



down the drain stormwater & you

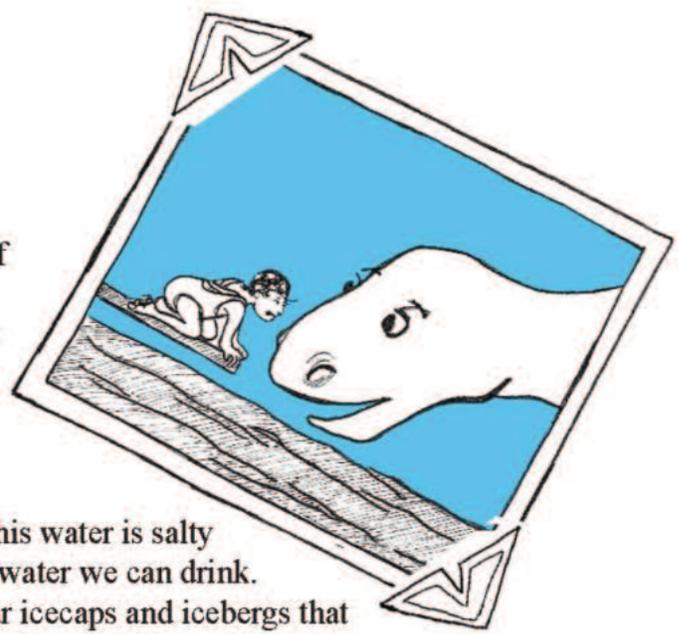
a water-wise workbook

Clark County, Nevada



Wonderful Water

Water has to be one of the coolest substances on the planet. How many other things can you think of that naturally exist as a liquid, solid and gas? None! Next to oxygen, water is the most important thing keeping us alive. You could survive a whole month without food, but only a week without water. In fact, your body is almost 70% water!

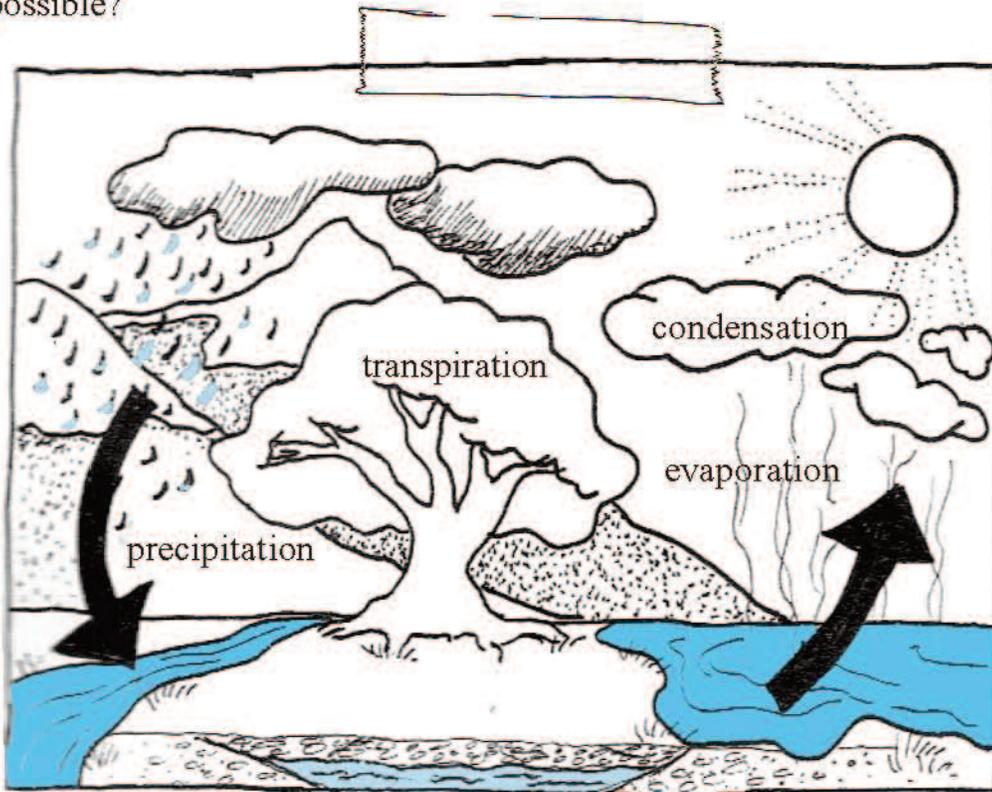


Water covers 70% of the Earth's surface. Most of this water is salty ocean water. Only 3% of the Earth's water is fresh water we can drink. However, about 2% of fresh water is frozen in polar icecaps and icebergs that we can't use. That leaves only 1% of fresh water for people, animals and plants to use. It's not a lot of water, and that's why keeping it clean is so important.

