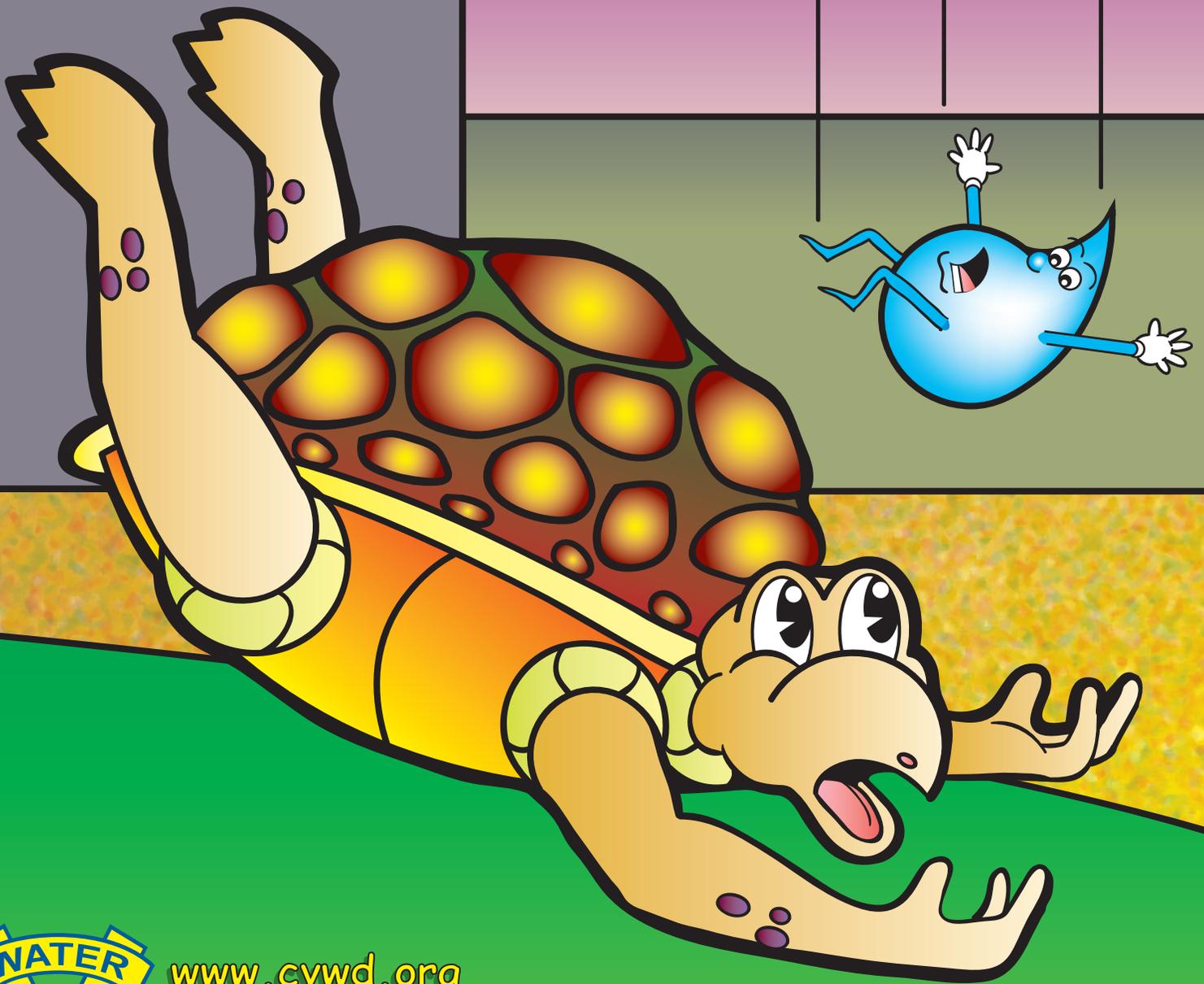


# TUTOR TORTOISE SAVES WATER

An information & activity book for all ages  
Presented by the Coachella Valley Water District



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

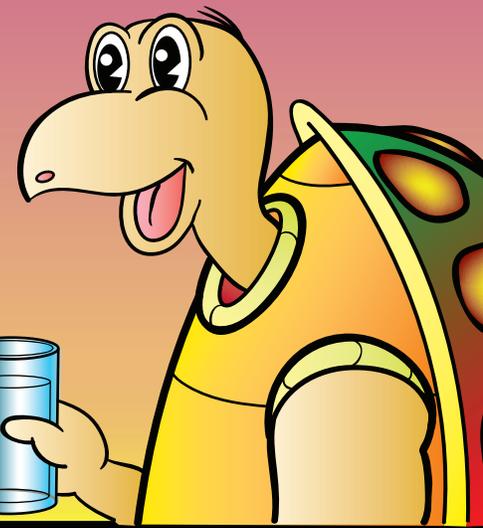
[www.waterfun4kids.org](http://www.waterfun4kids.org)

Hey Tutor, thanks for saving me back there. What would I do without you guys at CVWD looking out for me?



Don't thank me. I'm just doing my job. And as far as looking

out for you goes, well, all of us at the Coachella Valley Water District have been saving you since 1918! People voted us into existence to protect you and take care of your massive aquifer beneath the valley floor. Take a look below to see all of CVWD's areas of service.



Fill in the missing *D*s, *R*s, *O*s, and *P*s, to learn seven things CVWD does to serve you and protect your water supply.

1. inking wate: CVWD has been providing drinking water to valley homes since 1961.

2. Gund wateelenishment:

Groundwater is replaced by putting imported water into "Replenishment ponds"

3. Fam iigatin wate: The Coachella Branch of the

All American Canal has delivered Colorado River water to local farmers since 1949

4. Sanitatin / Waste wate: CVWD was introduced to sewage operations in 1968. Today the district maintains hundreds of miles of sewer pipes.

5. Waste wateeclamatin / ecycling: The district recycles an average of 18 million gallons of wastewater per day for use on golf courses.

