Blue flowers late in spring.

Scientific Name	Common Name	Soil Type	Sunset Climate Zone	Evergreen / Semi-Deciduous	Sun Exposure	Plant Size (height x width)	Notes
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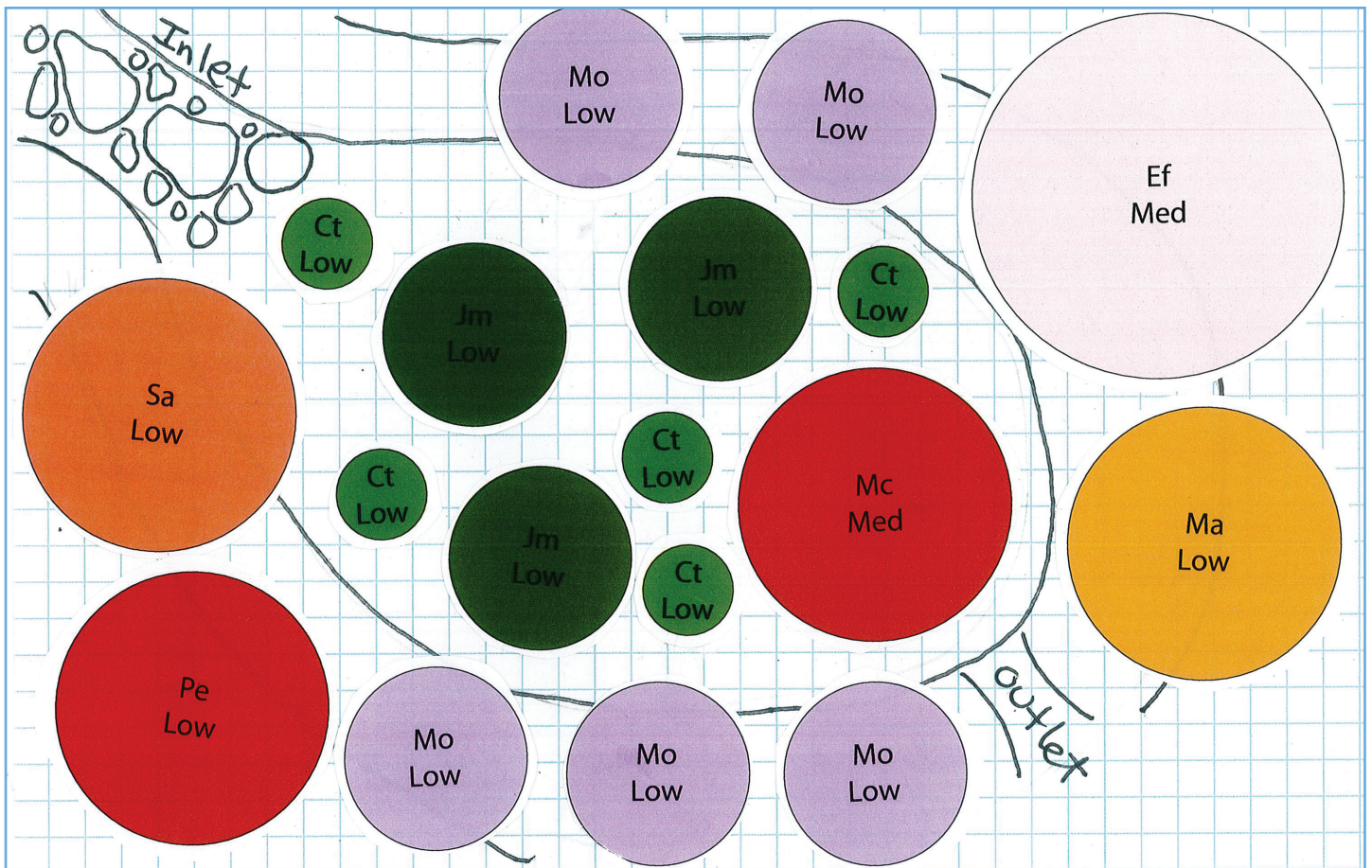
### Moderate to Low Water Needs (low water needs in summer) continued

<i>Ceanothus thyrsiflorus</i> griseus 'Yankee Point'	Yankee Point ceanothus	C,L,S	18-24	E	S-P	3' x 10-12'	One of the easiest Ceanothus to grow. Good in heat or clay. Can take regular watering. Glossy green leaves, light blue flowers in spring.
<i>Encelia californica</i>	bush sunflower	C, L, S	18-24	E	S	3-5' x 3-5'	A mounding perennial shrub. Small yellow sunflowers with dark centers. Attracts butterflies and beneficial insects.
<i>Erigeron glaucus</i> 'Cape Sebastian'	Cape Sebastian	L, S	20-24	E	S-P	1' x 2-3'	Low mounding perennial. Lavender-pink daisy flowers from spring to early fall. Best at the coast in full sun. Needs shade inland.
<i>Sisyrinchium bellum</i>	blue-eyed grass	C,L,S	18-24	D	S-P	4-16" x 6"	Long thin, leaves. Bright blue-purple flowers in spring. Summer dormant.

### RAIN GARDEN BASIN: Moderate to Low Water Needs (low water needs in summer)

<i>Artemisia douglasiana</i>	mugwort	WD,C,L,S	11-24	E	P	2-3' x spreading	Scented leaves are grey underneath. Spreads by rhizomes.
<i>Carex obispoensis</i>	San Luis Obispo sedge	C,L,S	18-24	E	S-P	2.5' x 3'	A grass-like clumping plant. Mop top look. Yellow-green wiry leaves
<i>Carex tunicola</i>	Berkeley or foothill sedge	WD,C,L,S	18-24	E	P-Sh	10-24" x 10-24"	Graceful clumping sedge, thin leaves. Mop top look.
<i>Juncus mexicanus</i>	Mexican rush	C,L,S	18-24	E	S-P	2' x spreading	Blue-grey, stiff, cylindrical stems. Used for basketry.
<i>Juncus patens</i>	common rush	C,L,S	18-24	E	S-P	2' x spreading	Blue-grey, stiff, cylindrical stems. Used for basketry.
<i>Koeleria macrantha</i>	june grass	C,L,S	11, 18-24	D	S-P	2' x 1'	Cool season bunch grass. Showy seed heads.
<i>Leymus condensatus</i> 'Canyon Prince'	Canyon Prince wild rye	C,L,S	11, 18-24	E	S-P	3-4' x 3-4' flowers to 4-5'	Bunch grass with blue-green strap-like leaves. Cream-colored, feathery flower spikes.
<i>Mimulus cardinalis</i>	Scarlet monkeyflower	L,S	11, 18-24	E	S-P	1-3' x 1-3'	Perennial. Scarlet, tubular flowers spring to summer.
<i>Muhlenbergia lindheimeri</i>	Lindheimer's muhly	WD C,L,S	11, 18-24	E	S-P	2'-3'x4'-5' flowers to 4-5'	Warm season grass. Flowerrrs are held on long thin stalks. Looks like a fountain.
<i>Muhlenbergia rigens</i>	deergrass	WD, CLS	11, 18-24	E	S-P	2-5' x 2-5' flowers 6'	Green, warm season bunch grass. Flowers are held on long thin stalks. Looks like a fountain.

