

Aqua Explorer

Activity Guide

PROTECT
YOUR
WATERSHED



Take Action & Get Involved!

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(Try to find the Heal the Bay logo hidden on each page)

Help Heal the Bay

Heal the Bay began as group of people living in Los Angeles who were tired of the pollution and trash in our local ocean, which was making fish, dolphins and other marine animals sick. The pollution was making swimmers and surfers sick too.

Since then, we've worked really hard to try to stop pollution and trash from harming anymore dolphins and swimmers, and the ocean is a lot cleaner. But there's still a lot of work to be done and you can help!

Inside you will learn a lot of simple ways you can help Heal the Bay keep the ocean clean and all of us healthy. You can also join us for one of our monthly Nothin' But Sand Cleanups, which are open to all ages and fun for the whole family.

To sign up, visit

www.healthebay.org/volunteer



Heal the Bay

Join us at the Santa Monica Pier Aquarium for days of discovery

- Spend the summer at our science adventure camp for 1st-5th graders:
healthebay.org/summerscience
- Bring your classroom to the beach! Tell your teacher that we offer marine education field trips to our aquarium, located at the Santa Monica Pier:
healthebay.org/smpa
- Come for a visit! Get up close and personal with some of our favorite ocean animals in one of our touch tanks. We're open year-round and host special events four times per year in February, April, July and October.
*Plus, kids 12 and under get in **FREE!***



There's more than one way to find us

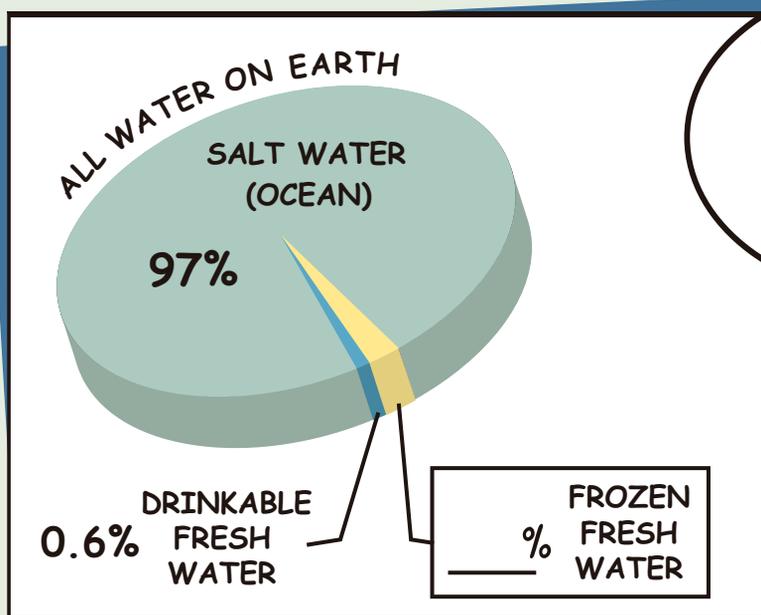
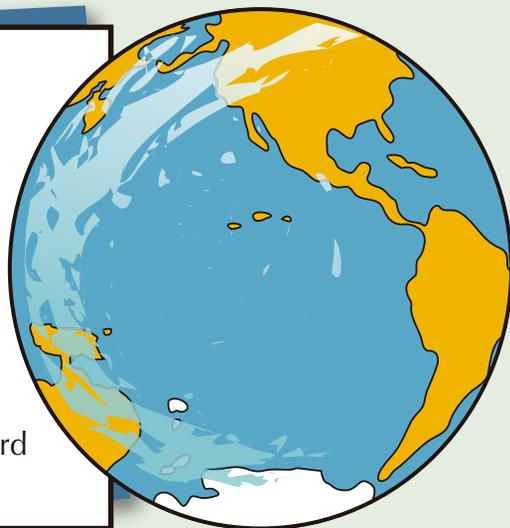
1600 Ocean Front Walk (beach level, under the carousel) Santa Monica Pier
310.393.6149 www.healthebay.org/smpa



Water World

Water is Everywhere

It covers the majority of the earth's surface (75%) and makes up the majority of the human body (70%). All of this water sounds promising; however, 97% of the earth's water is contained in the ocean as salt water, leaving only 3% as fresh water. Of that 3% fresh water, 2.4% is frozen in ice sheets, leaving less than 1% of our planet's fresh water in lakes, rivers or underground. That's less than 1% of fresh, drinkable water for over 6 billion people on earth. We can't afford to waste a single drop!