6. Stm watetectin: CVWD protects 590 square miles of property against flooding and has been doing so since 1935.

7. Agicultual ainage: Salty soil is a farmer's enemy. Therefore, CVWD designed a drainage system to carry salts away from fields to the Salton Sea.

# THE WATER CYCLE Coloring Page

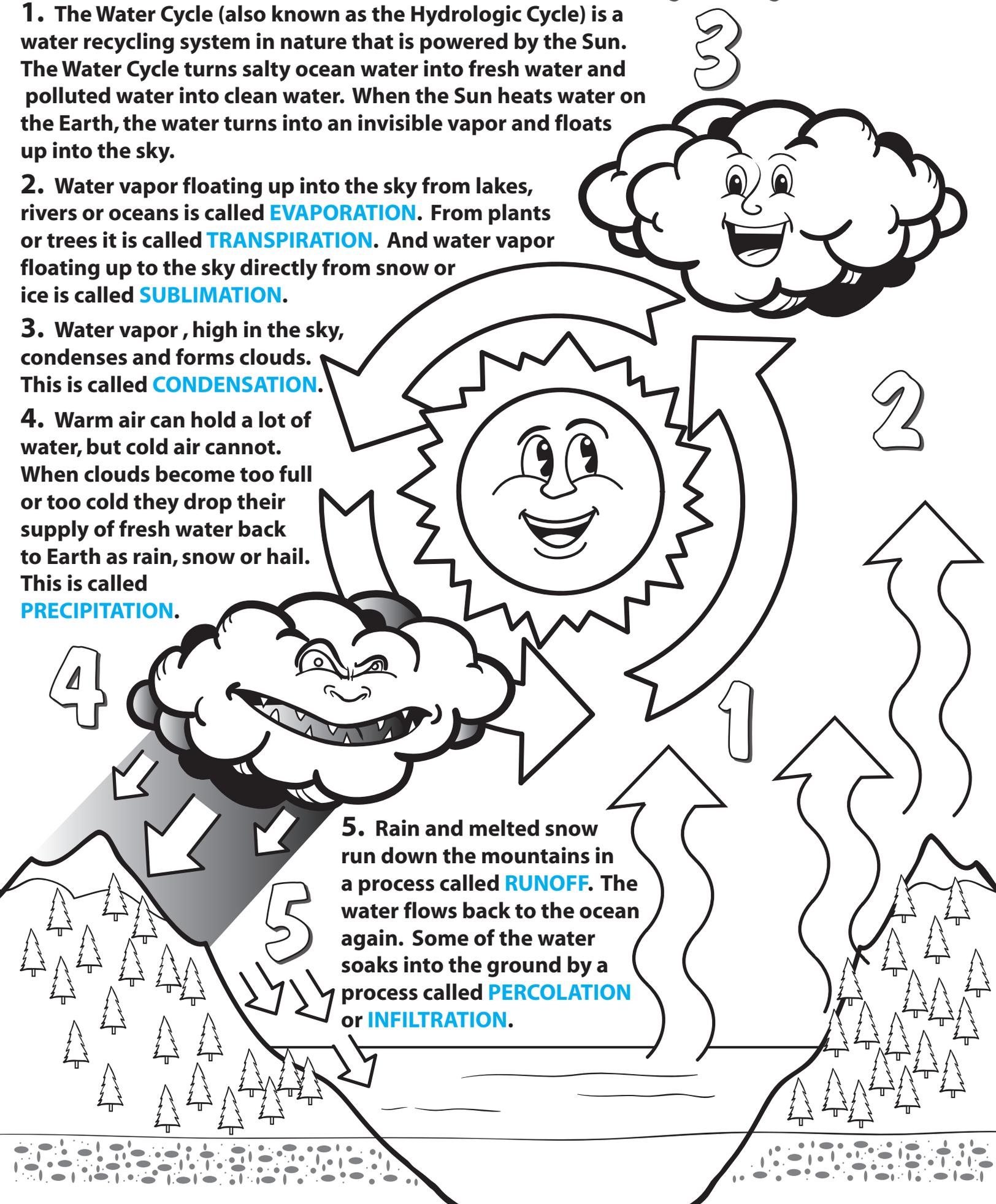
1. The Water Cycle (also known as the Hydrologic Cycle) is a water recycling system in nature that is powered by the Sun. The Water Cycle turns salty ocean water into fresh water and polluted water into clean water. When the Sun heats water on the Earth, the water turns into an invisible vapor and floats up into the sky.

2. Water vapor floating up into the sky from lakes, rivers or oceans is called **EVAPORATION**. From plants or trees it is called **TRANSPIRATION**. And water vapor floating up to the sky directly from snow or ice is called **SUBLIMATION**.

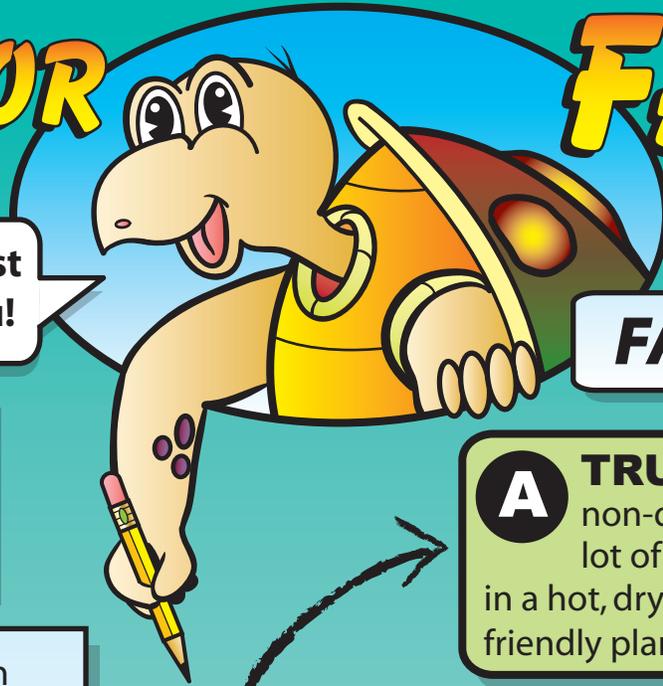
3. Water vapor, high in the sky, condenses and forms clouds. This is called **CONDENSATION**.