## Sample Design and Plant Templates



### Sample Design

#### KEY

##### Height

Low = Up to 3' tall

Med = 3' to 5' tall

Tall = 5' and higher

For specific height information for each plant, see the the Low Water Use California Native Plant Chart

##### Width

Each circle, representing a plant, is scaled at: 1" = 2 feet.

##### Letters

The letters represent the type of native plant, using the first letters of the botanical name.

##### Color

The color of the circles represent the approximate color of the flower or plant.

### PLANT TEMPLATES: Berm and surrounding garden



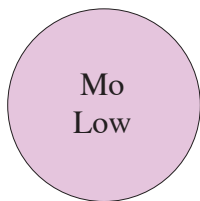
*Sisyrinchium bellum*



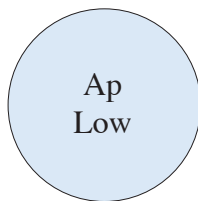
*Bouteloua gracilis*



*Dudleya hassei*



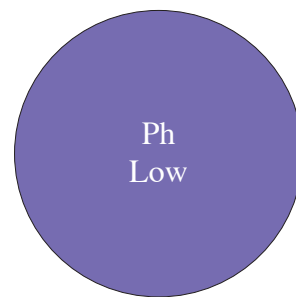
*Monardella odoratissima*



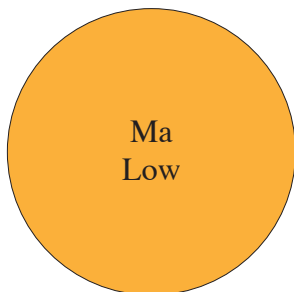
*Artemisia pycnocephala*



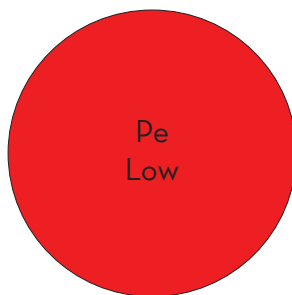
*Sphaeralcea ambigua*



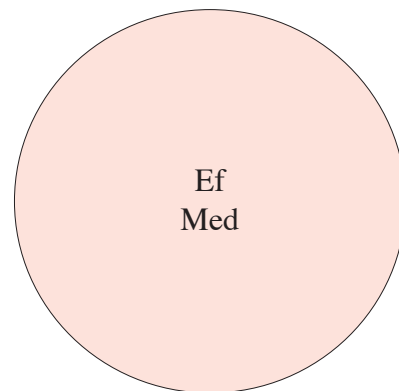
*Penstemon heterophyllus*



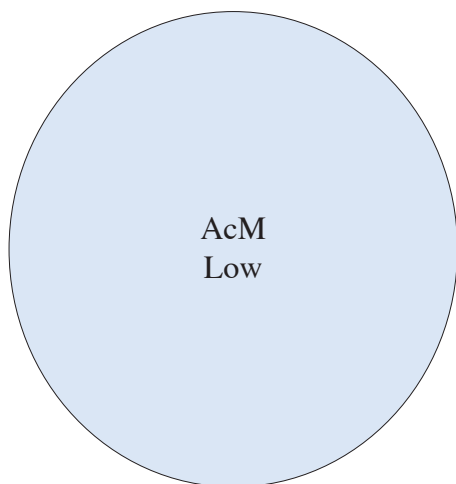
*Mimulus aurantiacus*



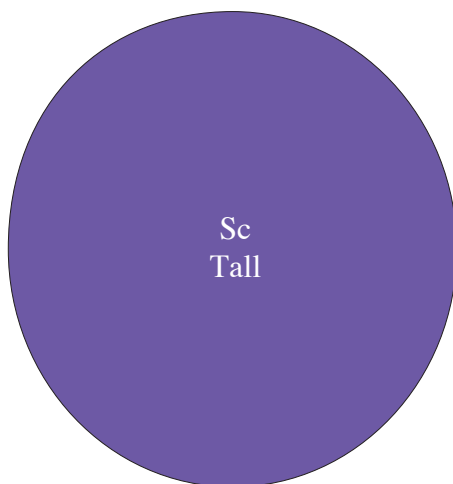
*Penstemon eatonii*



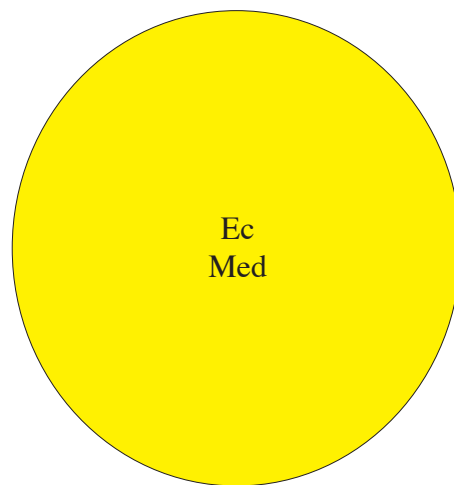
*Eriogonum fasciculatum*



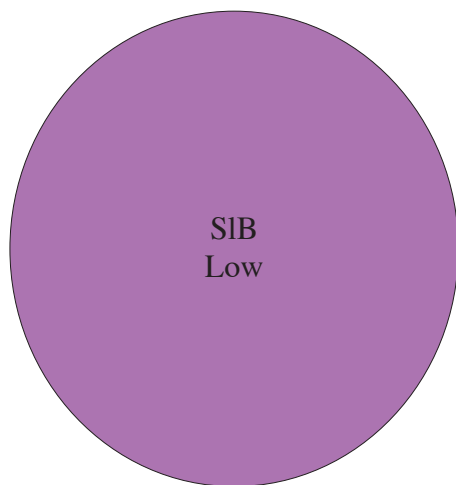
*Artemisia californica* 'Montara'