<h2>Water Wise</h2>	
Is Your Family Water Wise?	
Do You...	
	Never Sometimes Always
1. Leave the water running as you brush your teeth?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2. Have a leaky faucet?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3. Take a bath instead of a shower?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4. Do you throw trash in the toilet?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5. Do you throw kitchen scraps down the garbage disposal?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Did You Know?	
<ul style="list-style-type: none"> • Turning off the water while brushing your teeth in the morning and at bedtime can save up to 8 gallons of water per day. • A faucet that drips at one drop per second can waste up to 2,700 gallons of water each year. • A bathtub requires 70 gallons of water, while taking a 5 minute shower uses 25 gallons. • Putting fat, oil, grease and grit down a sink can clog sewer lines causing raw sewage to back up into homes and onto streets where it can make its way into storm drains and into Lake Mead. 	
(source EPA)	

The Water Cycle

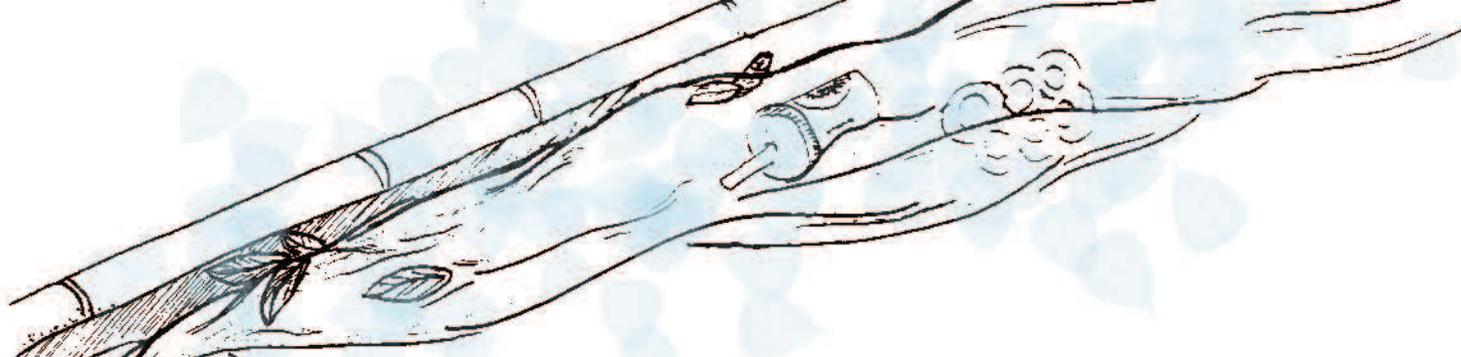
Did you know that the exact same water has been on Earth for billions of years? The water in your swimming pool might be the same water dinosaurs drank! How could this be possible?



The water cycle is responsible for recycling all the water on Earth. The Earth recycles water through evaporation, transpiration, condensation and precipitation. Evaporation occurs when heat from the sun causes water on Earth's surface to turn into water vapor. It's the same thing that happens when you boil water on the stove. Water evaporates and turns into the steam you see rising above your cooking pot. The leaves of plants and trees also give off water when it's hot. Water vapor leaving plants is called transpiration.

When this warm water vapor rises into the atmosphere, it cools off and turns into tiny water droplets. The changing of warm water vapor into cool water droplets is called condensation. The tiny water droplets come together and form clouds. Clouds are made of billions and billions of tiny water droplets. Clouds take in more and more water droplets until they cannot hold anymore and they burst. When clouds burst the water falls to Earth as precipitation. There are many different types of precipitation. In the desert we mostly see rain. Sometimes, when the weather is cold, we may even see sleet or snow. All together, the Mojave Desert only gets 3-4 inches of precipitation a year.

As precipitation falls to Earth, it is stored in underground aquifers, or held in streams, rivers, lakes and oceans. Plants store water too. When precipitation stops and the sun comes back out, the streams, rivers, lakes and oceans heat up and water begins to evaporate, starting the cycle over again.



Watersheds

A watershed is an area of land where all water drains into the same body of water. Our local watershed is called the Las Vegas Valley Watershed. When it rains here, all stormwater in the Las Vegas Valley drains into Lake Mead through the Las Vegas Wash.

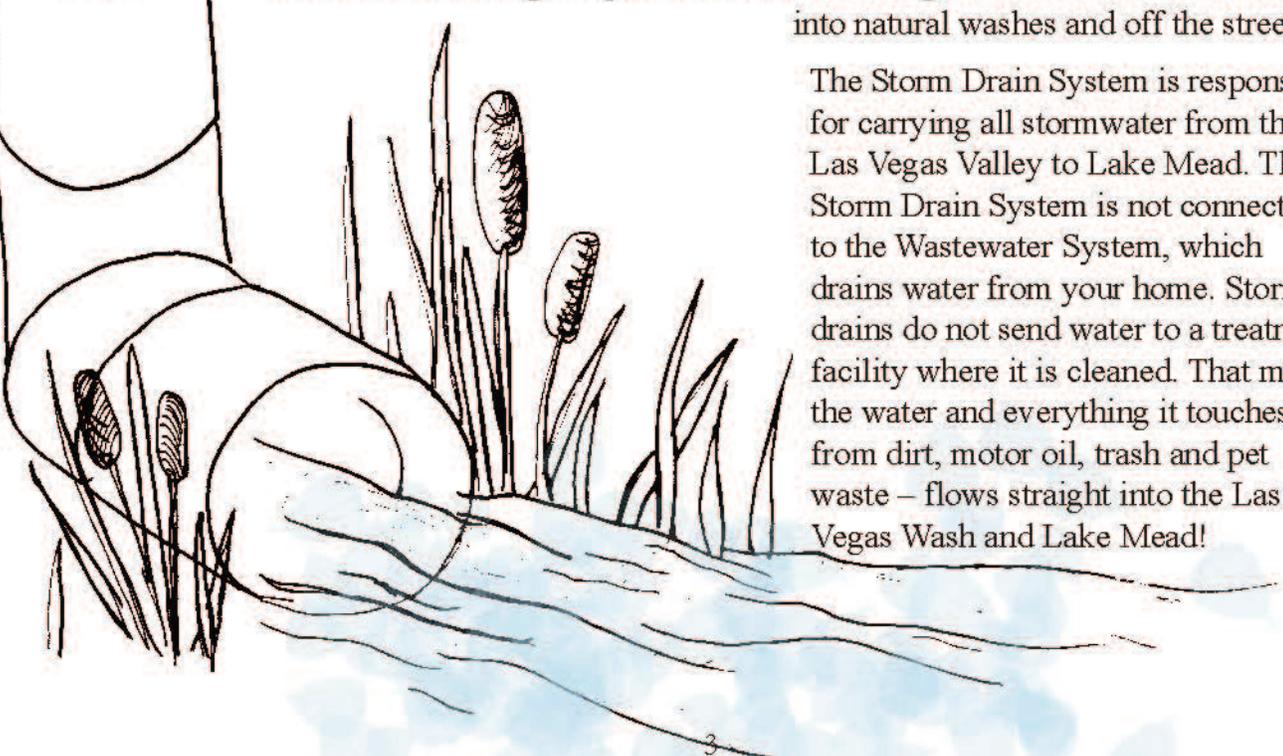
Watersheds are important habitats for people, animals and plants. All of us depend on our watershed for the water we use.