4. Warm air can hold a lot of water, but cold air cannot. When clouds become too full or too cold they drop their supply of fresh water back to Earth as rain, snow or hail. This is called **PRECIPITATION**.

5. Rain and melted snow run down the mountains in a process called **RUNOFF**. The water flows back to the ocean again. Some of the water soaks into the ground by a process called **PERCOLATION** or **INFILTRATION**.



# TRUE OR FALSE



I did the first one for you!

## FAST FACTS

Check out how much you know about water conservation.

1. Circle TRUE or FALSE for each statement.
2. Find the "fast facts" (A-F) that go with each statement.
3. Draw a line from each statement to the correct fast fact.

1. 70-80% of desert water is used outside of the home. **TRUE**  
**FALSE**

2. To conserve water I have to get rid of my lawn. **TRUE**  
**FALSE**

3. Landscaping with desert plants in a desert makes a lot of sense. **TRUE**  
**FALSE**

4. An unseated or leaky flap in your toilet tank isn't a very serious problem. **TRUE**  
**FALSE**

5. Turning off the water when brushing your teeth could save a million gallons per day. **TRUE**  
**FALSE**

6. Golf courses waste water. **TRUE**  
**FALSE**

**A TRUE:** Grass and other non-desert plants demand a lot of water to stay healthy in a hot, dry climate. Using desert friendly plants reduces water needs.

**B FALSE:** A leaky toilet can waste 200 or more gallons of water per day! A simple dye test can determine if you have a leak, or not.

**C TRUE:** Using desert plants in a desert to decorate your yard makes a lot of sense because they blend well with their environment & use much less water.

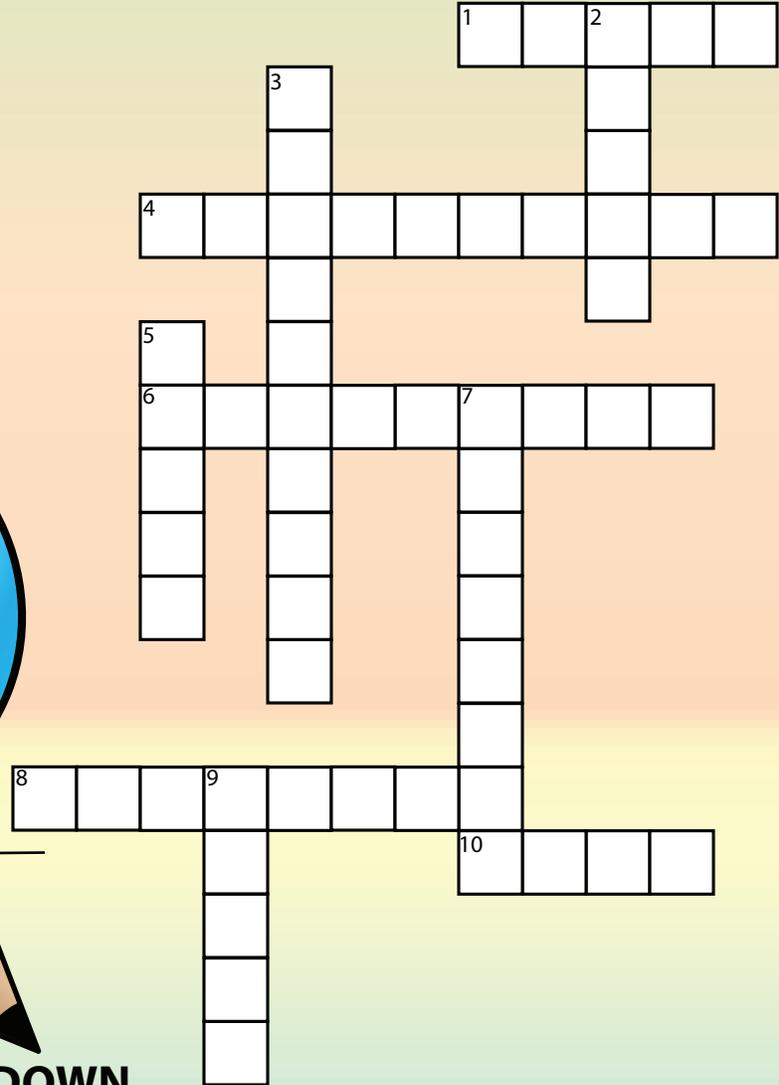
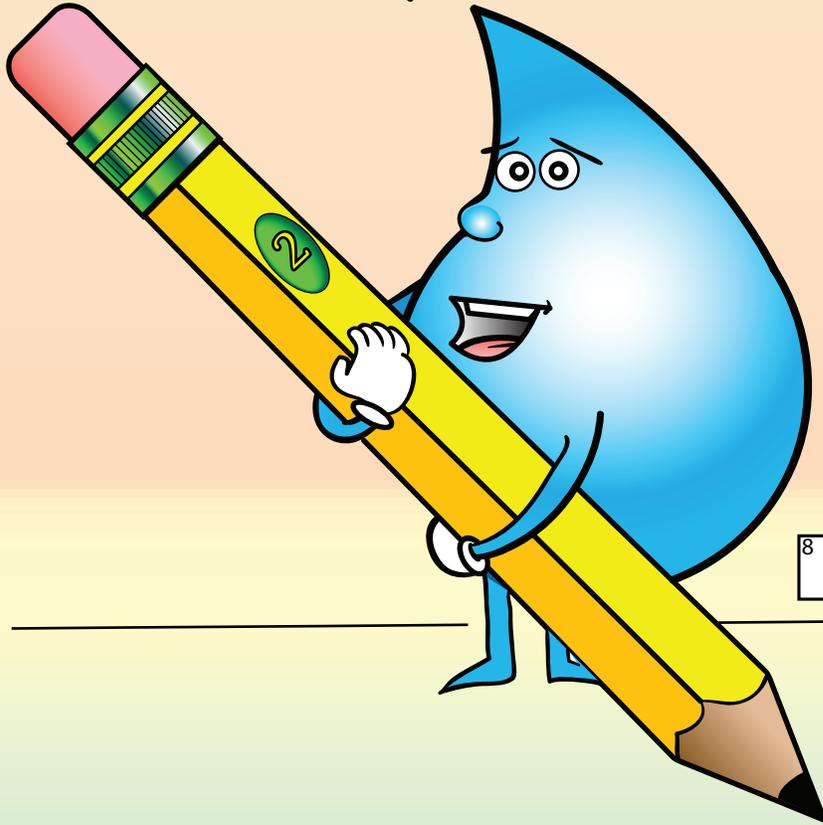
**D FALSE:** Golf course managers tend to be efficient water users. They use desert landscape off the fairways, use recycled water, and use only what they need.