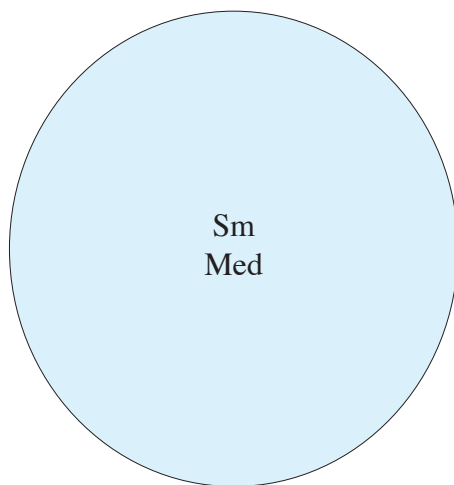
*Salvia clevelandii*



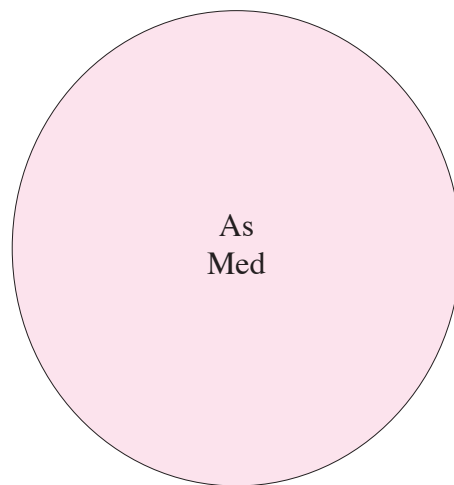
*Encelia californica*



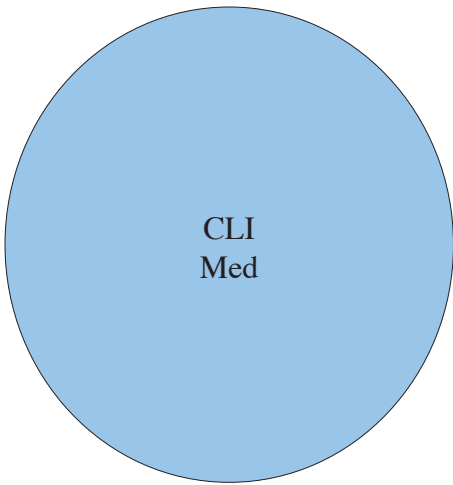
*Salvia leucophylla* 'Bees Bliss'



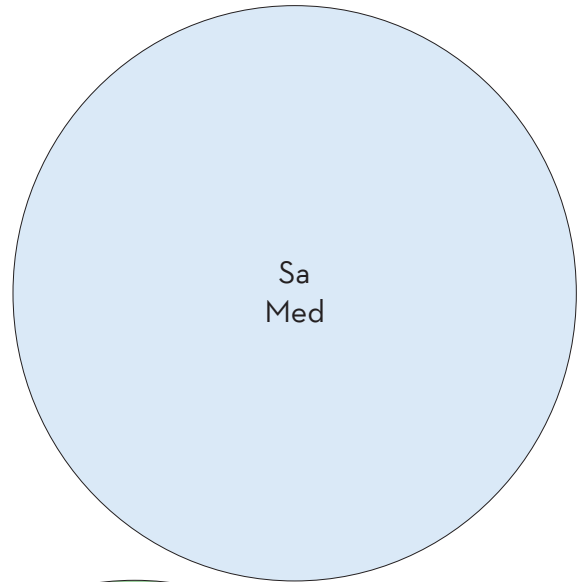
*Salvia mellifera*



*Asclepias speciosa*



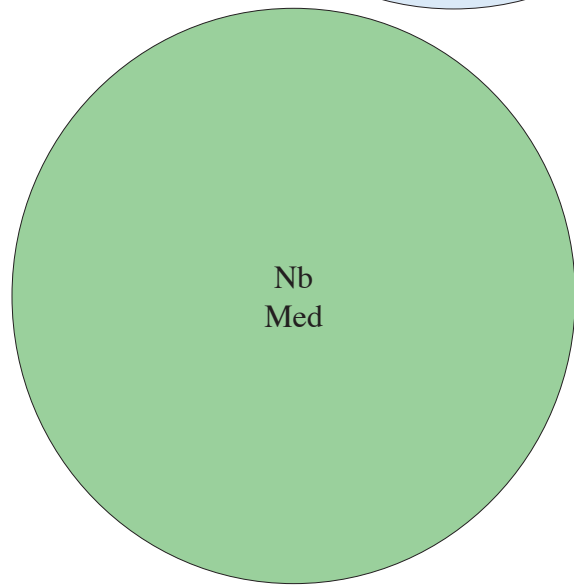
*Salvia leucophylla* 'Bees Bliss'