Some rainfall seeps into the ground and is stored in underground bodies of water called aquifers. Some of the water is soaked up by plants and wetland areas. Any water that is not stored in plants or in the ground becomes runoff.

Because we live in the desert, our native plants don't hold much water. Desert soil is protected by a hard surface crust that does not allow water to soak into the ground very quickly. In the Las Vegas Valley, most of our stormwater will become water runoff.

Storm Drains

During large storms, stormwater runoff can flow quickly over the ground and cause flash flooding. To prevent serious flooding, storm drains channel water into natural washes and off the streets.



The Storm Drain System is responsible for carrying all stormwater from the Las Vegas Valley to Lake Mead. The Storm Drain System is not connected to the Wastewater System, which drains water from your home. Storm drains do not send water to a treatment facility where it is cleaned. That means the water and everything it touches – from dirt, motor oil, trash and pet waste – flows straight into the Las Vegas Wash and Lake Mead!

Workbook Word Scramble

iqufera an underground body of water

natservcinoo to preserve natural resources

aptioevraon when the sun heats up water in rivers, lakes, or the ocean and turns it into vapor or steam

upollonit a substance introduced into the environment that harms the health of people, animals, or ecosystems

terwsormta nffour water that is not absorbed by plants or soil

ostmr arind ssyemt carries stormwater from all over the Las Vegas Valley to Lake Mead

wwtesataer mtsey carries water from homes and businesses to a treatment facility to be cleaned

ratew lcecy in nature, the Earth's water is recycled by what process

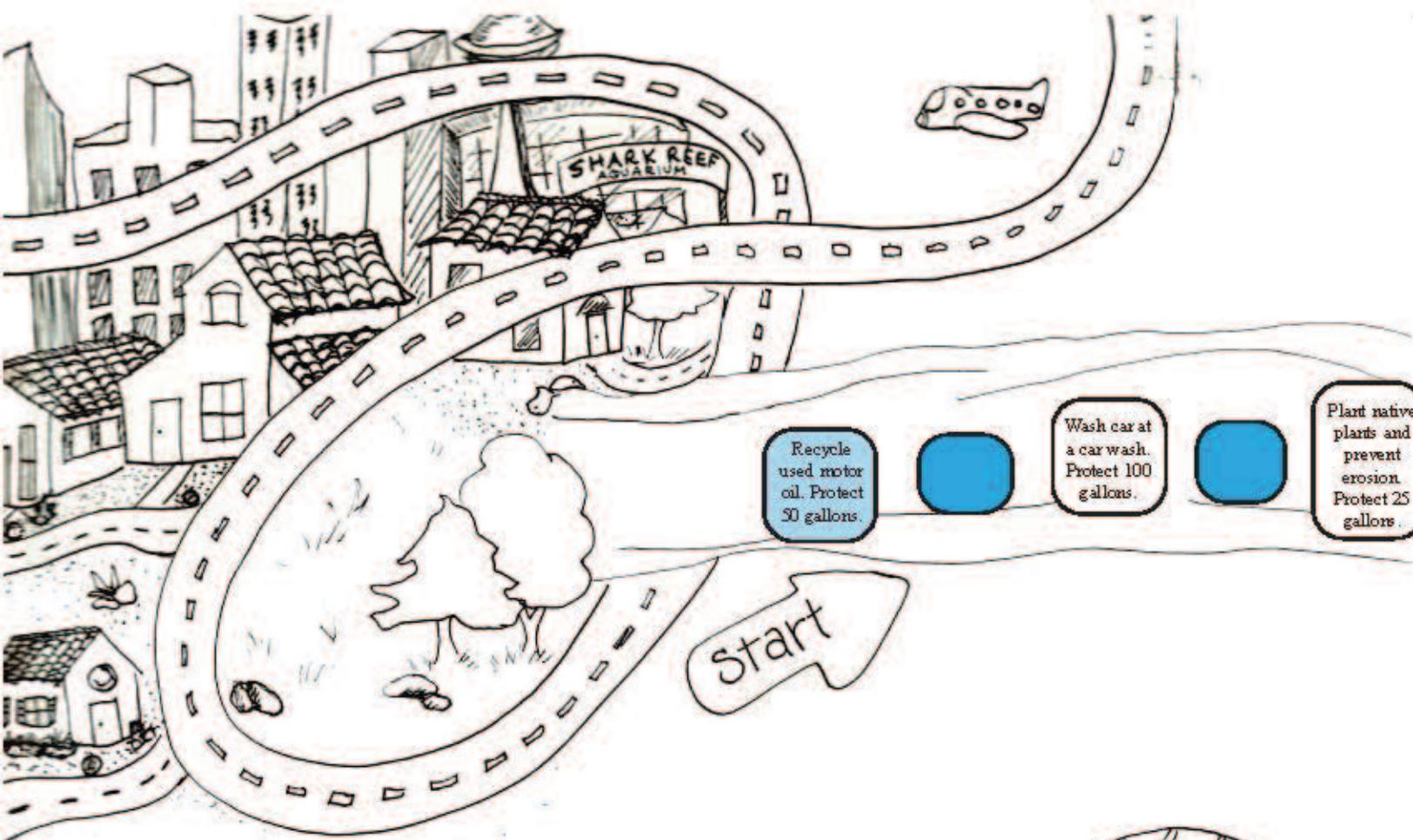
shdeertwa the land area that drains into a common body of water