**E FALSE:** You can keep your lawn and still use up to 30% less water by installing a "smart" controller.

**F TRUE:** Turning off the water when brushing your teeth saves one gallon. If everyone in the valley did this a few times per day, we'd save a million gallons!

You can help save me too! Fill out this puzzle to learn more about conserving water in a desert.

# WATER CONSERVATION

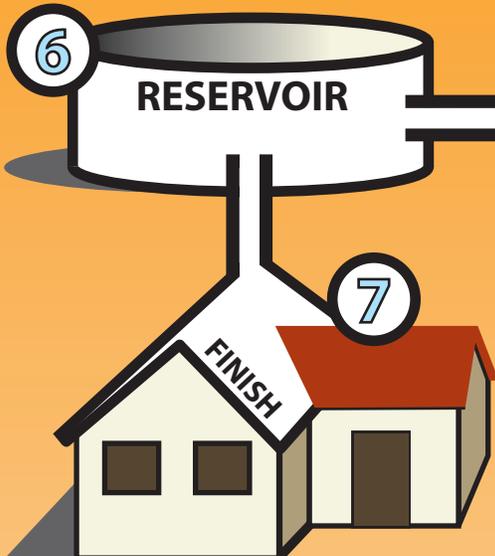


## ACROSS

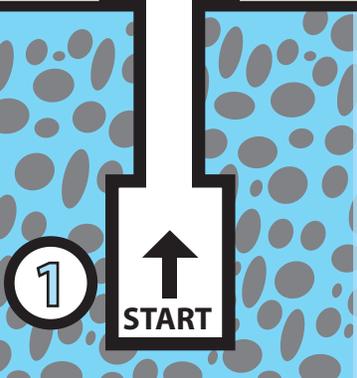
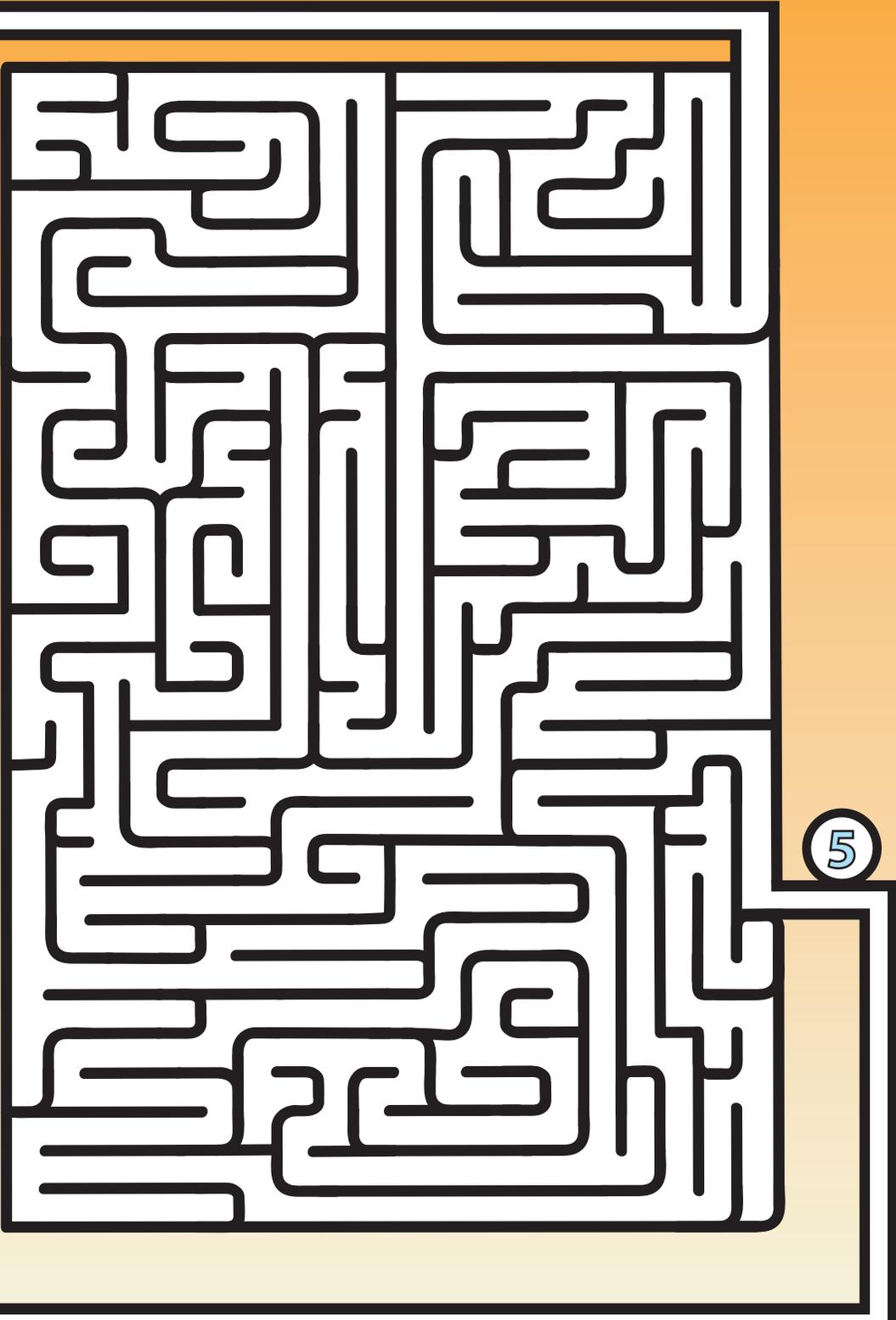
- 1 \_\_\_\_\_ is life.
- 4 You should turn your \_\_\_\_\_ off for several days after it has rained.
- 6 A simple way to conserve is to water at night when less will \_\_\_\_\_ and the plants will have more to use.
- 8 When you \_\_\_\_\_ water, you aren't wasting it.
- 10 Another name for highly efficient micro-irrigation is called \_\_\_\_\_ irrigation.