This pie chart represents water on earth. Fill in the missing percentage.



Why is the Ocean Important?



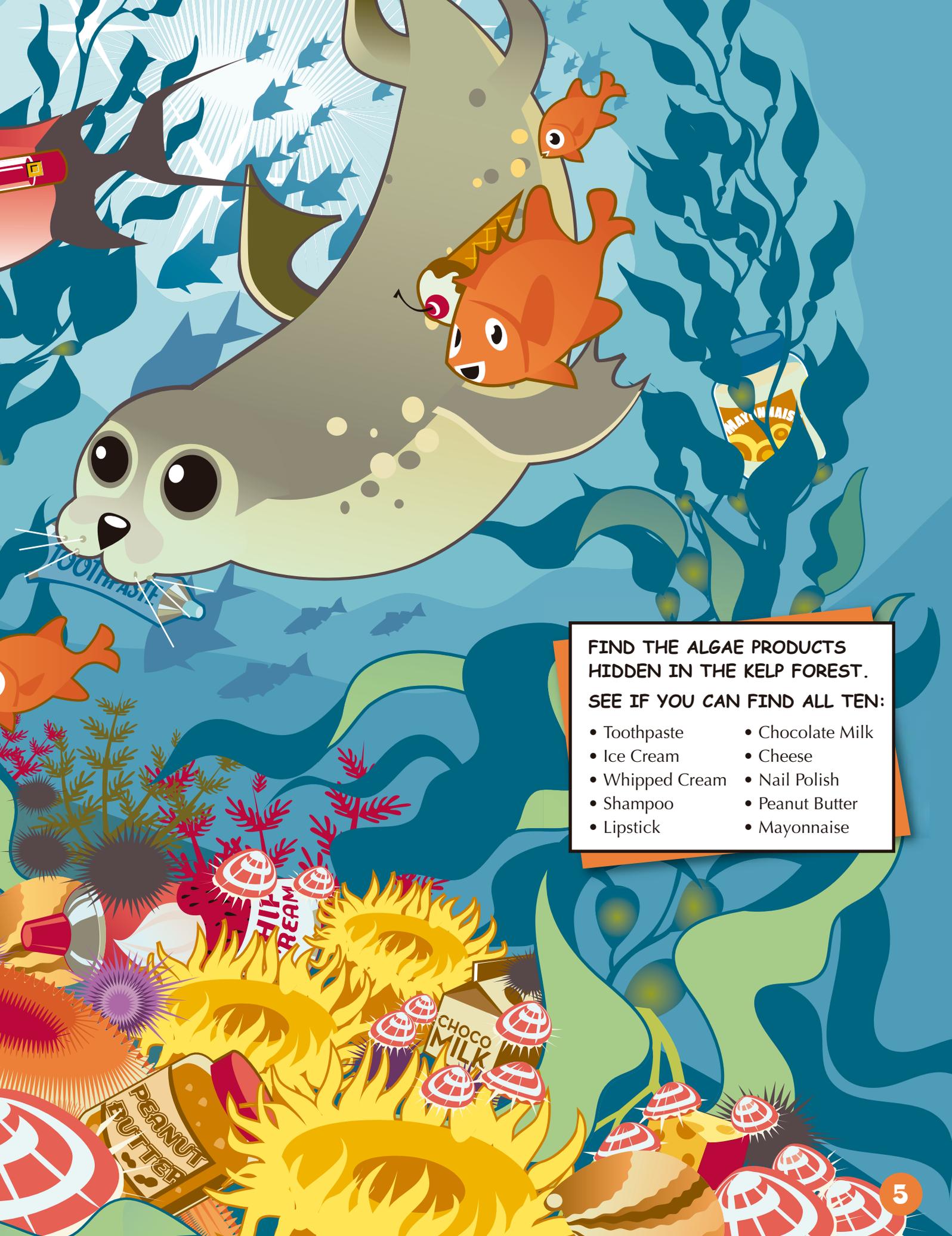
It's a funny!
What does seaweed
do in an emergency?
It calls for
KELP!!!