dansltew a land area that is covered by water all or part of the year

Did you unscramble all of these words?

water cycle, conservation, stormwater runoff, storm drain system, pollution, evaporation, aquifer, watershed, wetlands, wastewater system

Desert Wetlands
 A wetland is an area of land that is covered by water all or part of the year. The Las Vegas Wash supports hundreds of acres of wetlands. Wetlands are an especially important part of the watershed. They act like a sponge, soaking up large amounts of water. Wetland plants clean the water that runs through them, filtering out harmful pollutants like fertilizers and oils. Wetlands along the Las Vegas Wash help improve water quality before it reaches Lake Mead.

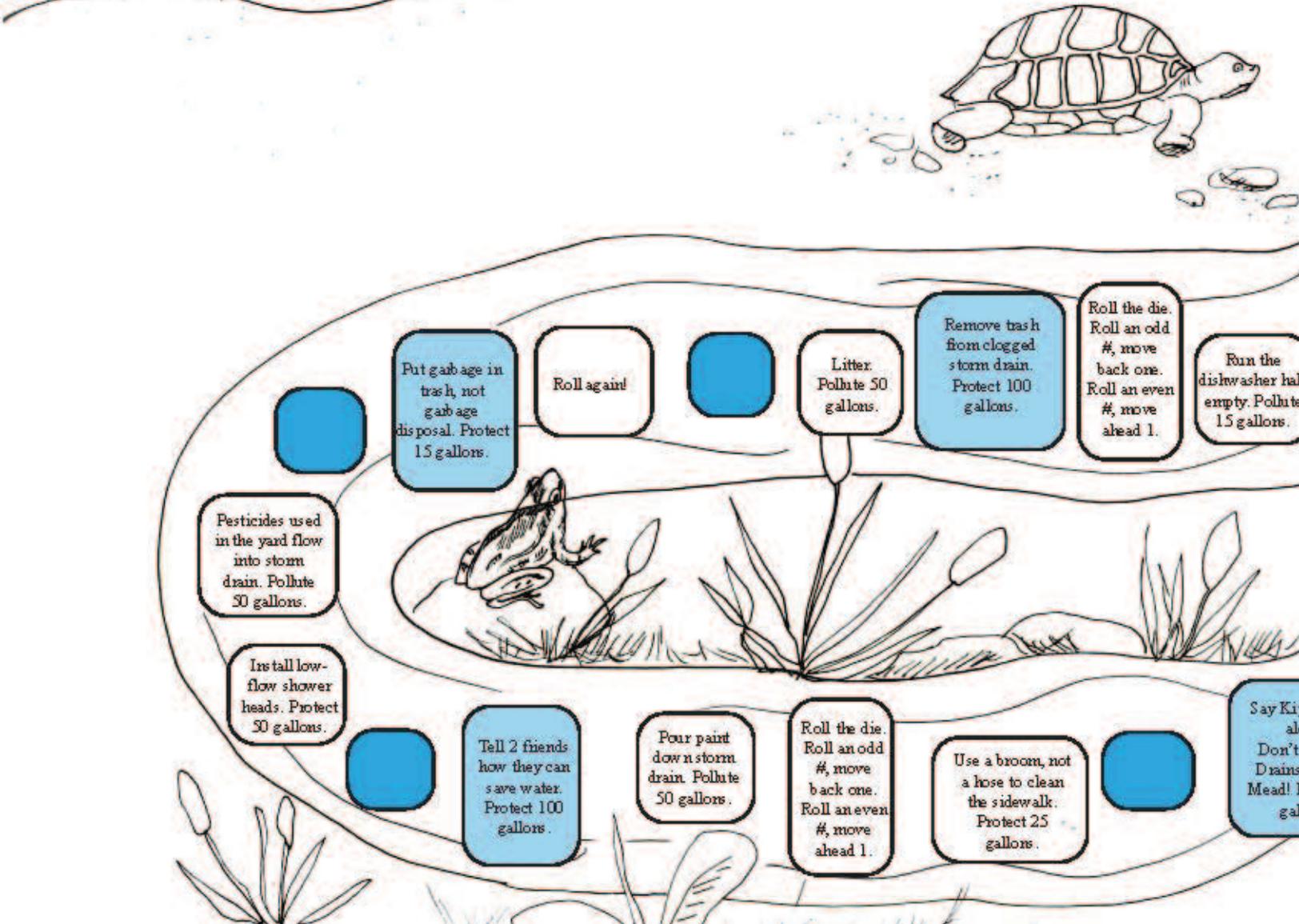


Recycle used motor oil. Protect 50 gallons.