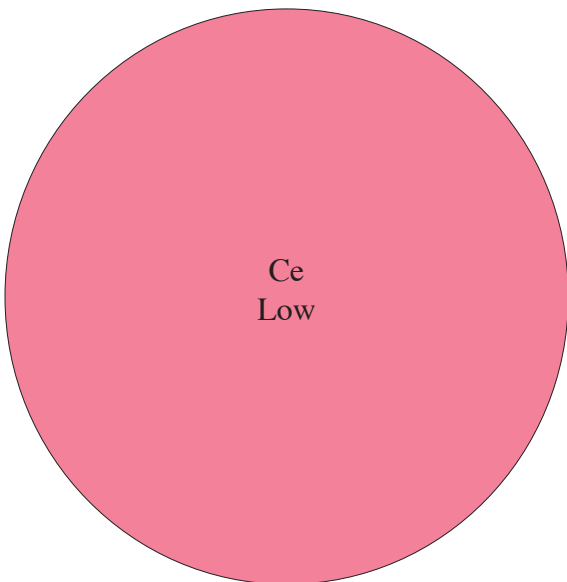
*Salvia apiana*



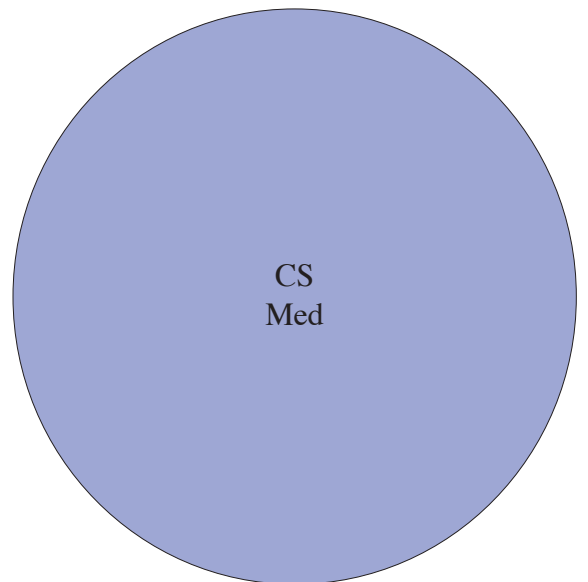
*Eriogonum giganteum*



*Nolina bigelovii*

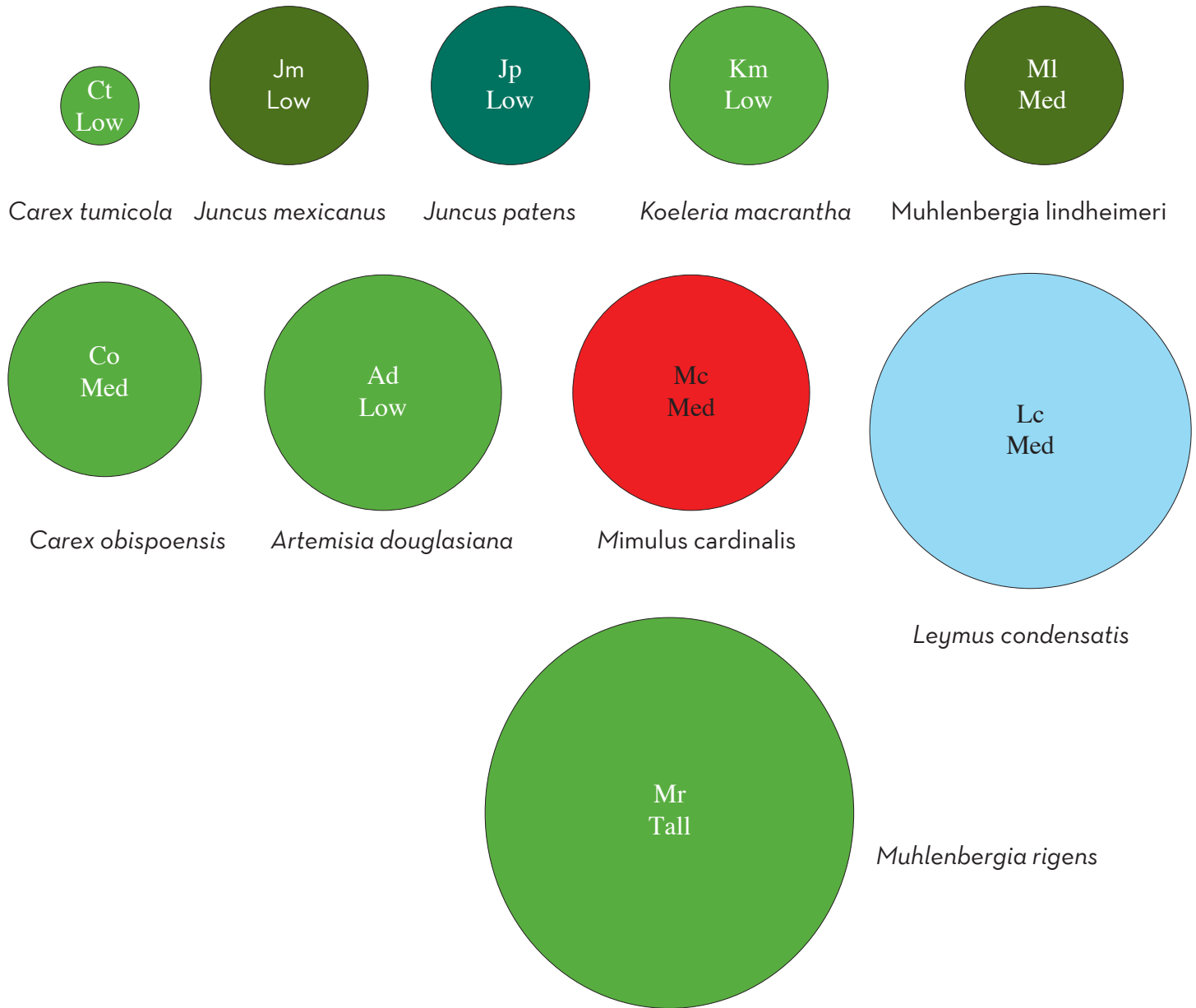


*Calliandra eriophylla*



*Ceanothus* 'Skylark'

## PLANT TEMPLATES: Basin



## Groundcovers and Spreading Plants

- The following groundcovers can be used to cover large areas.
  - *Artemisia californica* 'Canyon Grey' - low growing and spreads 10'
  - *Asclepias fascicularis* - medium growing and spreads as it grows
  - *Salvia spathacea* - low growing and spreads as it grows
- Write in the name of the plant on your plan to indicate use.

## Shrubs

Place a dot on your map to indicate where you would like to plant the following shrubs.

- Use a dotted line to indicate the width at maturity going out 1/2" for every 1 foot of width.
  - *Carpenteria californica* - shrub that grows 6 - 8' wide
  - *Ceanothus* 'Centennial' - shrub that grows 4-10' wide
  - *Ceanothus* 'Yankee Point' - shrub that grows 10-12' wide
- Write in the name of the plant on your plan to indicate use.

# FINALIZE YOUR PLAN

## Getting Permission

Once you have chosen the plants for your site and created a design that shows where the water is coming from, how it will be conveyed, and the general size of the garden, it is time to finalize your plan. Whether you are interested installing a rain garden at your local school, or at a community site, you will need to obtain permission from the entity responsible for the garden before you begin work. In some cases, you will be required to submit your plans and receive a permit.

### Finalize Your Plan

- Using a copy of your site map, indicate where the garden will be located, it's general size and how water will be conveyed from the catchment area.
- Create a key for your planting plan that indicates the type of plants to be planted.

### Property Owner / School Principal Permission

A *Project Information Sheet* is provided in the Resource section on page 45. Make a copy, fill in your specific information, and use it as a tool for providing the property owner or school principal with information about TreePeople and the proposed project.

### Permits & Final Approval

In some situations you will need to obtain a permit for your garden project. Work with a TreePeople Mentor, if necessary, to get a packet of instructions, forms, and samplers for obtaining a permit/final approval from the following:

#### Los Angeles Unified School District

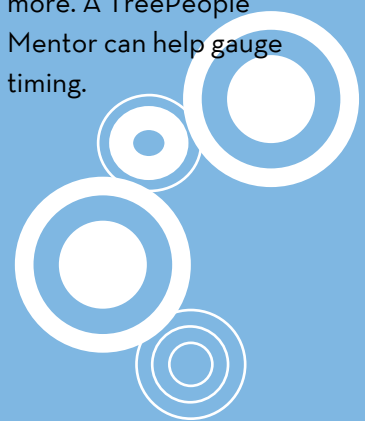
Other than approval from the school's principal, approval must be obtained from the school's Complex Project Manager (CPM). This includes a site visit, site plan and project scope of work. Depending on the location and how much soil will be removed, will determine whether there are additional tests and/or permissions needed.

#### TREEPEOPLE MENTOR

A TreePeople Mentor is available to assist your group through this process and to help avoid any roadblocks.

#### PERMIT TIMING

Take into consideration that, in some situations, the permit process make take 6 weeks or more. A TreePeople Mentor can help gauge timing.



# PREPARE FOR YOUR EVENT

## Timeline and Supplies

### EVENT PLANNING

Things to consider:

- **Volunteers:** Depending on the size of the garden to be planted, you may need extra help.
- **Publicity:** Who should know about your event?
- **Refreshments:** It is important to drink water during the planting. It is also nice to celebrate afterwards with food.
- **Water:** Where is your source of water? The plants will need water after they are planted and for continued care.
- **Opening Ceremony:** An important way to start the event, recognize and thank people, and share why you are planting natives.
- **Documentation:** before, during and after the event and share what you have done on our Facebook site, and more.

Once you have permission, then it is time to prepare for your event. This involves creating a plan for event day and ensuring you have all the supplies you need.

### Create a Timeline

Create a timeline for the event and assign tasks as necessary. The following are some event guidelines:

#### Before the rain garden installation

- Unload tools and supplies
- Set out water and refreshments
- Set up sign-in table and name tags
- Distribute plants and supplies according to your plan

#### During the rain garden installation

- Conduct an opening ceremony
- Conduct a demonstration as necessary, before each step of installation
- Create the basin, install the conveyance, and install the plants
- Mulch and water the rain garden

#### After the rain garden installation

- Gather up and load the tools
- Clean the area
- Eat and celebrate!

### Gather Your Supplies

#### Tools

- If your group needs to borrow tools, check the Resources section on page 42 for how to check out tools from TreePeople.
- Check the list on the sidebar on page 32 for the tools needed for a rain garden installation.

#### Mulch

Using mulch on the soil of the garden, is an important step. Different options are available for getting mulch for free.

