

Water Conservation Patch Girl Scouts of the Rio Grande & El Paso Water Utilities (EPWU)

Water is our most valuable resource. All living things need water to live. Without water, people could not live more than a few days. There is less than one percent of fresh water for the whole world; the rest is trapped in polar ice caps or it is salty (sea). El Paso is located in the Chihuahuan Desert; because we live in a desert we need to pay extra attention to our valuable water sources. Without water, the earth would probably look like the moon. Because of the earth's atmosphere and the hydrologic cycle, there is always water, though fresh water is not always at our fingertips. If water is in the form of ice or gas it is not available for drinking. If the liquid state of water has salt or is contaminated, again it's not ready for drinking; it needs to be treated to make it potable. It is important not to waste or pollute the water so we have it for the future. If we practice water conservation now, we will have fresh water in the future. The purpose of this program is to explore:

- Sources of Water:
 - Rio Grande/Rio Bravo Watershed
 - The Underground World – Mesilla Bolson & Hueco Bolson
- Fresh Water Availability
- Water Quality & Water Pollution
- The Underground World
- Waste and Water Treatment
- Water Smart Solutions

Troop Leaders should consult Safety-Wise about Internet usage and field trips, and use appropriate permission slips for all activities.

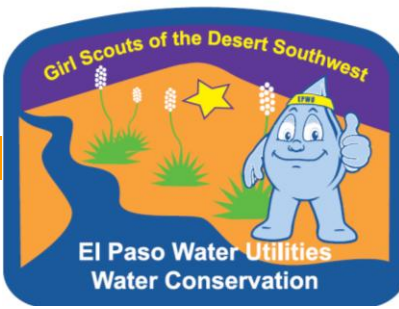
Patch Requirements:

Daisies/Brownies - Do any four activities.

Juniors - Do any six activities.

Cadettes - Do any eight activities.

Seniors/Ambassadors - Do any ten activities.



How **WELL** do you know your **WATER**?

1. The water cycle is a continuous cycle: Describe and define the steps of the water cycle and give examples of how the cycle process presents itself in this desert region.

Activities:

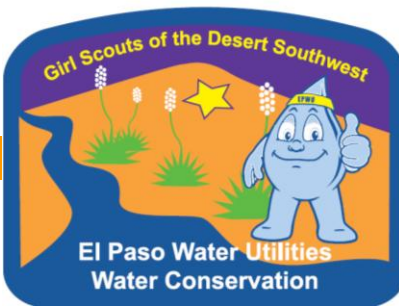
- **(Brownies/Daisies)** Review a Water cycle illustration. Play the El Paso Water Utilities Water Cycle game, Memory Game or play Willie's Water Bingo to learn water terms. (Water Cycle illustration, Memory Card game and Willie's Water Bingo included in Tech₂O Kit).
 - **(Juniors/Cadettes)** Look in a book or visit one of the websites listed in the resources section; such as the U.S. Environmental Protection Agency: <http://www.epa.gov/kids/water.htm>
 - **(Juniors/Cadettes/Seniors & Ambassadors)** Look for definitions in the Discover a Watershed book on pg. 140. (Book: Discover a Watershed included is in the Tech₂O Kit).
2. What percentage of the earth's water is fresh water and where is that water stored? Write your answer in percentages according to where the fresh water is stored. Answers can be found by looking in the following resources:

Activities:

- **(Daisies/Brownies)** EPWU Willie's World Activity Book.
 - **(Juniors/Cadettes/Seniors & Ambassadors)** Websites:
United States Geographical Service: <http://ga.water.usgs.gov/edu/> or
<http://ga.water.usgs.gov/edu/earthwherewater.html>
<http://ga.water.usgs.gov/edu/waterdistribution.html>
3. What is a watershed? What watershed do you live in?

Activities:

- Describe the watershed you live in.
 - **(Daisies/Brownies/Juniors)** Look in Discover Rio Grande/Rio Bravo booklet. (Booklet included is in the Tech₂O Kit).
 - **(Cadettes/Seniors & Ambassadors)** Look in Discover a Watershed booklet. (Booklet included is in the Tech₂O Kit).
- Draw a map of the area that the watershed includes. **(All Levels)**
 - Willie's Water World Adventure - Rio Grande/Rio Bravo
(Check the EPWU website: http://www.epwu.org/water_world/rio.htm)
 - **(Daisies/Brownies/Juniors)** Look in Discover Rio Grande/Rio Bravo (Booklet in the Tech₂O Kit).