Wash car at a car wash. Protect 100 gallons.

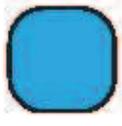
Plant native plants and prevent erosion. Protect 25 gallons.

start



Put garbage in trash, not garbage disposal. Protect 15 gallons.

Roll again!



Litter. Pollute 50 gallons.

Remove trash from clogged storm drain. Protect 100 gallons.

Roll the die. Roll an odd #, move back one. Roll an even #, move ahead 1.

Run the dishwasher half empty. Pollute 15 gallons.

Pesticides used in the yard flow into storm drain. Pollute 50 gallons.

Use tall low-flow shower heads. Protect 50 gallons.

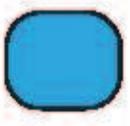


Tell 2 friends how they can save water. Protect 100 gallons.

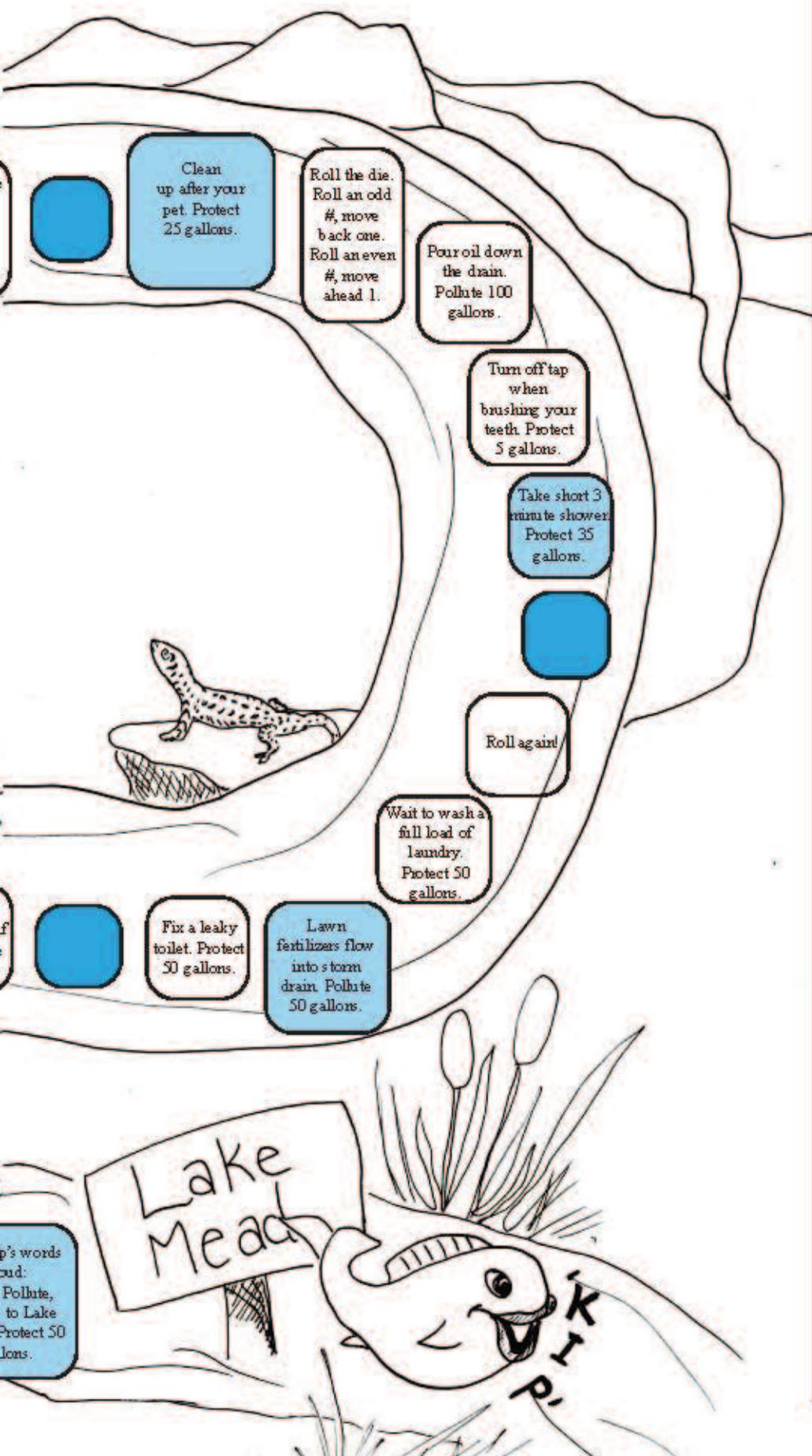
Pour paint down storm drain. Pollute 50 gallons.