Water is important because every living thing on earth needs it to survive. The ocean is the largest body of water and provides food, animal habitats, energy, transportation and recreation. The underwater kelp forests along our coast are home to 550 different types of fish. This kelp forest habitat provides food and shelter for other animals besides fish and humans. The kelp, which is a type of algae, produces oxygen for us to breathe and we harvest it to use in hundreds of products we eat or use everyday. Algae ingredients you might find in your food are alginate, agar, carrageenan, and even beta-carotene. Algae is used to help hold ingredients together and to make them thicker and creamier.



Heal the Bay



**FIND THE ALGAE PRODUCTS
HIDDEN IN THE KELP FOREST.
SEE IF YOU CAN FIND ALL TEN:**

- Toothpaste
- Ice Cream
- Whipped Cream
- Shampoo
- Lipstick
- Chocolate Milk
- Cheese
- Nail Polish
- Peanut Butter
- Mayonnaise



Water stored underground is called groundwater. It supplies water to springs and wells.



Water on the Move

The Three Forms of Water

All water on earth is connected and constantly moving. It can be found throughout the world in three different forms. To find out what the forms are, unscramble the words below. Then draw a line from the word to its definition.



— — — — —
D L O I S



— — —
A S G



— — — — —
U I D L Q I

- Rain, like the water flowing through our rivers and in our oceans.
- Snow and ice, like on the top of Mount Everest.
- Steam, like when you boil water in a pot or kettle.

The Water Cycle

Water moves from humans, animals and plants, through creeks, rivers and streams, out to oceans and lakes. It ventures up to the sky forming giant clouds and then falls back to the earth as rain and snow. This movement of water is a continuous cycle with no beginning and no end. It's called the Water Cycle! To see how it's connected, number the parts of the water cycle in the watershed picture with the terms below.

- 1 Evaporation** - The process, caused by heat, where liquid is transformed into gas.
- 2 Condensation** - The process, caused by cooling temperatures, where clouds form from gas changing to a liquid.
- 3 Precipitation** - When clouds get too heavy with liquid they produce rain, snow, sleet, or hail.
- 4 Infiltration** - The process where water soaks into the ground and helps to replenish our ground (drinking) water.
- 5 Runoff** - Water that doesn't infiltrate into the ground flows down to streams, creeks and rivers and eventually to the ocean.

What is a Watershed?

Everyone lives in a watershed. In fact, you are sitting in one right now. A watershed is an area of land that drains downward through a series of creeks and rivers into a common body of water such as a lake or ocean. Watersheds can vary greatly in size and shape.

It's important to understand that wherever you live, the beach, the city, or the mountains, you are connected to the ocean! That means it's up to **YOU** to help keep your watershed clean. By stopping pollution and picking up trash, you show pride in your neighborhood and respect for the ocean. It's easy, everyone just has to do their part.

You and Your



SANTA MONICA MOUNTAINS

SANTA MONICA BAY

LEGEND

- Ballona Creek watershed
- Dominguez Channel watershed
- Los Angeles River watershed
- San Gabriel River watershed
- Santa Monica Bay watershed
- Freeway
- Waterway (river, creek or channel)



Watershed



SAN GABRIEL MOUNTAINS

Let's find your watershed

- 1 Use the watershed map to find the name of your city. If you can't find your city, use a freeway or a nearby city to help find your location.
- 2 Put an **X** with a marker or pencil on the location of your city and write it in the space below.
My city is: _____
- 3 Notice the color of where your city is located. Go to the legend and use that color to determine the name of your watershed.
My watershed is: _____
- 4 Trace a line from your **X** to the nearest water way within your watershed. Follow that water way down to see which bay your watershed drains into.
My bay is: _____

As you can see, we're all in this watershed together. No matter where you live we all have an impact on the ocean.