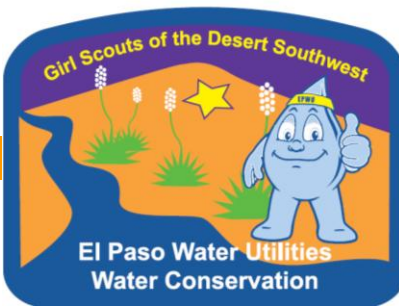


- **(Cadettes/Seniors & Ambassadors)** Do the activity in Discover a Watershed: “Mind Mapping” on pgs. 129-133. Use EPWU’s Willie Water World Adventure: Rio Grande/Rio Bravo link: http://www.epwu.org/water_world/rio.htm to assist you with this activity. (Book: Discover a Watershed in Tech₂O Kit).
- **(Juniors/Cadettes/Seniors & Ambassadors)** Do the hands on activity *Branching Out!* (Included the Tech₂O Kit). Objective is to learn and predict where water will flow in watersheds and describe drainage patterns in watersheds.
- **(Cadettes/Seniors & Ambassadors)** Surf your watershed on www.epa.gov/surf/ or <http://pdnwc.org/>
- **(Cadettes/Seniors & Ambassadors)** Demonstrate the watershed model to a lower level troop or at a community outreach (Watershed model is available for checkout at Tech₂O Center).

4. How can all that water be stored underground?

Activities:

- Define an aquifer. Name the two aquifer(s) shared by the United States and Mexico in the Paso Del Norte Region. Look in the EPWU website- Willie’s Water World Adventure: http://www.epwu.org/water_world/under.htm.
- **(Brownies/Daisies)** Read about Ground Water in the Discover Ground Water & Springs booklet and do any one activity in the booklet. (Booklet included the Tech₂O Kit).
- **(Brownies – Juniors)** After reviewing the above booklet, draw and color a ground water picture.
- **(Juniors/Cadettes/Seniors & Ambassadors)** Do the activity: “Aquifers of Two Countries” in the Discover a Watershed on pg. 172 (Book: Discover a Watershed included in the Tech₂O Kit).
- **(All Levels)** Construct your own “*Well in the Cup*”. Activity instructions included in the Tech₂O Kit or EPWU website: http://www.epwu.org/conservation/outreach_programs.html.
- **(All Levels)** Build a 3-dimensional aquifer “*Geoblox Aquifer*”. Activity instructions included in the Tech₂O Kit.
- **(All Levels)** Make an “*Edible Aquifer*”. Activity instructions included in the Tech₂O Kit.



5. How can you help protect the quantity and quality of our water resources?

Activities:

A. Quantity - we can make sure there is enough water for everyone through **conservation** - to save or reduce the use of water consumption.

List at least ten uses of water and how that water is used wisely. You can find uses of water by completing the following EPWU activity booklets for each level:

- **(Daisies/Brownies)** Complete EPWU's My First Water Activity Booklet.
- **(Juniors)** – “Be a Leak Detective” activity in the Conserve Water Booklet.
- **(Juniors/Cadettes)** – Complete the Willie World Adventure Book.
- **(Juniors/Cadettes/Seniors & Ambassadors)** – Do the Water Tallies Water Use Activity with the Camel Kits. (Included in the Tech₂O Kit).

B. Quality – Assuring the water is clean and safe to drink. Define contamination and pollution (point & non-point source pollution) in water. Vocabulary in the Discover a Watershed and the EPWU Willie World Adventure – Rio Grande/Rio Bravo website http://www.epwu.org/water_world/pollution.htm or on the following U.S. Environmental Protection Agency website:

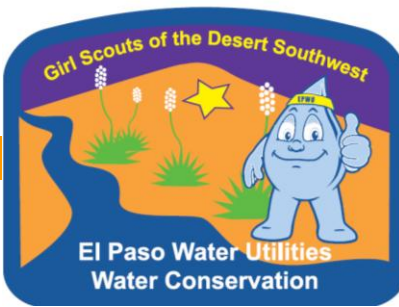
<http://www.epa.gov/safewater/kids/>

- **(All Levels)** Do the activity “Amazing Water” pg. 219 Project Wet. Activity instructions in Tech₂O Kit.
- **(All Levels)** Do the “Leaky Landfill” activity instructions included in the Tech₂O Kit. Answer question: Is this a point source or non-point source pollution?