Roll the die. Roll an odd #, move back one. Roll an even #, move ahead 1.

Use a broom, not a hose to clean the sidewalk. Protect 25 gallons.



Say Ki...
al...
Don't Drains Mead!...
gal



Help Protect Lake Mead!

There isn't a water source more important to us than Lake Mead. Up to 90% of our water comes from this man-made lake. Aside from drinking water, Lake Mead is a popular spot for fishing, swimming, diving, waterskiing and boating.

All stormwater from the Las Vegas Valley travels through the Las Vegas Wash into Lake Mead. Stormwater does not pass through any treatment facilities on its way to the Lake. That means any pollutants (like motor oil, trash, pet waste and fertilizer) the water picks up will end up in the Lake too. That's why Lake Mead needs your help!

Objective: Make your way down the Las Vegas Wash to Lake Mead. Protect the most water and you win!

What you Need:

2-4 players

This gameboard

One die

Token for each player (example: use a penny, nickel, dime and quarter)

M&Ms

How to Play:

Each player starts with 1,000 gallons of water. Use the M&Ms to keep track.

Blue = 100 gallons; Red = 50 gallons; Green = 10 gallons; Orange = 5 gallons

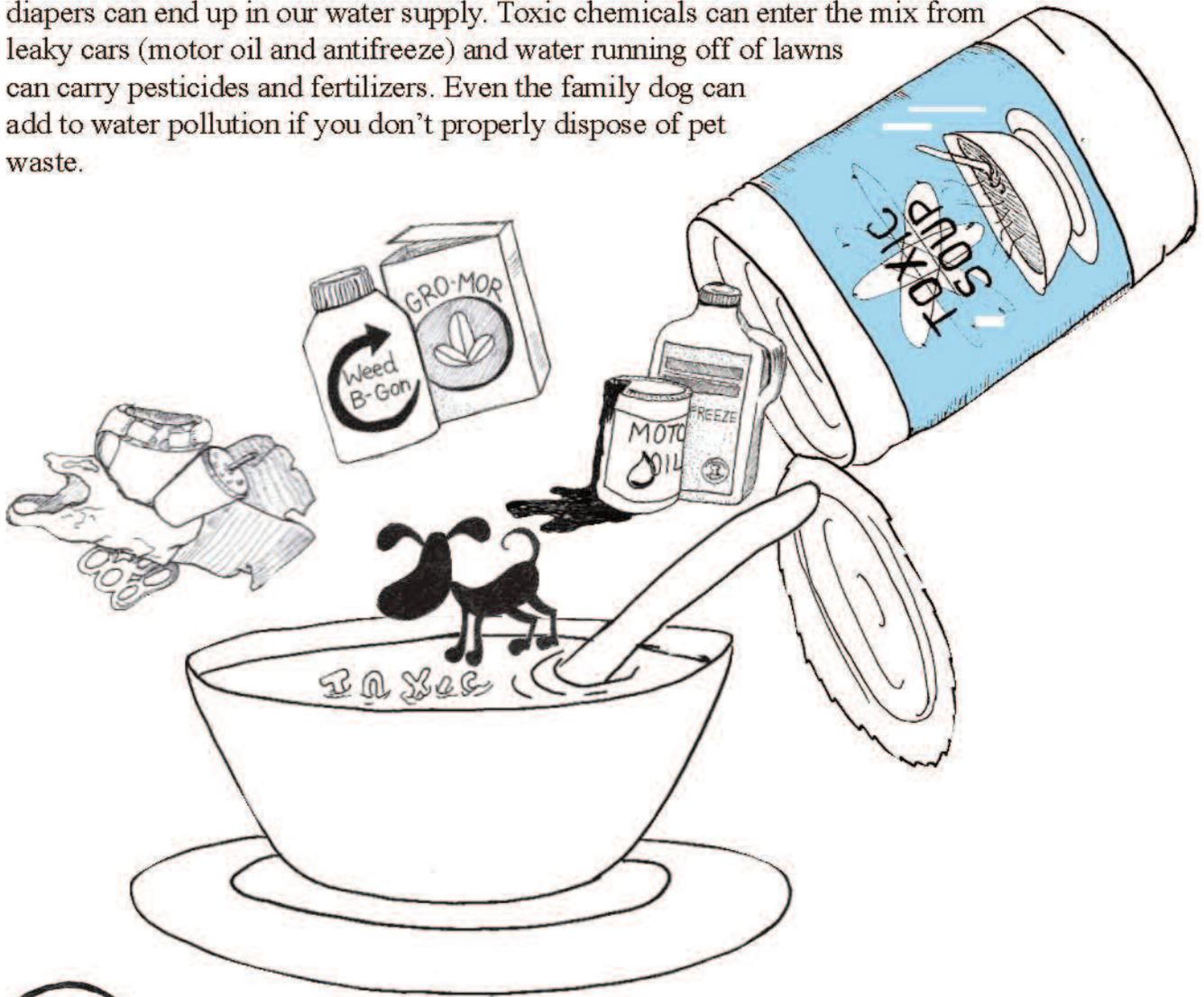
Roll the die and move your token the number of spaces you rolled. Read the activity in your space and find out if you saved water or polluted it. Use the M&Ms to add water to your reservoir or lose water.