- Check the Resources section on page 42 for where to get mulch.

## Plants

Some local nurseries carry a variety of native plants. For a list of nurseries that specialize in native plants, check the Resources on page 44.

- Not all varieties may be available that are listed on the TreePeople Top 25 List of Native Plants. Talk with your TreePeople Mentor for other similar options, if necessary.

## Pavers, rocks, stones, or gravel and downspout supplies

These items can be purchased at local home improvement/garden centers.

- If you are on an Los Angeles Unified District site, you will need to use pavers instead of rocks, stones or gravel.

## Water

Locate the closest water source for watering the plants.

- Check with a Facilities Manager for the site.
- Check if a water key is needed.

## TreePeople Sign-in sheets and Outreach Materials

- TreePeople sign-in sheets are required to ensure that everyone involved in the event is covered under TreePeople insurance.
- TreePeople outreach materials include brochures, stickers and fliers of upcoming events.

## Remove Any Grass

Before the garden planting, any grass will need to be removed as part of site preparation. There are a couple of options to ensure that you save as much of the top soil as possible:

### • Use a shovel or sod cutter

- Use a shovel or a sod cutter to remove the turf.
- Try not to remove too much of the top soil.

### • Cover it

- Called, "sheet mulching", cover your lawn with about 1 layer of cardboard or 6 layers of newspaper. Be sure to overlap by at least 6" to prevent grass from growing through.
- Add 4 - 6 inches of mulch on top.
- Water it.
- Wait 2 months and dig through to plant.

## MATERIALS

### Rain Garden

- Shovel
- Metal rake
- Tape measure
- Water buckets
- Gloves
- Wheelbarrow
- Plants
- Mulch
- Rocks, stones, gravel, or pavers

### Conveyence by downspout extention (if needed)

- Downspout extension
- Downspout elbow
- Sheet metal screws
- Hacksaw
- Tin snips
- Needle-nose pliers
- Safety glasses
- Gloves

# CREATE YOUR RAIN GARDEN

## Garden Planting Steps

### Attach a Downspout Extension

If the water for the rain garden is coming from a downspout you will need to attach a downspout extension.

Use the following as a guide when attaching an extension to your downspout.

1. Decide on the length and angle of your extension.
  - Keep it at a 2% slope to ensure water flows through it.
  - Rain water should be directed at least 5 feet from the foundation of the building.
2. Mark approximately 12 inches from the ground to the downspout.
  - This height should work for up to a 6 foot extension.
    - Mark the downspout higher for longer extensions.
3. Using a hacksaw, cut the downspout at the mark.
  - Remove the cut piece.
4. Attach the elbow over the downspout.
  - Use needle-nose pliers to crimp the ends of the cut downspout and slide it inside the elbow.
  - Attach the elbow to the downspout with screws, or for added stability, consider securing the elbow to the building with a bracket or strapping.
5. Do the same steps as above to attach the extension to the newly installed elbow.
  - If additional stability is needed for the extension, consider a support like a cinder block or large stone.
6. To prevent erosion, depending on your site and school district requirements, place pavers, large stones or gravel where the extension directs water into your rain garden or swale.



## Create a Swale

To help direct the flow of water into the rain garden, create a swale.

- The beginning of the swale should be 2 feet away from the foundation of a building.
- The swale needs to slope at least 1 - 2% grade (1 - 2 inches for every 8 feet of length) to direct water.
- The swale needs a depression to correctly direct water.
  - The sides of the swale should slope down at about a 4:1 ratio – for every 1 inch of depth, there are 4 inches of width.
  - Create a v- or u-shaped slope from the center depth to the outside edges creating a depression.
- Place rocks or gravel within the swale or, use stone pavers if your School District does not allow them.
  - Mulch can also be used.

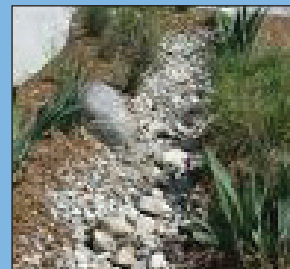
High point - where water enters the site

Slope

Low point - where water enters the rain garden

## UTILITIES

Check your map to see if there are underground utilities or waterpipes to avoid when digging.



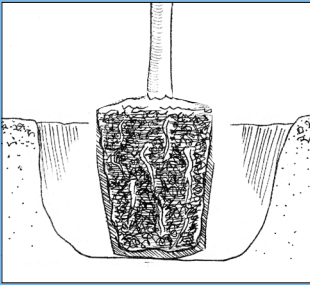
## Create a Basin

1. Using the size calculation (page 17) determined for the rain garden, outline the area using flour or chalk to show where to dig the basin.
2. Dig out the basin using the excavated soil to form a raised berm on the downstream side of the rain garden.
  - Dig down to a depth of 9 inches (6 inches recommended ponding depth, plus an additional 3 inches to accommodate mulch).
  - The basin should be flat across the bottom.
3. Compact the berm by jumping up and down on it and/or tamping it down well. This will ensure it doesn't collapse when it rains.
4. Create an overflow outlet.
  - In the event of a heavy rain storm, the basin may get filled and will need an outlet to drain.
  - Create a u-shaped outlet at the top of the berm.



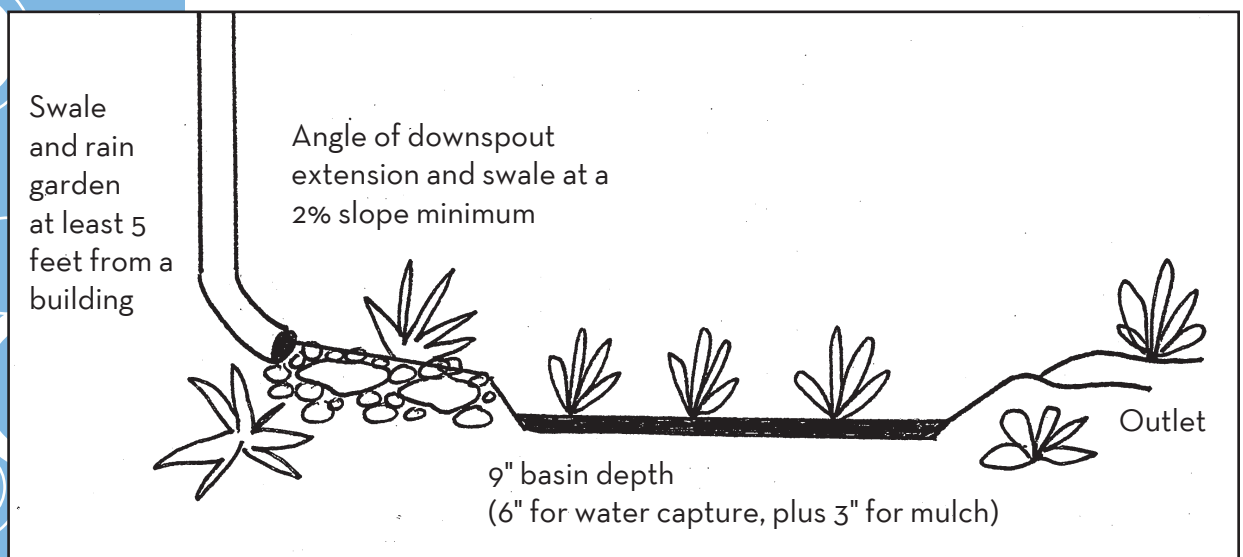
## Install Plants

Based on your design, use the following as a guide to install plants. Remember to space them for growth!