Is Your Trash Go

The Storm Drain System

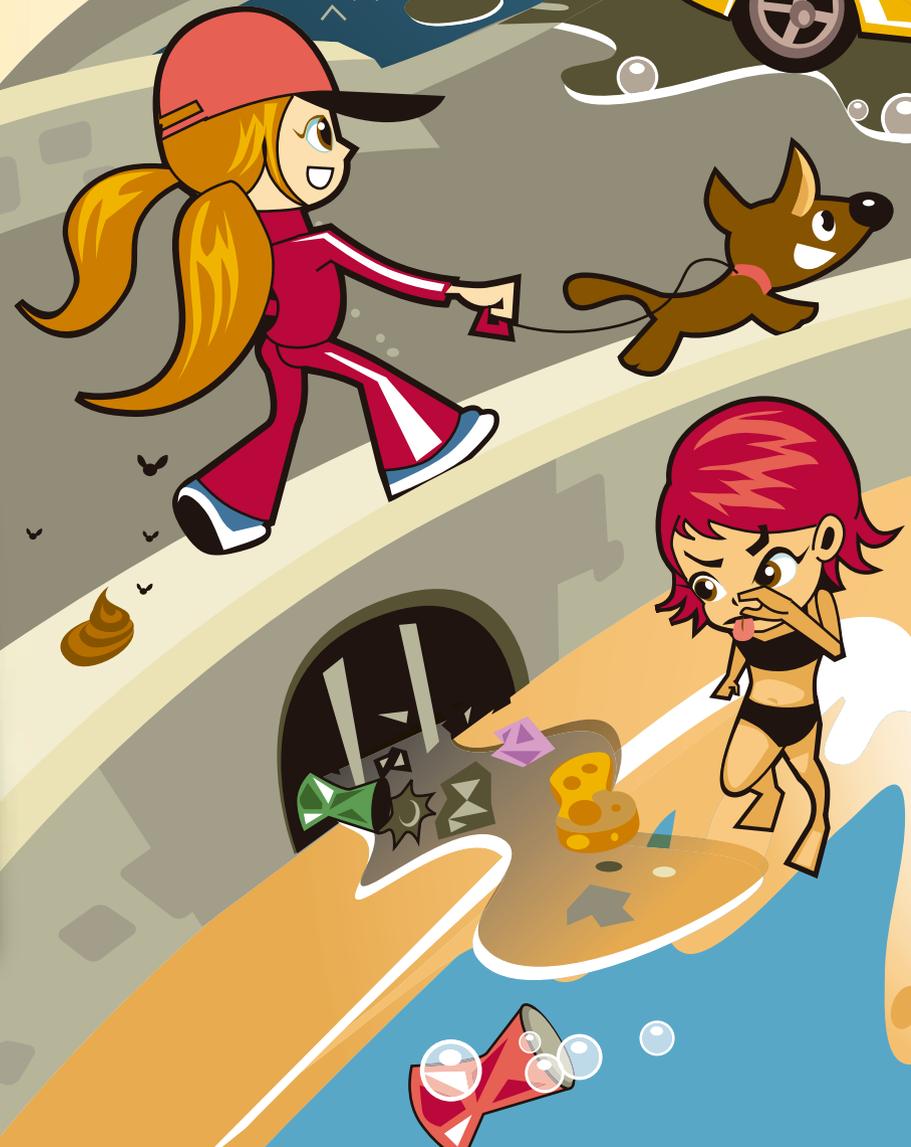
Most of Los Angeles is covered with hard solid surfaces like parking lots, streets, and buildings. When rain falls on any of those surfaces it can't soak or infiltrate into the ground. Water that doesn't infiltrate into the ground is called **runoff**. Runoff water can gather very quickly and endanger our cities with floods. To prevent flooding and help protect our cities, drains on our streets and a maze of underground pipes was created, called the **storm drain systems**. Through this system water is moved from our streets to the ocean.

When you walk down the street you may have noticed openings in the curb. These openings are called **catch basins** and are the entrance to the storm drain system. The problem is that it's not just water running off our streets; the water picks up trash like food wrappers, cigarette butts, animal waste, and chemicals along curbs and sidewalks. This trashy water enters a catch basin and will then either empty out into the ocean or onto the beach through a concrete pipe called an **outfall**.

Rain isn't the only water that pushes trash into the ocean. On a sunny day, things like washing our cars on a street, over-watering our yards, or hosing down sidewalks are all activities that create **dry weather runoff**.

What About Sewage?

The storm drain system is separate from the sewage system. Sewage is dirty water that comes from a toilet, sink or any drain from the inside of a building or home. Unlike the sewage system which does clean the water, storm drain run off rarely gets cleaned before entering the ocean.



ing to the Ocean?

Circle the catch basin, outfall, and runoff in the picture.

You can make a difference. Help keep the storm drains clean!

Hey beach goers, find and highlight the definitions of the words in bold.