When all players reach the finish line add up your M&Ms. Whoever saves the most water wins!

*Gallons of water listed for each activity are estimates and used for game play only.

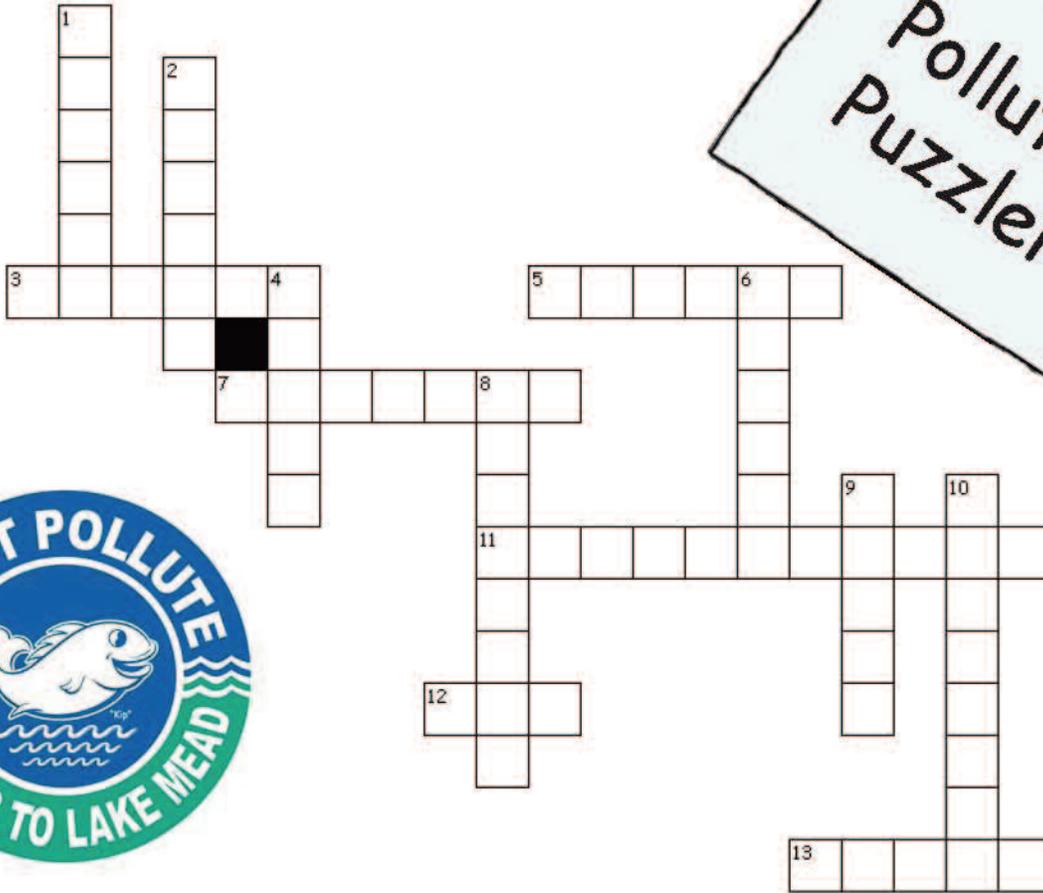
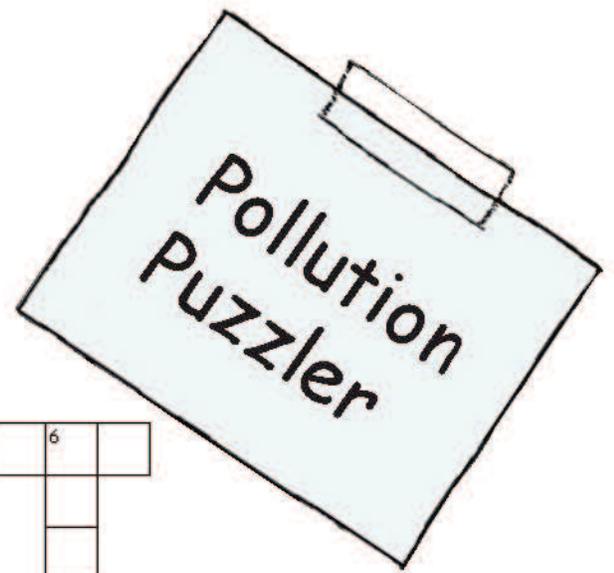
Stormwater Pollution

We just learned that most of our rainwater becomes runoff. Polluted stormwater runoff can make you sick. Most of the pollution comes from things we do everyday. Anything you dump or drop on the ground adds to stormwater pollution. The most common pollutants result from littering. Trash like fast-food wrappers, cigarette butts, styrofoam cups and even dirty diapers can end up in our water supply. Toxic chemicals can enter the mix from leaky cars (motor oil and antifreeze) and water running off of lawns can carry pesticides and fertilizers. Even the family dog can add to water pollution if you don't properly dispose of pet waste.