## DOWN

- 2 Groundcovers, shrubs and \_\_\_\_\_ can all be part of a lush and efficient garden.
- 3 Up to 80% of the water used by homes in the Coachella Valley is used for outside \_\_\_\_\_.
- 5 This water waster can be seen dripping from faucets or unseen in buried pipes.
- 7 Water that has been reclaimed or \_\_\_\_\_ is sent to golf courses in purple pipes.
- 9 Water efficient trees can serve a dual purpose. They save water and also provide cooling \_\_\_\_\_.



Hello, Tutor & Tammy here. It's not always easy getting water to peoples' homes. Help us out by solving this maze.



1. **AQUIFER:** A natural basin beneath the Coachella Valley that holds a lot of water.
2. **WELL SITE:** CVWD maintains more than 100 municipal grade well sites.
3. **CHLORINE:** About one drop of chlorine is added to each gallon of water to prevent the growth of algae & bacteria in pipelines.
4. **LABORATORY:** About 20,000 water quality tests are performed each year in CVWD's state certified lab to ensure your water meets all state & federal standards.
5. **PIPELINES:** CVWD maintains nearly 1,900 miles of underground, domestic pipes.
6. **RESERVOIR:** CVWD maintains 58 large steel water containers called reservoirs.
7. **HOMES:** Water is delivered to more than 107,000 homes & businesses.

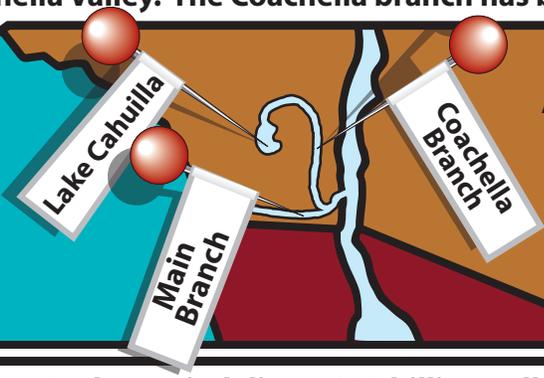
CALIFORNIA

NEVADA

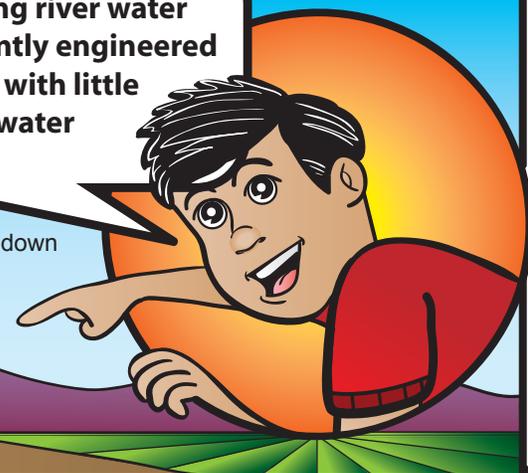
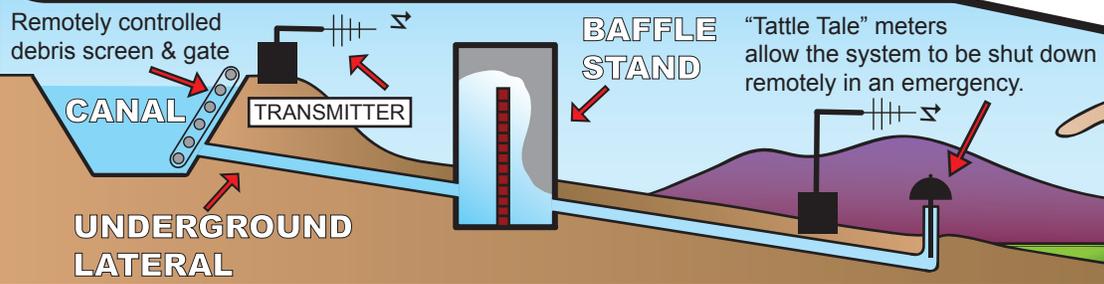
ARIZONA