6. What is the difference between Water Treatment Plant & Waste Water Treatment Plant?

Activities:

- **(Juniors/Cadettes)** Do activity “Washing Water” on pg. 324 in the Discover a Watershed (Book: Discover a Watershed included in Tech₂O Kit).
- **(Juniors/Cadettes)** Chose between Task 3 & Task 5 activities in EPWU website: Willie's World Adventure – Rio Grande/Rio Bravo – Activities and Lessons: http://www.epwu.org/water_world/activ1.htm
- **(Juniors/Cadettes)** Do the activity “Removing Salt from Water” found in the El Paso Water and Electricity Conservation Lesson (EPWEC). (Activity instructions included in the Tech₂O Kit).
- **(Brownies/Daisies)** Do activities in the Reclaimed Water booklet “Water, Water Everywhere and CD for leader to show group. (Packet included in the Tech₂O Kit).



- **(All Levels)** Schedule a tour at one of the Waste Water Treatment Plants or the Tech₂O Water Resource Learning Center or the Discovery Center at the El Paso Zoo. Answer this question: Where does the El Paso Zoo use reclaimed water?

7. Where does all that water go?

Activities:

- **(Brownies/Daisies)** Check for activity in variety of booklets in the Tech₂O Kit for Brownies for example: The Water Story (copies in Tech₂O Kit)
- **(All Levels)** What is Storm Water?
- **(All Levels)** What is urban runoff?
- **(Juniors/Cadettes)** Do storm drain monitoring program in Amazing Water activity Project Wet pg. 219. (Activity instructions in Tech₂O Kit).

8. Recycling

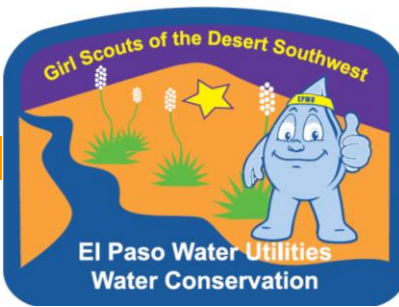
Activities:

- **(Juniors/Cadettes/Seniors & Ambassadors)** Investigate what other states and cities in the region do to recycle household chemicals, plastics, batteries, etc. and compare with your local environmental center how such recyclables are handled. A list of household chemicals is listed in the U.S. Environmental Protection Agency website: <http://www.epa.gov/epahome/commsearch.htm>
- **(Juniors/Cadettes/Seniors & Ambassadors)** Design a brochure, flyer, or bumper sticker to campaign for better recycling that will help prevent groundwater and surface water pollution. Task #2 Underground on Willie's Adventure: http://www.epwu.org/water_world/intro.htm

9. Deserts in North America.

Activities:

- **(All Levels)** What are the four main deserts in North America? Which is the largest? Refer to websites listed under Chihuahuan Desert Educational links or contact Chihuahuan Desert Education Coalition (CDEC) members for field trips or presentations.
- **(Juniors/Cadettes/Seniors & Ambassadors)** Describe the largest desert and explain how it is different from the other deserts in North America. Think about elevations, water supply, climate, and wildlife.



10. What is a Desert Diorama?

Activities:

- **(All Levels)** Design and construct a desert diorama to represent the El Paso region. Instructions and samples included in Tech₂O Kit.
Note: If selecting natural specimens observe natural resource permits and rules, such as City, County, State and National, Park Regulation for rules. Leaders: check guide on how to start your own diorama.
- **(All Levels)** Visit the Tech₂O Center's "Chihuahuan Desert Diorama".

11. Water Smart Landscaping

Activities:

- **(All Levels)** Make a list of 10 water smart plants.
- **(Juniors/Cadettes/Seniors & Ambassadors)** List the 7 principals of Desert Landscaping. Can be found in the Desert Blooms CD-Rom or research Chihuahuan Desert Educational links listed. (Desert Bloom CD & Plant Guide included in Tech₂O Kit).
- **(Juniors/Cadettes/Seniors & Ambassadors)** Do "Thirsty Plants" activity on pg. 116 – (Copy in Tech₂O Kit)

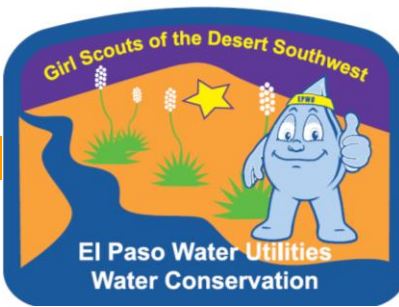
12. Are there wetlands in the desert?

- **(All Levels)** In El Paso visit the Rio Bosque Wetlands Park, Keystone Heritage Park or Bosque Del Apache in New Mexico. Take a tour or select an activity in the website(s). Contact information included in referenced websites listed.
- **(Juniors/Cadettes/Seniors & Ambassadors)** Do this plant filtration activity:
http://www.epa.gov/safewater/kids/activity_grades_4-8_plantsinwaterfiltration.html

13. **Service project ideas:** Do public presentations or lower level mentoring with related activities. (Check out Tech₂O Kit at Tech₂O Center – information listed in Resource - Section E).