Heal the Bay

Journey to the Ocean

START

Fall in Park. Slide to the groundwater path.

Fall on concrete. Slide to the storm drain path.

STORM DRAIN PATH

GROUNDWATER PATH

Land in grass and soak into the ground.

Absorbed by tree roots.
-1 pollution point



Filter down through soil, gravel and clay.

Bubble up through floor of natural creek. Slide to ocean.

Concrete river channel covers river spring.
+1 pollution point

Illegal dumping in the creek.
+2 pollution points

Enter underground aquifer. Move forward 2 spaces.

Natural spring adds clean water. Move forward 1 space.

Leaky oil tank pollutes groundwater. Lose a turn. **+2 pollution points**

Leave aquifer through natural spring

Sea turtle mistake popped balloons for food. **+2 pollution points**

Recharge drinking water.
-1 pollution point

ENTER OCEAN

An aquifer is an underground area of rock, sand, or gravel that can hold water. Groundwater is held within an aquifer.



DIRECTIONS

You're a rain drop in the water cycle and you're trying to reach the ocean. Choose a rock, button, or other object to use as a game piece. Take turns flipping a coin to move along the paths. HEADS = 1 space, TAILS = 2 spaces.

Keep track of your pollution points along the way. When you reach the ocean, add up your points. The player with the **LEAST** amount of pollution points is the winner. Which path do you think is less polluted?



POLLUTION POINTS			
PLAYER 1		PLAYER 2	
(+)	(-)	(+)	(-)
TOTAL		TOTAL	



Pollution has

1 MISTAKEN IDENTITY:

When trash, like plastic bags and balloons, end up in the ocean, turtles, fish, birds and other marine life mistake it for food. If they eat enough plastic, their stomachs can fill up, tricking them into feeling full. Animals stop eating when they think they're full and can starve to death.

Ocean Food Imposters

Solve the problems to find the ocean food imposters. Place the letter on the line of the matching number.

$$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array} = P$$

$$\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array} = L$$

$$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array} = F$$

$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array} = N$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array} = S$$

$$\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array} = G$$

$$\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array} = Y$$

$$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array} = R$$

$$\begin{array}{r} 5 \\ \times 3 \\ \hline \end{array} = A$$

$$\begin{array}{r} 39 \\ \times 1 \\ \hline \end{array} = M$$

$$\begin{array}{r} 10 \\ \times 2 \\ \hline \end{array} = B$$

$$\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array} = O$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array} = I$$

$$\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array} = T$$

$$\begin{array}{r} 198 \\ \times 0 \\ \hline \end{array} = C$$

- 20 15 12 12 54 54 21 81

- 16 12 15 81 49 64 0 20 15 24 81

- 81 49 56 4 54 30 54 15 39



Consequences



2

ENTANGLEMENT:

Animals can get tangled up in trash like six-pack rings, ribbons and fishing line, which makes it hard to swim, fly, and eat. Imagine how you would feel to be trapped in trash. Try this game to find out. Place a rubber band on



your left thumb. Pull it around the back of your left hand across your knuckles and loop it onto your pinky finger. Now using your left hand only, try getting the rubber band off. How many people in your class were able to get untangled? Were you?



3

HABITAT DESTRUCTION:

In order to control and prevent flooding, natural creeks and rivers were replaced by concrete channels. The channels took away the natural habitat from animals living on land and in the water. The animals are left without shelter or shade. Since there is nothing to absorb the water in a concrete channel, the water flows much faster which increases the danger to both humans and animals.

4

BIOACCUMULATION:

Would you ever eat pesticides or cleaning products? NO WAY, that would make you sick. BUT, when those chemicals end up in the ocean fish and birds eat them by accident. The chemicals build up as they move up the food chain through a process called bioaccumulation.



What Can You Do?

Slash Your Trash

- 1 Don't litter. Put trash in the can.
- 2 Recycle and turn trash into cash. To find out how, visit www.consrv.ca.gov or call (800)-RECYCLE.
- 3 Create less trash. Bring your own bag to the market.
- 4 Reuse! Refill your water bottle and use grocery bags over and over.
- 5 Buy recycled products. Look for this symbol. 

Carlos has a can he wants to recycle. Help him get to the recycle bin by correctly answering the questions along the way.



START

Most of the trash in the ocean is plastic.