NEW MEXICO

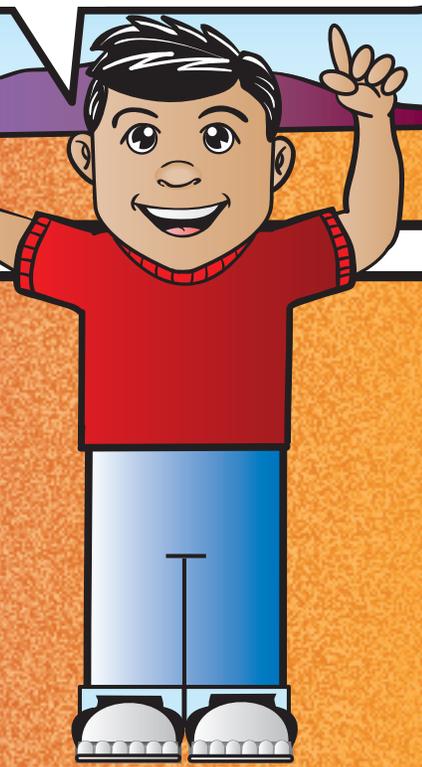
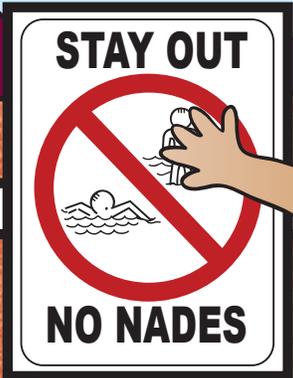
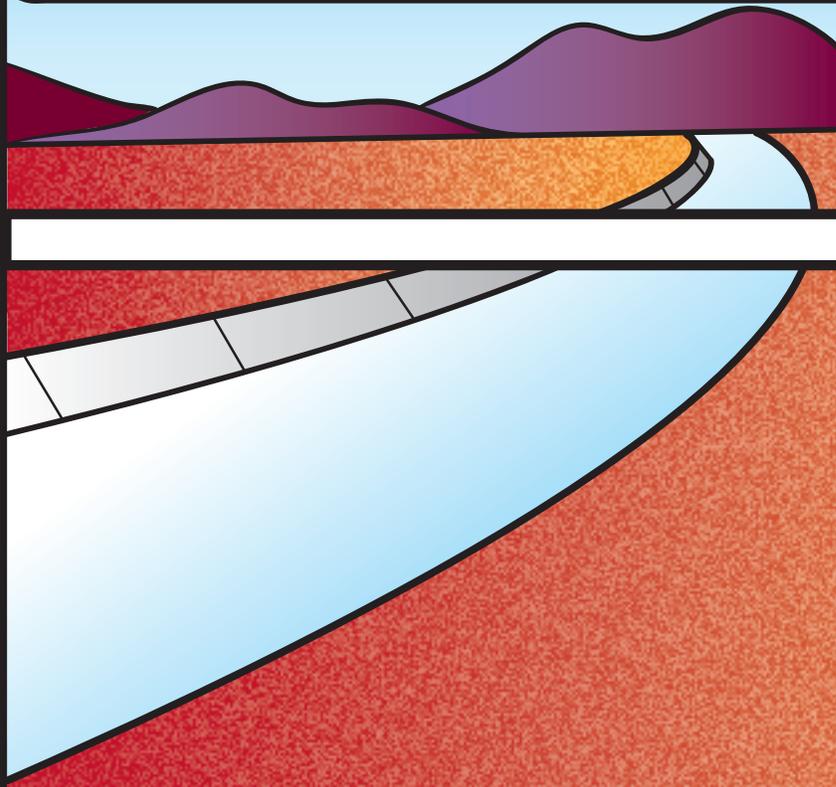
Hi, I'm Tommy and I'm here to talk to you about our canal. The All-American Canal is connected to the Colorado River. It has two branches. The Main Branch irrigates farmland in the Imperial Valley while the Coachella Branch serves farms in the Coachella Valley. The Coachella branch has been in service since 1949.



The Coachella Canal is 123 miles long. Each year it delivers 108 billion gallons of Colorado River water to farms & golf courses in the Coachella Valley. Using river water for irrigation helps to save our precious groundwater supply. The efficiently engineered canal allows water to be delivered to the high point of every 40 acre plot with little more than the natural, downward pull of gravity. Baffle stands equalize water pressure to keep everything flowing smoothly.



Our canal is a very important source of water, but it is also very dangerous! Please stay away from canals. The water is deep, cold and swift. There are also many hidden dangers like large underground siphons and steel control gates. The sides are also steep, hard, slippery and lined with concrete. The best way to stay safe is to stay out. Our motto is Stay Out, Stay Alive!



# THE COACHELLA VALLEY

Coachella Valley Water District's **two office sites** are located in the city of Coachella and the city of Palm Desert.

- 1 **Mt. San Jacinto** is the second highest mountain in Southern California (10,834 ft.)
- 2 **Mt. San Gorgonio** is the highest mountain in Southern California (11,503 ft.)
- 3 **Snow Creek** originates in an alpine forest from melted snow and ends in the sands of the desert floor where it percolates into the underground aquifer.
- 4 **San Gorgonio River** flows south out of the San Bernardino Mountains then turns east and joins the Whitewater River.
- 5 **Whitewater River** is a permanent stream flowing off of Mt. San Gorgonio that can vary from small trickles in the dry season to raging torrents during the stormy season.
- 6 **Mission Creek** is a small intermittent stream that joins the Whitewater River below the Whitewater Replenishment Facility.
- 7 **The Whitewater River Replenishment Facility** is a series of 19 large ponds that were constructed in 1973. These capture natural runoff and imported water. Once captured, the water is percolated through the sand into the vast underground aquifer. Because water is actively being put back into the groundwater supply, this process is called replenishment. To date, more than two million acre feet (one acre foot = 325,851 gallons) have been replenished at this site.
- 8 **Thomas E. Levy Groundwater Replenishment Facility**
- 9 **Martinez Canyon Pilot Facility**
- 10 **Mission Creek Replenishment Facility**
- 11 **Lake Cahuilla** was built in 1969 to hold excess canal water for redistribution.
- 12 **Coachella Branch of the All American Canal** extends 123 miles from the main branch near Mexico and ends at Lake Cahuilla. It supplies 330,000 acre feet of Colorado River water to local farmers & golf courses per year.
- 13 **Colorado River Aqueduct** is a 230-mile pipeline that provides river water to Los Angeles. It also discharges into the Whitewater River to help replenish the Coachella Valley's aquifer.
- 14 **Whitewater River/Coachella Valley Stormwater Channel** is an engineered portion of the Whitewater River that is designed to safely divert flood waters to the Salton Sea.
- 15 **Telemetry Towers** reduce water waste by allowing flow rates and water levels to be monitored and controlled remotely via microwave transmitters.



**Mid-Valley Pipeline** is a 54-inch diameter, 6.7-mile pipeline buried 20 feet below the Whitewater River/Coachella Stormwater Channel. It moves canal water to Wastewater Reclamation Plant 10 (WRP 10) in Palm Desert where it is blended with recycled water and then distributed to golf courses.

**Wastewater Reclamation Plants** treat and recycle an average of 18 million gallons of sewage per day. Most of the recycled water is used to irrigate golf courses.