14. Or design an Environmental Sensitive Landscape for example: xeriscape, wildscape, wildlife habitat, garden maintenance or restoration project.

15. **(All Levels)** Enter poster contest and 6th grade – 12th grade enter the essay contest with EPWU for Drinking Water Week. It is the first full week of May. Announcements begin end of February. Check EPWU website and local schools for announcements. Deadline date is the middle of April, judging and winners announced the first week of May.



Resources:

A. Water Educational Links:

- Willie's Water World Adventure
http://www.epwu.org/water_world/intro.htm
- Drought Information for Kids
http://www.state.nj.us/drbc/drought/kids_droughtinfo.htm
- Environmental Protection Agency <http://www.epa.gov/>
- GLOBE: Science and Education Program
http://www.globe.gov/globe_flash.html
- Project Wet: Water Education for Teachers <http://www.projectwet.org/>
- The Groundwater Foundation <http://www.groundwater.org/>
- United States Geological Survey <http://www.usgs.gov/>
- WERC: A Consortium for Environmental Education and Technology Development <http://www.werc.net/>
- Paso del Norte Water Task Force <http://www.sharedwater.org/>
- Paso del Norte Watershed Council <http://pdnwc.org/>
- Rio Bosque Wetlands Park
<http://research.utep.edu/Default.aspx?tabid=18875>
- Keystone Wetlands & Heritage Park <http://www.keystonepark.org/>
- Bosque del Apache
<http://www.fws.gov/southwest/refuges/newmex/bosque/>

B. Chihuahuan Desert Educational Links:

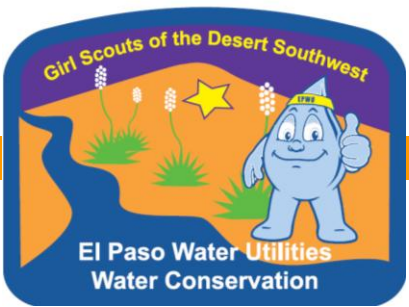
- Chihuahuan Desert Education Coalition www.chihuahuandesert.org
- UTEP's Centennial Museum <http://museum.utep.edu/chih/chihdes.htm>
- Desert USA <http://www.desertusa.com/glossary.html>
- Chihuahuan Desert Research Institute (CDRI)
<http://www.cdri.org/Desert/index.html>
- Texas Parks & Wildlife Wildscapes
<http://www.tpwd.state.tx.us/huntwild/wild/wildscapes/>

C. Discover a Watershed Rio Grande/Rio Bravo: Reference & Activity Guide

D. Discover a Watershed Series:

- Discover Rio Grande/Rio Bravo
- Watershed Protection
- Discover Ground Water & Springs
- Conserve Water
- Healthy Water Healthy People

E. EPWU Water Conservation Kit: Can be checked out at the Carlos M. Ramirez Tech₂O Water Resources Learning Center located at 10751 Montana Ave., 79935. Hours of Operation: Monday - Friday: 8:00 a.m.-5:00 p.m. (by appointment only) and Saturday: 9:00 a.m.-1:00 p.m. (open to the public). Tours and Special Events must be scheduled either by emailing the center at tech2o@epwu.org or calling 915-621-2000.



Tech₂O Water Conservation Kit
Check-out Form

Name of Leader: _____

Troop #: _____

Address: _____

Phone: _____ (Cell) Alt. Phone: _____

Fax: _____ Email: _____

Date picked up: _____ Date to be returned: _____

Driver's License #: _____ Deposit Check #: _____

I agree to take full responsibility to assure the safe keeping and intended use of the Tech₂O Water Conservation Kit and to return it no later than the agreed date posted above. I understand that if the kit and supplies are not delivered in favorable condition or by the time of the agreed date, my deposit of \$25.00 will not be returned. El Paso Water Utilities reserves the right to charge a replacement fee of damaged, missing parts and late fees. Clearly accidents happen and wear and tear is inevitable. Replacement cost will be determined on a case by case basis.

In order for girls to complete the activities, El Paso Water Utilities will provide the following materials per participant.

Materials:

Amount needed:

EPWU Willie's World Activity Books _____

EPWU My First Activity Coloring Books _____

"Learn to Be Camel Clever" – Conservation Booklet & Kit _____

"Water, Water Everywhere" – Student Activity Books
(Includes 1 Teacher Guide) _____

Leader's Signature: _____

Date: _____

EPWU Employee: _____

Date: _____