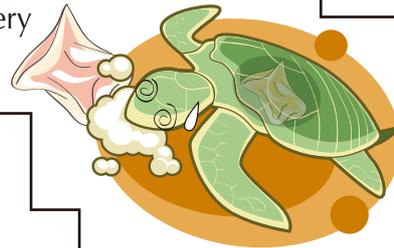
FALSE

TRUE

FALSE

TRUE

Marine animals can mistake plastic grocery bags for food



21 billion plastic water bottles are thrown in the trash each year.

FALSE

TRUE



TRUE

In some parts of the ocean there is six times as much plastic as plankton.

FALSE





14 billion pounds
of trash is dumped
into the ocean
each year?

T

F

TRUE FALSE

California recycling
centers pay 5¢ for
every bottle or
can you recycle.



TRUE Plastic trash in FALSE
the ocean never
truly biodegrades.

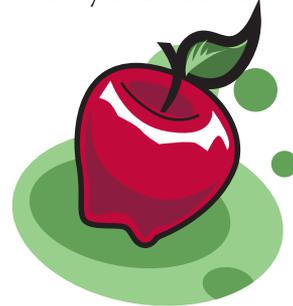
FALSE It is okay to throw
apple cores on the
ground because
they are natural.

TRUE

It is better to bring
a reusable grocery
bag from home than
to use paper or plastic.

TRUE

FALSE



What Can You Do?

There are 9.5 million people in Los Angeles County and if everyone picked up just one piece of trash it would make a HUGE difference.

The 3 R's Reduce Reuse Recycle

What are the 3 R's?

The 3 R's stand for reduce, reuse, and recycle. You can do many things to prevent pollution and save energy. Following the 3 R's makes it easy.

Reduce: It is the best choice! Do you really need a plastic bag from the grocery store? Save resources and just say, "No thanks!"

Reuse: Bring a bag from home to the store and use it over and over again.

Recycle: We hear about Recycling all the time, but it's not always the best choice. Recycling requires a lot of energy and not all materials can be recycled. Keep in mind, recycling is still better than throwing paper, a can or bottle in the trash.

What is Recyclable?



Most communities recycle clean, dry paper, aluminum cans, plastic bottles and glass. So look for a blue bin or a can with the chasing arrow symbol. If you can't find one call the County's recycling hotline at 1 (888) CLEAN LA, or visit www.888CleanLA.com.

Do Your Part!

Connect the R to it's definition and then to it's example.

RECYCLE

Use Less —Always the best choice



Cloth Bag

REDUCE

Takes energy, but better than throwing a can or bottle away.



Just say, "No Thanks!"

REUSE

Use it again and again.



Aluminum Can



RECYCLING CENTER
888-CLEAN LA

Cha-ching \$\$\$.
Did you know you could make money by recycling? Take your bottles & cans to a recycling center and make 5¢ per item!

Save water!

Conservation



Tips to Save Water and Keep it Clean

- Turn the water off while you brush your teeth.
- Take a 3-minute shower instead of a 5-minute shower.
- Turn off the water while soaping up your hands.
- When cleaning up your front yard, use a broom instead of a hose to prevent leaves, pesticides, and fertilizers from going down the storm drain.
- Before you throw anything on the ground, think about whether you would want to see it in your drinking glass (chewed gum, banana peels, motor oil -- yuck!).
- Check your house and school for leaky faucets.

Water Consumption Chart

WHAT YOU DO	WATER IT TAKES	HOW MANY TIMES A DAY?	*TOTAL GALLONS
Flushing a toilet	1.6 gallons		
Shower <i>avg. shower length is 8 (min.)</i>	5 gallons/min. <i>(old shower head)</i>		
	2.5 gallons/min. <i>(new shower head)</i>		
Taking a bath	40 gallons <i>(if tub is full)</i>		
Brushing teeth	3 gallons <i>(water left running)</i>		
	1 gallon <i>(water turned off)</i>		
Washing dishes	10 gallons		
Watering lawn	40 gallons		
Washing a car	40 gallons		