58 large, steel tanks called **Reservoirs** hold freshwater from the aquifer until it is released and distributed to local homes & businesses.

**Homes & Businesses**  
CVWD's 100+ well sites provide about 40 billion gallons of water annually to more than 107,000 local homes & businesses.

# WATER RECYCLING

Hi there! I'm Terry Tartigrade, but you can call me a Water Bear. I'm a tiny animal five times smaller than the period at the end of this sentence. Me and my little friends help to recycle wastewater by digesting the sewage. Many people are curious about the water recycling process. For fun, I separated the steps into five boxes then mixed them up. Read the process descriptions and then try to figure out their correct order by writing the correct number in the correct box. I did the first one for you.



Sewage enters a treatment plant at the "Headworks". Bulky material is screened out and hauled to the dump.

Water, separated from the sludge, is filtered, chlorinated put into purple pipes and used to irrigate golf courses.

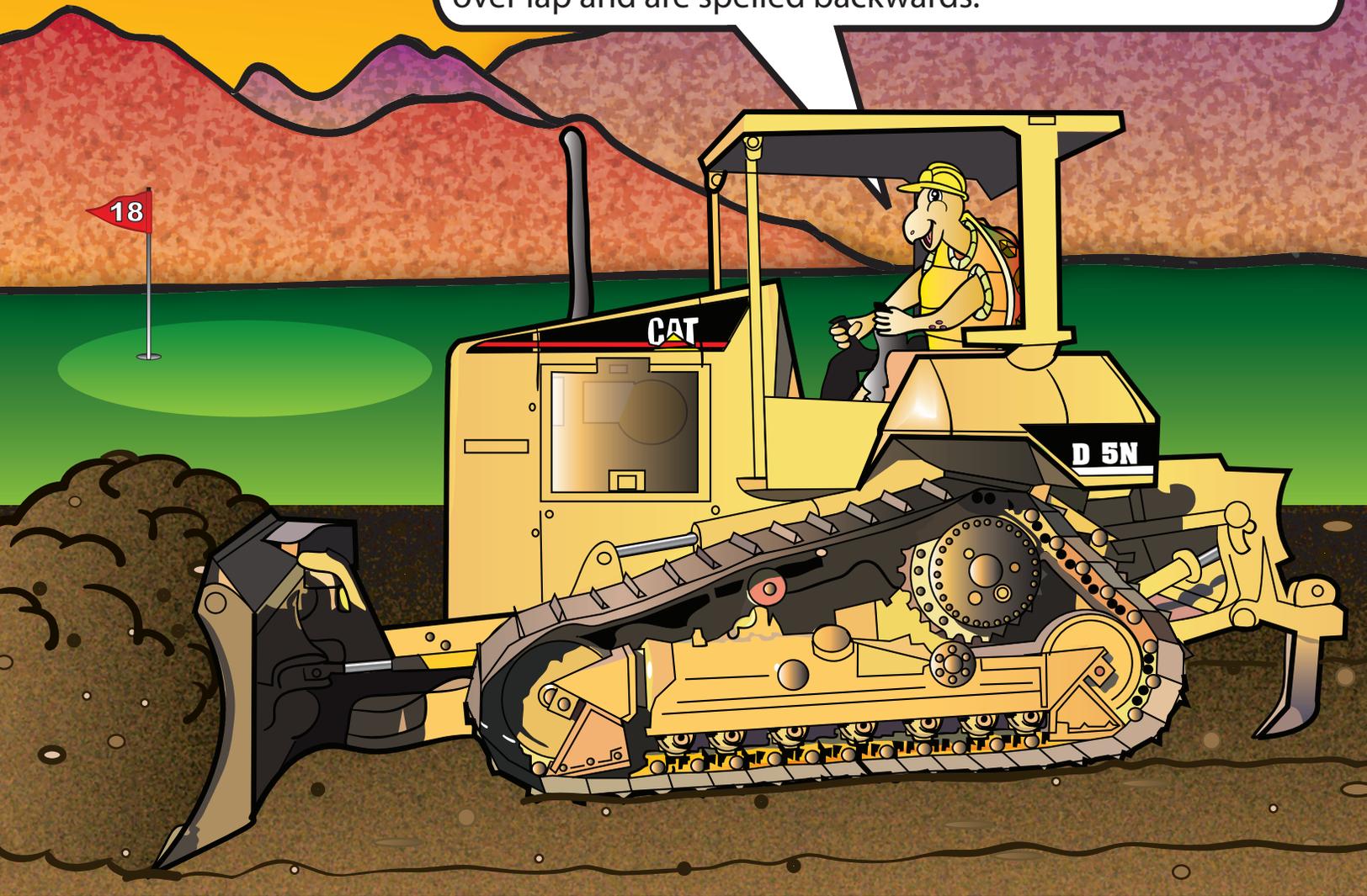
Liquid sewage leaves the headworks and flows to aeration basins. Micro-organisms digest the sewage.

Sewage leaves a home or business through underground sewer pipes and flows to a treatment plant.

Digested sewage, called "sludge" is separated from the water and composted into fertilizer.

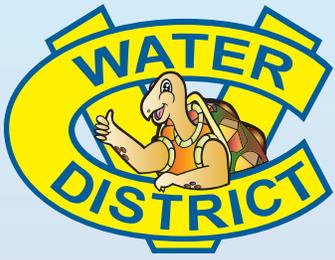
# STORMWATER PROTECTION

At CVWD we're always planning and preparing to protect lives and property from flash floods. Channels, dikes and levees are designed and maintained so that rapidly flowing floodwater, pouring from adjacent mountains, can be diverted away from local homes and businesses. See if you can find all of the hidden words related to stormwater in the puzzle below. Note that some of these hidden words overlap and are spelled backwards.