1. Dig a hole twice as wide as the root ball and slightly shallower than the root ball.
  - The root ball is comprised of all the roots contained in a pot.
2. Hit the bottom and sides of the container until the root ball is loosened.
3. Slide the pot off the root ball.
  - Be careful not to pull the plant out by the main stem.
4. Lightly massage the roots to loosen the root ball.
5. Place your plant in the soil.
  - Have the top of the root ball level with the ground.
6. Fill the hole with soil.
  - Tamp the soil firmly as you backfill to eliminate any air pockets.
7. Create a small basin around the plants to help hold in water until they become established.
8. Slowly, deep water your plants with the following:
  - 1 gallon potted plants: 2 gallons of water (1/2 bucket)
  - 5 gallon potted plants: 5 gallons of water (1 bucket)
9. Place a 3 inch layer of mulch over the entire area.
  - Keep mulch at least 2 inches away from the base of the shrubs.

## Completed Rain Garden Sample



# MAINTAIN YOUR RAIN GARDEN

## Ongoing Care

### Ongoing Care

New plants will need care until they are established. Follow the general guidelines below and the more in-depth guidelines for the specific plants in your garden, provided in the Native Plant Care Guide on page 39.

#### General Guidelines

1. Water the plants.
  - Provide supplemental water for about 2 dry seasons or until plants are established.
  - Water, during the early morning or late afternoon.
  - Do not water if the soil is wet.
2. Weed the garden.
  - Weed the garden as needed for the next 2 -3 years.
    - Once plants are established, little or no weeding is needed, if the area is kept mulched.
3. Maintain mulch.
  - Maintain mulch at about a 3 inch depth.
    - Apply a layer twice a year, in the spring and fall, as needed.

#### Plant Care by Species

1. Create your own plant care guide
  - Using the Native Plant Care Guide on page 41 highlight the specific plants used in your garden.
  - Create a timeline for care.
2. Things to remember:
  - Follow the water frequency given. However, when we have below average rainfall in winter, it's important to water the plants to make up the difference. Deep soak the plants once (or twice in extremely dry winters) a month until the end of April.
  - The plants listed as summer dormant do not need water in the summer. They need to rest and will come back with the winter rains.
  - Do not fertilize the garden. Most California native plants prefer well-drained soil that is nutrient poor. If they are fertilized, or grown in organic-rich soil, they may die.
  - Check the chart for specific pruning guidelines. Most plants will do well with just pinching back stalks after flowering.

## Native Plant Care Guide

Scientific Name	Common Name	Water Frequency	Pruning and Care
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### TOP OF RAIN GARDEN: Low to Very Low Water Needs (very low water needs in summer)

<i>Artemisia californica</i> 'Canyon Grey'	Canyon Grey California sagebrush	No supplemental water once established, except for dry winters.	Prune out arching stems before new spring growth.
<i>Artemisia californica</i> 'Montara'	Montara California sagebrush	No supplemental water once established, except for dry winters.	Prune back as needed before new spring growth.
<i>Bouteloua gracilis</i>	Blue grama grass; Mosquito grass	Once or twice a month during warm weather if needed.	Used as turf- mow to 2 or 3 inches once a month during the warm months, or leave it unmowed for a natural look. Needs less water if left tall. Cut back clumps in late winter before new growth begins.
<i>Dudleya hassei</i> ( <i>D. virens hassei</i> )	Catalina Island dudleya	Needs good drainage. Very little water needed. Can be summer dormant.	Remove flower stalks after blooming. It's better not to remove any dead leaves.
<i>Eriogonum fasciculatum</i>	California buckwheat	Once a month during warm weather if needed.	Lightly prune in late fall to late winter. Do not cut into stems without leaves.
<i>Eriogonum giganteum</i>	Saint Catherine's lace	Once or twice a month during warm weather if needed.	Lightly prune in late fall to late winter or as needed.
<i>Eriogonum grande rubescens</i>	island buckwheat; red buckwheat	Once or twice a month during warm weather if needed.	Cut back flower stalks after bloom.
<i>Eriogonum umbellatum</i>	sulfur buckwheat	Once or twice a month during warm weather if needed.	Cut back flower stalks after bloom.
<i>Mimulus aurantiacus</i>	sticky monkeyflower	Once a month during warm weather if needed.	Pinch back young stems a few inches throughout the spring growth to make it denser and prevent branch breakage. Prune out flower stalks after blooming. Prune in late fall if needed.
<i>Monardella odoratissima</i>	mountain pennyroyal; western coyote mint	Once or twice a month during warm weather if needed.	Cut back flower stalks after bloom.
<i>Nolina bigelovii</i>	desert beargrass; Bigelow's nolina	Needs good drainage. Very little water needed after establishment	Cut back flower stalk after bloom and once completely dried.
<i>Penstemon eatonii</i>	firecracker penstemon	No supplemental water once established, except for dry winters.	Cut back flower stalks after bloom or leave to release their seeds, then remove them.
<i>Penstemon heterophyllus</i> 'Margarita BOP'	Margarita BOP penstemon	Once a month during warm weather if needed.	Cut back old flower stalks or leave them to release their seeds, then remove them.
<i>Salvia apiana</i>	white sage	No supplemental water once established.	Remove old flower stalks. Pinch back branches on younger plants to encourage a denser plant.
<i>Salvia clevelandii</i>	Cleveland sage	No supplemental water once established.	Cleveland sage and its hybrids (Allen Chickering, Aromas, Pozo Blue, Whirly Blue) are vigorous and need a heavy pruning in winter to prevent the branches from breaking. Prune back the plant by 1/2 to 1/3 in winter, leaving 2 sets of leaves or buds.
<i>Salvia leucophylla</i> 'Bees Bliss'	Bees Bliss sage	Once or twice a month in the warm months if needed.	Lightly cut back stems in the center of the plant when young during winter.

## Native Plant Care Guide

Scientific Name	Common Name	Water Frequency	Pruning and Care
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### Low to Very Low Water Needs (very low water needs in summer) continued

<i>Salvia mellifera</i>	black sage	No supplemental water once established.	Pinch back when young to encourage a dense plant. Can also prune back by 1/2 to 1/3 in winter, but not into wood without buds or leaves.
<i>Salvia spathacea</i>	hummingbird sage	Once or twice a month in the warm months if needed. Do not get leaves wet when watering.	Can have a problem with powdery mildew. Keep good air circulation and don't use a sprinkler which gets the leaves wet. Cut out old flower stalks.
<i>Sphaeralcea ambigua</i>	desert mallow, apricot mallow	Once a month during warm weather if needed.	Cut back in the fall after bloom.