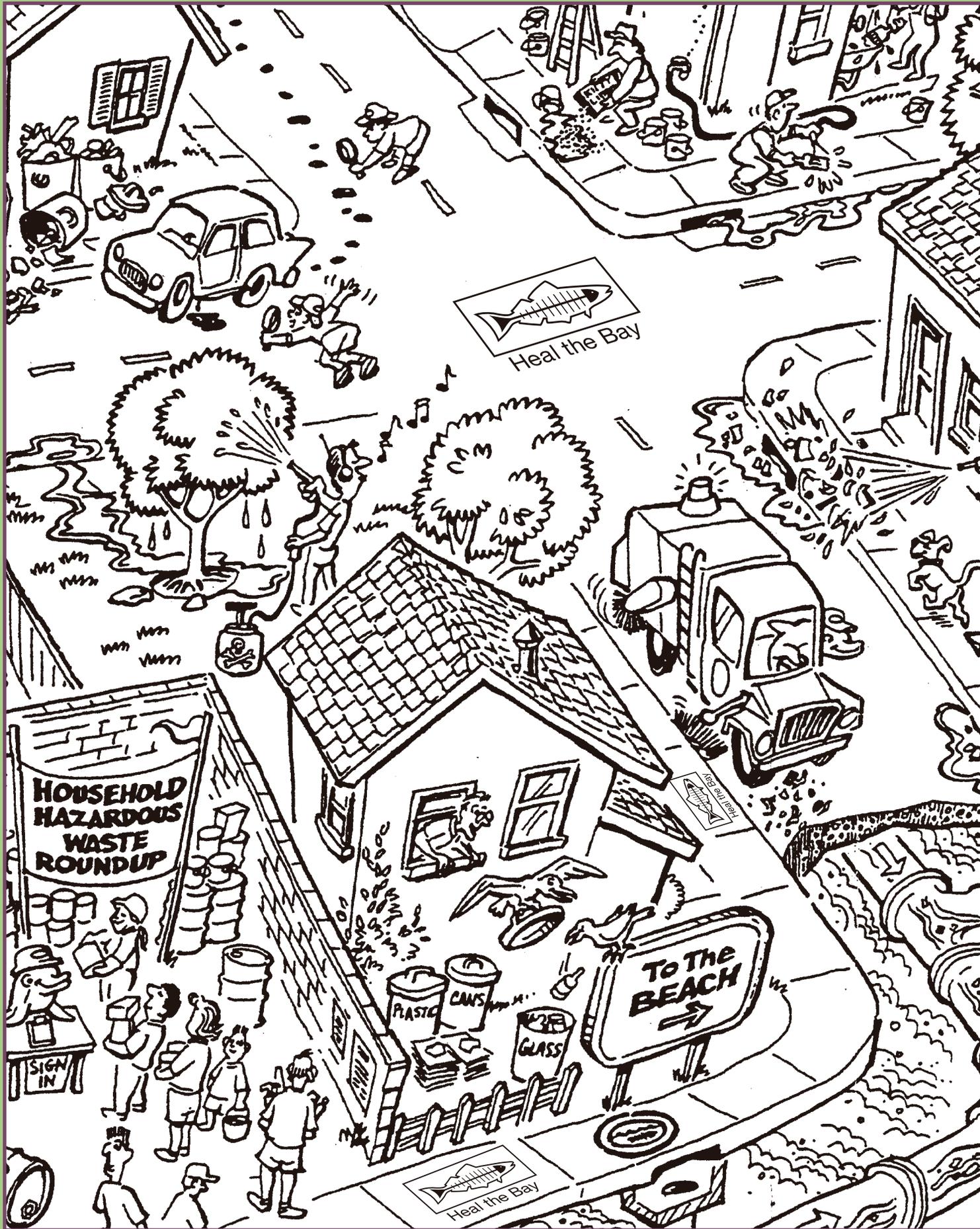
Water Use

The average person uses 120 gallons of water each day. Use the water consumption chart to find out how much water you use in one day.



Water Wise Chart adapted from the Waves, Wetlands, and Watersheds: California Coastal Commission Science Activity Guide www.coastforyou.org

* WATER IT TAKES X HOW MANY TIMES A DAY = TOTAL GALLONS





It's Everybody's Ocean

Get out your coloring markers and add some color to this page. As you color, circle whomever is keeping the ocean healthy and cross out whomever is not. Here's some things to think about:

- How does trash harm animals?
- How did the trash get there?
- Did the trash float in?
- Did the trash blow in?
- Did the trash get dumped in?