BULLDOZER	LEVEE
CHANNEL	POWERFUL
DANGEROUS	PROTECTION
DIKE	RAIN
DIVERSION	SEVERE
FLASHFLOOD	STORM

V M L U O J M T L C O Y W F I P H B R Z A N Q I I P R Q M H  
 K I C S E V E R E Z O D L L U B O N N P L T O A S R G T P B  
 A W Y D O C P R O T E C T I O N O I S R E V I D Z Y P R I C  
 P O W E R F U L G T Z D T Y B M A D Y V N E B I Z W B X K D  
 W U Y X N I A W H Z S H T T L R R R D I N I V K Y A C A A J  
 D R A U D G W U U T F L A S H F L O O D A N G E R O U S J P  
 P P B E F E N H M S Y B L J T P Z L V B H B I N L R E X K L  
 V P Y O N M L Q Y T K Q F X B R T A Z H C W Z I T E D Y D V



For more tips on how you can help save water visit the following Coachella Valley Water District web sites: [www.cvwad.org](http://www.cvwad.org) and [www.waterfun4kids.com](http://www.waterfun4kids.com)

# ANSWERS

**STORMWATER PROTECTION**

FLASHFLOOD	STORM
DIVERSION	SEVERE
DIKE	RAIN
DANGEROUS	PROTECTION
CHANNEL	POWERFUL
BULLDOZER	LEVEL

Word search grid with words highlighted in yellow:

V M L U O J M T L C O W F L P H B R Z A N Q I I P R Q M H  
 K I C S E V E R E Z O D L L U B O N N P L T O A S R G T P B  
 A W Y D O C P R O T E C T I O N I S R E V I D Z Y P R I C  
 P O W E R F U L G T Z D T Y B M A D V Y N E B I Z W B X K D  
 W Y X N I A W M Z S H T L R R D I N I V K Y A C A J  
 D R A U D G W U U T F L A S H F L O O D A N G E R O U S J P  
 P B E F E N H M S Y B L J T P Z L V B I N L R E X K L  
 V P Y O N M L Q Y T K Q F X B R T A Z H C W M Z I T E D Y D V

**WATER RECYCLING**

Hi there! I'm Terry Tardigrade, but you can call me Water Bear. I'm a complex microorganism that is five times smaller than the period at the end of this sentence. Me and my little friends help clean up sewer water by eating the sewage. Can you place the wastewater treatment & delivery steps in order? Write numbers 1-5 in the correct box. Step 1 is already done.

1. Sewage enters a treatment plant where it is screened and pumped to the dump.
2. Dirty material is screened and pumped to the dump.
3. Headworks and flows to treatment tanks. Microorganisms digest the sewage.
4. Clarified sewage, called effluent, is pumped to a treatment plant.
5. Headworks and flows to treatment tanks. Microorganisms digest the sewage.

**WATER RECYCLING**

Always enjoy getting water to people's homes. Help us out by solving this maze.

Hiho, Hoar & Tarny here. It's not a good idea to drink water from a well. Always enjoy getting water to people's homes. Help us out by solving this maze.

1. ACQUERS: A natural basin beneath the Coachella Valley that holds a lot of water.  
 2. WELL SITE: CWD maintains about 100 municipal wells that pump water to homes.  
 3. CHLORINE: About one drop of chlorine is added to each gallon of water to prevent the growth of algae & bacteria in pipelines.  
 4. LABORATORY: About 20,000 water quality tests are performed each year in CWD's state certified lab to ensure your water meets all state & federal standards.  
 5. PIPELINES: CWD maintains nearly 1,000 miles of underground domestic pipes.  
 6. RESERVOIR: CWD maintains 58 large water storage reservoirs.  
 7. HOMES: More than 107,000 meters require water to local homes & businesses.

**WATER CONSERVATION**

You can help save me too! Fill out this puzzle to learn more about conserving water in a desert.

WATER

SPRINKLERS

WATER

CONSERVE

DRIP

WATER CONSERVATION

DOWN: WATER, CONSERVE, DRIP

ACROSS: WATER, CONSERVE, DRIP

**TRUE OR FALSE**

Check out how much you know about water conservation.

1. Circle TRUE or FALSE for each statement.
2. Find the "Fast Facts" (A-F) that go with each statement.
3. Draw a line from each statement to the correct fact.

**FAST FACTS**

**A** FALSE: Grass and other non-desert plants demand a lot of water to stay healthy in a hot, dry climate. Using desert-friendly plants reduces water needs.

**B** FALSE: A leaky toilet can waste 200 or more gallons of water per day. A single drop can determine if you have a leak or not.

**C** TRUE: Using desert plants in a desert to decorate your yard makes a lot of sense because they blend well with their environment & use much less water.

**D** FALSE: Golf courses tend to use a lot of water. They are often irrigated with recycled water, not over watering and using grass only on lawns.

**E** FALSE: You can keep your lawn and yard from becoming a serious problem.

**F** TRUE: Turning off the water when brushing your teeth saves a million gallons per day.

**QUESTIONS**

**1** TRUE: Turning off the water when brushing your teeth saves a million gallons per day.

**2** TRUE: Using desert plants in a desert to decorate your yard makes a lot of sense because they blend well with their environment & use much less water.

**3** TRUE: A leaky toilet can waste 200 or more gallons of water per day. A single drop can determine if you have a leak or not.

**4** TRUE: Turning off the water when brushing your teeth saves a million gallons per day.

**5** TRUE: Turning off the water when brushing your teeth saves a million gallons per day.

**6** TRUE: Turning off the water when brushing your teeth saves a million gallons per day.

**1. Drinking water**: CWD has been providing water to valley homes since 1961.

**2. Groundwater Replenishment**: Groundwater is replaced by putting imported water into "replenishment ponds".

**3. Farm Irrigation Water**: The Coachella Branch of the All American Canal has delivered Colorado River water to local farmers since 1949.

**4. Sanitation / Waste water**: CWD was produced of sewage operations in 1968. Today the district maintains hundreds of miles of sewer pipes.

**5. Waste water Reclamation / Recycling**: The district recycles an average of 18 million gallons of wastewater per day to use on golf courses.

**6. Stormwater Protection**: CWD protects property against flooding and has been doing so since 1935.

**7. Agricultural Drainage**: CWD designed a drainage system to carry salts away from fields to the Salton Sea.