### Moderate to Low Water Needs (low water needs in summer)

<i>Artemisia pycnocephala</i> 'David's Choice'	David's Choice sagebrush	Once a month during warm weather if needed.	Cut back flower stalks after bloom.
<i>Asclepias fascicularis</i>	narrow-leaved milkweed	None to twice a month during warm weather.	Winter dormant. Cut back old growth before new growth begins March to April.
<i>Asclepias speciosa</i>	showy milkweed	None to twice a month during warm weather.	Winter dormant. Cut back old growth before new growth begins, March to April.
<i>Calliandra eriophylla</i>	fairy duster	None to once a month in warm weather.	Not much pruning needed.
<i>Carpenteria californica</i>	bush anemone	Twice to four times a month in warm weather.	Not much pruning needed.
<i>Ceanothus</i> 'Centennial'	Centennial ceanothus	Once or twice a month in the warm months if needed.	Prune as needed after bloom.
<i>Ceanothus</i> 'Lemon ice'	Lemon Ice ceanothus	Once or twice a month in the warm months if needed.	Prune as needed after bloom. Prune out stems with solid green leaves.
<i>Ceanothus</i> 'Skylark'	Skylark ceanothus	Once or twice a month in the warm months if needed.	Prune flowers heads after bloom.
<i>Ceanothus thyrsiflorus</i> <i>griseus</i> 'Yankee Point'	Yankee Point ceanothus	Once or twice a month in the warm months if needed. Can take more water than other ceanothus.	Prune as needed after bloom.
<i>Encelia californica</i>	bush sunflower	No water to once a month in the warm months.	Prune to 4" stubs in late winter.
<i>Erigeron glaucus</i> 'Cape Sebastian'	Cape Sebastian	Two to four times a month in the warm months if needed.	Prune back a few inches after flowering.
<i>Leymus condensatus</i> 'Canyon Prince'	Canyon Prince wild rye	Once or twice a month in the warm months if needed.	Prune to the ground late summer to early winter every year or two.
<i>Muhlenbergia rigens</i>	deer grass	No water to once a month in the warm months.	Rake out old flower heads or cut to the ground every few years from May to June.
<i>Sisyrinchium bellum</i>	blue-eyed grass	Needs winter and spring water once or twice a month. Do not water in summer.	Summer dormant. After leaves are totally brown, you can prune them off.

## Native Plant Care Guide

Scientific Name	Common Name	Water Frequency	Pruning and Care
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### RAIN GARDEN BASIN: Moderate to Low Water Needs (low water needs in summer)

<i>Artemisia douglasiana</i>	mugwort	Once every one to 4 weeks.	Cut to the ground in early winter.
<i>Carex obispoensis</i>	San Luis Obispo sedge	The most drought tolerant sedge. Once to twice a month when hot.	Cut back or mow late summer to fall.
<i>Carex tumicola</i>	Berkeley or foothill sedge	Once to four times a month when hot.	Best in light shade. Cut back once or twice a year, mainly late summer to fall.
<i>Juncus mexicanus</i>	Mexican rush	Once to four times a month when hot. Needs less water than J. patens. After 2 years needs less water.	A vigorous spreader. Rake out or cut back dead stalks as needed.
<i>Juncus patens</i>	common rush	Once to four times a month when hot. After 2 years needs less water.	A slow spreader. Rake out or cut back dead stalks as needed.
<i>Koeleria macrantha</i>	june grass	Once to four times a month. Stop watering once dormant in summer.	Cut back once dormant in summer.
<i>Leymus condensatus</i> 'Canyon Prince'	Canyon Prince wild rye	Once or twice a month when hot.	Prune to the ground late summer to early winter every year or two.
<i>Mimulus cardinalis</i>	Scarlet monkeyflower	Needs water once a week to stay moist.	More shade needed inland. Reseeds easily. Pinch back leggy stems to encourage stronger branches.
<i>Muhlenbergia lindheimeri</i>	Lindheimer's muhly	No water to once a month when hot.	Rake out old leaves or cut to the ground every 2-3 years in May to June. Must be planted on a mound if in clay or poor draining soil.
<i>Muhlenbergia rigens</i>	deergrass	No water to once a month when hot.	Rake out old leaves or cut to the ground every few years in May to June.

# MAKE YOUR RAIN GARDEN COUNT!

## Mapping on TreeMapLA.org

To increase the awareness of trees and rainwater harvesting in Los Angeles, TreePeople and a collaboration of nonprofits, local government and businesses has created TreeMapLA. This powerful mapping tool generates specific environmental and economic benefits that will help us manage the well-being of our region's urban forest.

### Register on TreeMapLA.org

Choose a User Name and Password for your group. You can do this by either:

- Downloading the free TreeMapLA mobile app for Android or iPhone
- Logging into [www.TreeMapLA.org](http://www.TreeMapLA.org).

### Enter Data And Generate Benefits

Input the data into TreeMapLA and generate environmental benefits by doing the following:

- Go to <https://www.opentreemap.org/latreemap>
  - Log In for the class.
  - Click on "Add A Watershed Solution".
  - Input the sites's address in "Search by Location" in the upper right.
  - Click on "Satellite" in the upper right corner of the map.
  - Check "Rain Garden".
  - Click "Next" in lower right corner.
  - Input the address and set the location of the rain garden. Then, click "Next".
  - Move the dots on the blue polygon to define the borders of the roof area (or other) that will drain into your watershed solution. Then, click "Next".
  - Answer the yes/no questions about rain garden site. Then, click "Next".
  - Once complete, check "I'm Done!" and click "Done".
  - To view the benefits, click on the blue dot indicating the rain garden. The benefits and the economic savings will appear to the right.

# SHARE WHAT YOU DID

## Let Us Know About Your Project!

Projects like this serve as an inspiration to others, and count toward TreePeople's goal of transforming our city into a safe and sustainable environment! There are a variety of ways to share what you did.

### Social Media

Share photos and videos on the Project Toolkit Facebook Group. If your group has not been invited to join, contact [youthleadership@treepeople.org](mailto:youthleadership@treepeople.org). See page 3 for other ways to share.

### Final Report

Send an email to [youthleadership@treepeople.org](mailto:youthleadership@treepeople.org) and tell us:

1. What is the name of your school/Eco club?
2. What are the names of the students who participated?
3. What project did you complete?
4. Where and what plants did you use?
5. Are you interested in another Project Toolkit?

We would love photos and/or videos of the project too!

# RESOURCES

## Glossary

**aquifer:** A formation of porous rock, gravel or sand that holds an underground supply of water. The City of Los Angeles takes about 11% of its water from the San Fernando Valley aquifer.

**asphalt:** A product used in paving, specifically for streets and play grounds.

**berm:** A raised mound of dirt designed to slow, spread and sink water much like a dam. They can be covered with shrubs, ground covers, turf or mulch.

**climate-appropriate:** Plants and grasses that are native to Southern California, or are adapted to our semi-arid climate.:

**debris:** Scattered remains, such as those from trees, that include leaves, branches, bark and twigs.

**dependent:** Relying on or requiring the aid of another for support.

**dormant:** In a condition of biological rest or inactivity characterized by cessation of growth or development.

**downspout:** A vertical pipe for carrying rainwater down from a roof gutter.

**downspout extension:** an attachment to a downspout that extends its reach.

**dry weather runoff:** urban runoff that happens when it is not raining, usually from inefficient sprinklers or overspraying.