Brought to you by:
PROJECT
Pollution
PREVENTION

Une los 10 problemas de contaminación con la solución correcta. Coloca la letra de la columna de contaminación en la línea de la respuesta correcta. Luego encierra en un círculo el problema de contaminación y la solución de en la ilustración.

10 Formas de Curar la Bahía



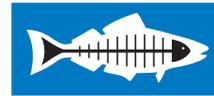
Heal the Bay te puede ayudar a mantener nuestro océano limpio.

Invita a un orador de Heal the Bay a que vaya a tu clase gratuitamente para pueda dar una plática sobre la contaminación oceánica.

www.healthebay.org/education

Entérate de divertidos eventos familiares como la limpieza de playas y festivales en el Acuario del Muelle de Santa Monica en

www.healthebay.org/calendar



Heal the Bay

Exploradores Del Agua Guía de Actividades

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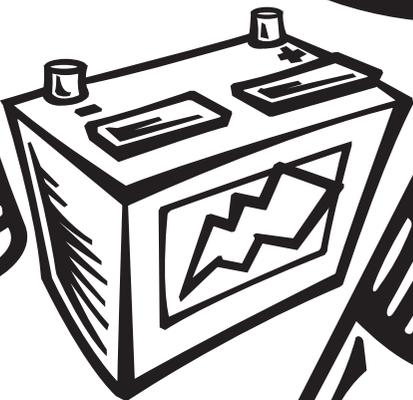
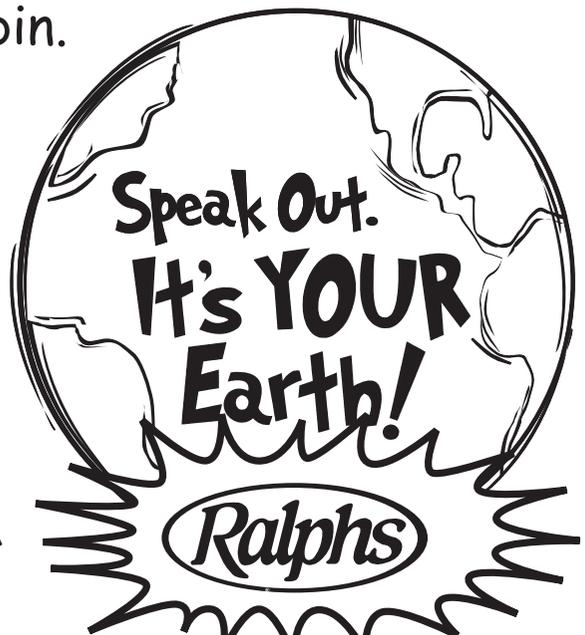
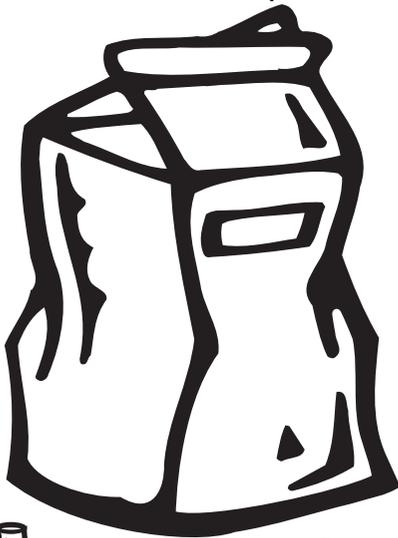
Para un grupo escolar, comuníquese al (800) HEAL BAY ext. 146 o descargue la guía en www.healthebay.org/education



Heal the Bay



Color ONLY the items that should go into the recycle bin.



Artist's Name _____

Age _____

Ralphs rewards

Gourmet Cookie

FREE

In the Service Bakery

Limit One Coupon & One Cookie. Coupon Effective thru 12/31/12.



Color your page and return your masterpiece to any Ralphs supermarket location and turn in your coupon for a FREE Cookie at the Service Bakery. Plus, Mom & Dad can save \$5.00 when they shop.

Ralphs rewards

Your Next \$50 or More Grocery Purchase

\$5.00 OFF

Purchase excludes alcohol, tobacco, money orders, postage stamps, gift cards/gift certificates, lottery, promotional tickets, fluid milk, milk products, CRV, tax and pharmacy purchases. Limit One Coupon per Customer. Coupon effective thru 12/31/12.