Be a Stormwater Detective

The next time you see water running down the street ask an adult to help you follow where the water flows. If it's raining, take some time to see what happens to the rain that falls around your home or school. Where is the water that falls on the roof going? What about the water on the driveway? If the water is coming from a sprinkler, is it spraying in the wrong place, or just delivering too much water? Do you notice a difference between how quickly water on the sidewalk is moving compared to water falling on grass or landscaped areas? Why do you think this is? Do you see any sources of pollution like trash or oil leaking from a car? What do you think will happen to it when it rains? Try and think of ways you can reduce the pollution you see.



Across

- 3. Storm ___ and wash channels don't connect to sewage treatment plants, so runoff can flow directly into Lake Mead.
- 5. Water that is not soaked up by the ground or plants becomes ___.
- 7. Don't dump used motor oil into storm drains, ___ It!
- 11. ___ is when water is heated and turns into water vapor, or steam.
- 12. Always bring a ___ to pick up after your pets.
- 13. The ___ cycle is responsible for recycling all the water on Earth.

Down

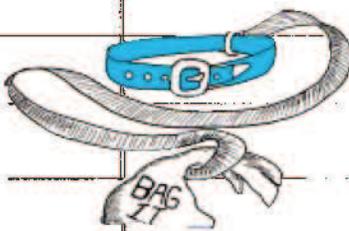
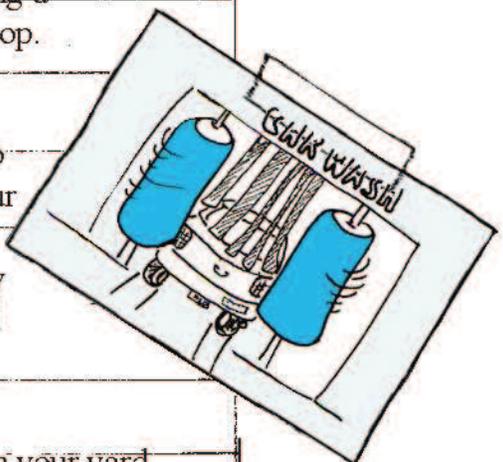
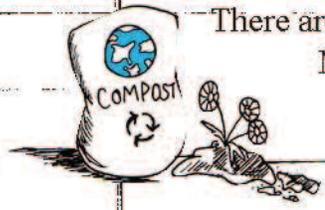
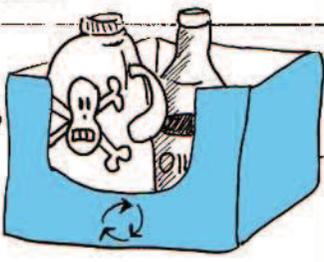
- 1. Pick up ___ in your yard or street.
- 2. Water is the only substance on Earth that can be a ___, solid, and a gas.
- 4. The best way to clean the sidewalk or driveway is to ___ not hose.
- 6. Wetland plants act like a natural water ___, removing harmful pollutants from stormwater runoff.
- 8. Most of our drinking water comes from ___.
- 9. Marking "Don't Pollute Drains to Lake Mead" on a ___ drain is one way to educate people about polluted runoff.
- 10. ___ water and reduce the amount of runoff by not over-watering your lawn and garden.

Use the following words to solve the puzzle!

- Lake Mead
- Drains
- Liquid
- Recycle
- Conserve
- Sweep
- Storm
- Litter
- Water
- Runoff
- Filter
- Evaporation
- Bag

Help Prevent Stormwater Pollution!

Worrying about having enough clean water can be scary. Luckily you have the power to protect water! Most stormwater pollution starts at home. By taking good care of your home and yard you can help protect our water quality.

○	<h2>Clean Water Checklist</h2>
	<p>Do you have a dog? Taking him for a walk is fun, but don't forget to bring a grocery bag to pick up his poop.</p>
○	<p>Check out the family car. Report any leaks to your parents. Think about how you wash your car too. Car washes are a better option than washing your car at home. They are specially designed to collect water and reuse it several times.</p> 
	<p>There are lots of ways to protect water in your yard. Make sure your sprinklers are watering your grass and not the sidewalk. If you see water running off your grass, ask your parents to adjust the sprinkler clock. Using organic or natural fertilizers, like compost, can help protect water quality. Always be on the lookout for leaves or grass clippings blocking storm drains. They can clog drains and attract pests like cockroaches and rats.</p>
○	<p>Speaking of pests, recycle toxic chemical sprays and try natural ways to get them to bug off. Cockroaches hate catnip and bay leaves placed around your kitchen and home.</p> 

Stormwater Pollution

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

Be part of the solution!

Can you find these stormwater related words?

BACTERIA

CHEMICALS

FERTILIZER

HOUSEHOLD HAZARDOUS WASTE

TRASH

MOTOR OIL

PESTICIDES

POLLUTION

Clean Water - Pass it On!

Now that you know about keeping our water clean, share the message with a friend. Create your own poster to encourage others to protect Lake Mead. Ask your teachers to hang up the poster in your classroom, or have your parents take the picture to work with them. Throw a poster party and invite all your friends to make their own posters!

The more people who hear the message, the cleaner our water will be.

remember...

it's your water...
protect it!



For more information on stormwater management in Clark County, visit www.ClarkCountyNV.gov – Keyword: water quality, or call the Clark County Water Quality Team at (702) 668-8674.

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Southern Nevada Water Authority

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Report illegal dumping to Southern Nevada Health District at (702) 759-0600.
To recycle household hazardous waste contact Republic Services at (702) 735-5151



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