**evaporation:** To convert or change into a vapor.

**gutter:** A channel at the edge of a street or road for carrying off surface water.

**hardscape:** Refers to hard elements on the land such as those composed of concrete, brick and stone. It includes driveways, patios and sidewalks.

**impervious:** Presenting a barrier to the passage of stormwater.

**import:** To bring in from an outside source.

**irrigation:** To supply with water by means of pipes, sprinklers, etc.

**landscape:** Garden or planted area.

**local water supply:** Water that comes from local sources.

**Mediterranean climate:** climate characterized by hot, dry summers and mild, wet winters. Usually located between 30 - 40 degrees latitude and next to a large body of water.

**mulch:** A ground covering, especially of organic materials, that holds water, slows evaporation, enriches the soil and encourages plant growth.

**native:** Originating in, or inhabiting, a specific place for many years.

**non-native:** Not coming from a given locality; synonymous with "exotic."

**permeate:** To flow through.

**percolation:** The movement of water downward through the soil.

**runoff:** Stormwater flowing across the surface of the earth.

**semi-arid:** A region characterized by very little annual rainfall, usually from 10 to 20 inches.

**sustainability:** The use of natural resources in a way that avoids depleting them or otherwise damaging the environment.

**swale:** A u- or v-shaped depression in the land, usually lined with grass or mulch, designed as a channel for moving stormwater from one place to another.

**watershed:** The land area that drains water to a particular stream, river, lake or ocean.

## HOW MUCH MULCH?

Measure the length and width of the garden area. The measurements should be in feet.

Mulch is delivered or purchased by the cubic yard. To figure out how many cubic yards you need follow the formula below:

- Multiply the width by the length to get the area.  
width x length = area
- Multiply the area by .25 feet (depth of mulch)  
area x .25 = cubic feet
- To get the cubic yards, divide by 27.  
cubic feet ÷ 27 = cubic yards

## Mulch

DO NOT PAY for mulch! Many free options exist:

- LAUSD
  - Contact Mahmud Shieikh-Ali at Mahmud.shiekh-ali@lausd.net
- Los Angeles City Recreation and Parks
  - Work with a TreePeople mentor to arrange for mulch.
- Other
  - For a large amount, contact a local tree trimmer.
    - Let them know you will be using it around trees and don't want chips from a palm or diseased tree.
    - They can deliver it to your site.
  - For a small amount, work with a TreePeople mentor to arrange for mulch from TreePeople/Coldwater Canyon Park.

## Tools

If you plan to borrow tools from TreePeople:

- Please try to schedule 2-3 months in advance.
- TreePeople tools are lent out depending on availability.
- Work with a TreePeople Mentor to reserve and pick-up tools.

For an LAUSD school site: (213) 241-1000

## Native Plant Nurseries

Theodore Payne Foundation  
10459 Tuxford St.  
Sun Valley, CA 91352

(818) 768-1802  
[www.theodorepayne.org](http://www.theodorepayne.org)

Tree of Life Nursery  
33201 Ortega Hwy.  
San Juan Capistrano, CA 92675

(949) 728-0685 ph  
<http://treeoflifenursery.com>

Las Pilitas  
8331 Nelson Way  
Escondido, CA 92026

(760) 749-5930  
<http://laspilitas.com>

Matilija  
8225 Waters Rd.  
Moorpark, CA 93021

(805) 523-8604  
[www.matilijanursery.com](http://www.matilijanursery.com)

El Nativo Growers  
200 S. Peckham Rd.  
Azusa, CA 91702

(626) 969-8449  
<http://elnativogrowers.com>

Rancho Santa Ana Botanic Garden  
1500 N. College Ave.  
Claremont, CA 91711

(909) 625-8767  
[www.rsbg.org](http://www.rsbg.org)

Grow Native Nursery  
100 Davis Ave.  
Los Angeles, CA 90049

(424) 234-0481  
[www.rsabg.org/grow-native-nursery](http://www.rsabg.org/grow-native-nursery)



## Project Information Sheet

### Who We Are

TreePeople is an environmental nonprofit that unites the power of tree, people and technology to grow a sustainable future for Los Angeles. Our mission is to inspire, engage and support people to take personal responsibility for the urban environment, making it safe, healthy, fun and sustainable and to share the process as a model for the world.

TreePeople believes in the power of young people to make change in their communities. In fact, TreePeople was founded by a teenager in 1973. Since then, over 2 million trees have been planted in wilderness areas, neighborhoods and school campuses in Southern California by volunteers. We've continued to place young people at the center of our work by developing one of the largest environmental education programs in the United States. Our programs for youth create opportunities for leadership, community service and fun.

### TreePeople's Youth Leadership Program

TreePeople's Youth Leadership Program is designed to assist teens, youth groups and youth group leaders by providing a program that teaches youth about critical environmental issues in their community and how taking action can help to address these issues.

### TreePeople Mentor

Groups are assigned a TreePeople Mentor who will provide expertise and work with the group to support the completion of the project. Project guidelines, tools and some supplies are also provided. For sites on LAUSD property, TreePeople has a formal partnership to assist with greening projects and is well-versed in the procedures for obtaining permission at the District level.

Name of TreePeople Mentor: \_\_\_\_\_

Email: \_\_\_\_\_ Phone: \_\_\_\_\_

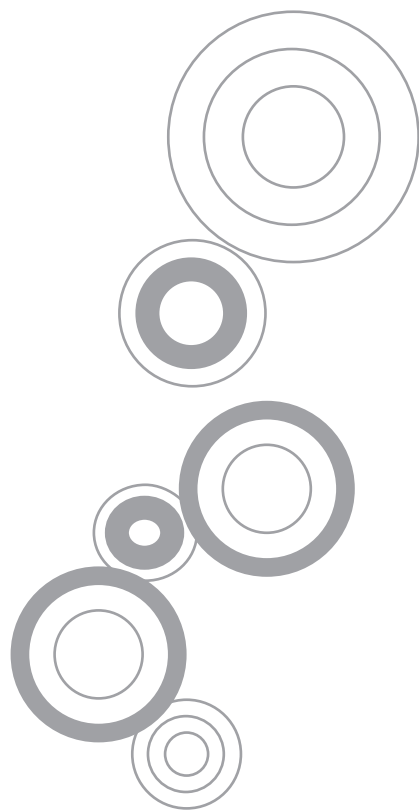


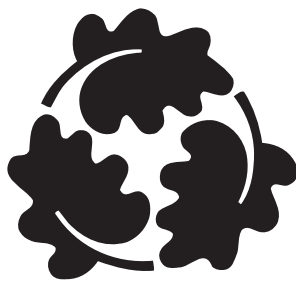
### Rain Garden Project

The group has assessed the site and identified a location for a small rain garden. A site map and suggested native plant species are included.

Name of Group: \_\_\_\_\_

Group Contact: \_\_\_\_\_





**TREEPEOPLE**

12601 Mulholland Dr.  
Beverly Hills, CA 90210  
(818) 753-4600

[www.treepeople.org](http://www.treepeople.org)

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