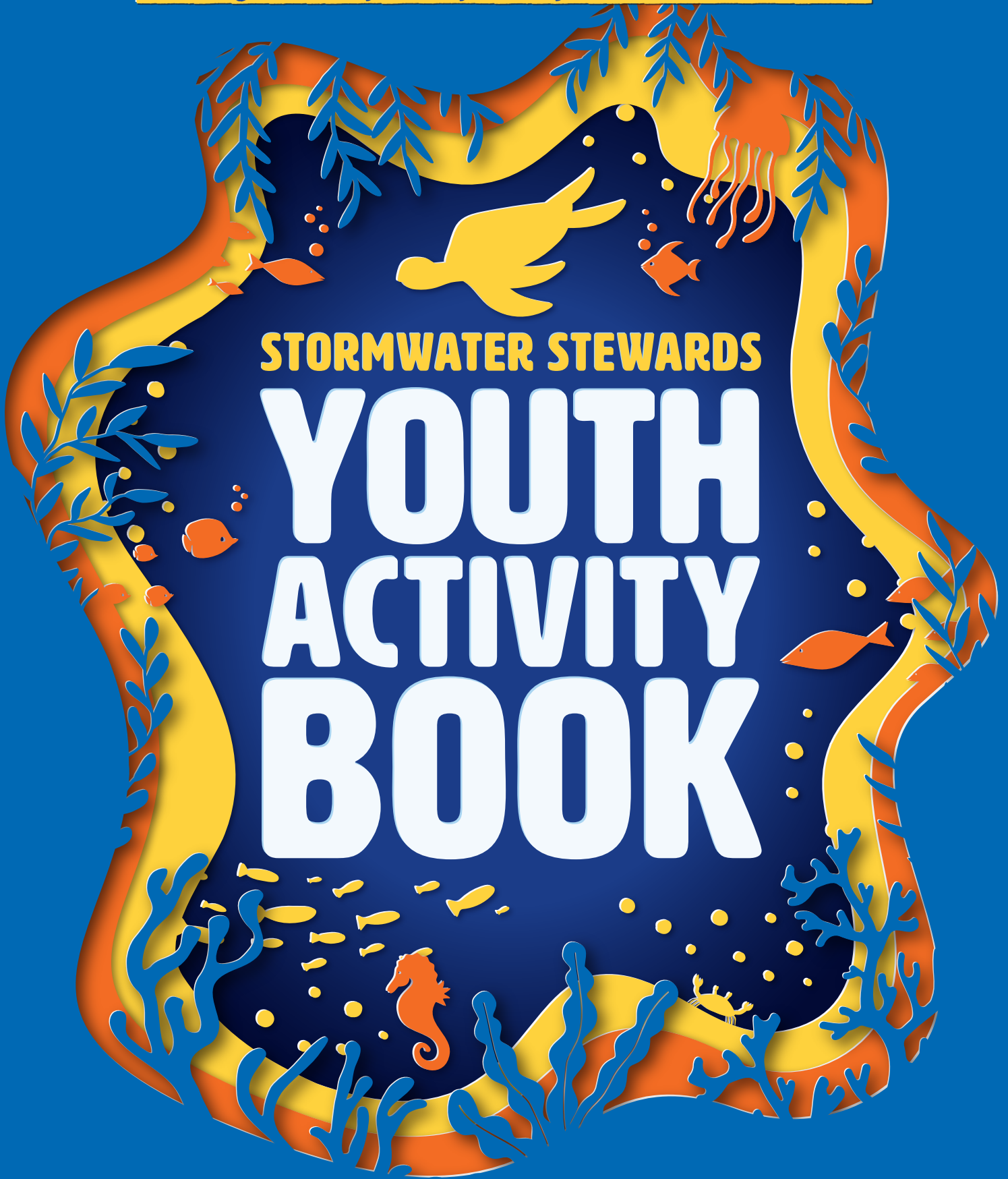


Brought to you by Project Clean Water



STORMWATER STEWARDS
YOUTH
ACTIVITY
BOOK

Activities provided by



Clean beaches, healthy creeks, rivers, bays and the ocean

are crucial to San Diego...



However, everyday activities can lead to water pollution if we're not careful. Items like litter, pet waste, chemicals and pollutants left on yards, sidewalks, streets and in gutters can flow through storm drains and pollute our waterways. Unlike treated water in sanitary sewers, storm drain water enters our water bodies untreated.

This activity book provides engaging activities that teach simple ways to safeguard San Diego's water resources to protect our watersheds and preserve the ocean. "Stormwater Stewards" is a collaborative effort by 21 governmental agencies. Our goal is to raise awareness about water pollution and empower individuals to make a positive environmental impact.

By participating in the activities outlined in this workbook, you'll learn how small changes in our daily lives can contribute to cleaner waterways and a healthier ocean. Each activity is designed to be fun and educational, enabling you to understand the importance of protecting our watersheds and promoting sustainable practices.

We invite you to embark on this exciting journey with us as we explore the wonders of our local watersheds and discover how we can all contribute to a cleaner, healthier San Diego region. Together, we can make a significant difference and ensure a brighter future for our water resources and the diverse ecosystems they support.

Eco-Glossary

Condensation

The process of gas changing to a liquid due to cooling temperatures. Condensation forms clouds.

Evaporation

The process of heat transforming liquid to gas.

Infiltration

The process where water soaks into the ground and helps to replenish our groundwater.

Pollutant

Materials such as litter, pet waste, motor oil and yard clippings that harm the environment.

Precipitation

Rain, snow, sleet or hail that falls from clouds due to decreased temperatures and a saturation of water vapor.

Runoff

Water from rain, sprinklers or hoses that travels through our streets, sidewalks and catch basins to storm drains where it flows directly into our creeks, rivers, bays and ocean.

Watershed

An area of land where water drains through a series of creeks, rivers and bays into a common body of water such as the ocean. Everyone lives, works and plays in a watershed.

Urban Run-off

Water from a hose or sprinkler that flows into the street.

Storm Drain

A pipe or channel that conveys water from rain or urban runoff flows. This water picks up pollutants on the way to the storm drain. Once in the storm drain, the water and pollutants flow untreated to the ocean.

Transpiration

The evaporation process of water from plants mostly through leaves, but also stems, flowers and roots as a result of undergoing photosynthesis.

Stormwater

Water from nature such as rain or snowmelt.

City of San Diego Mighty Mini-Sweeper

SWEEP-E



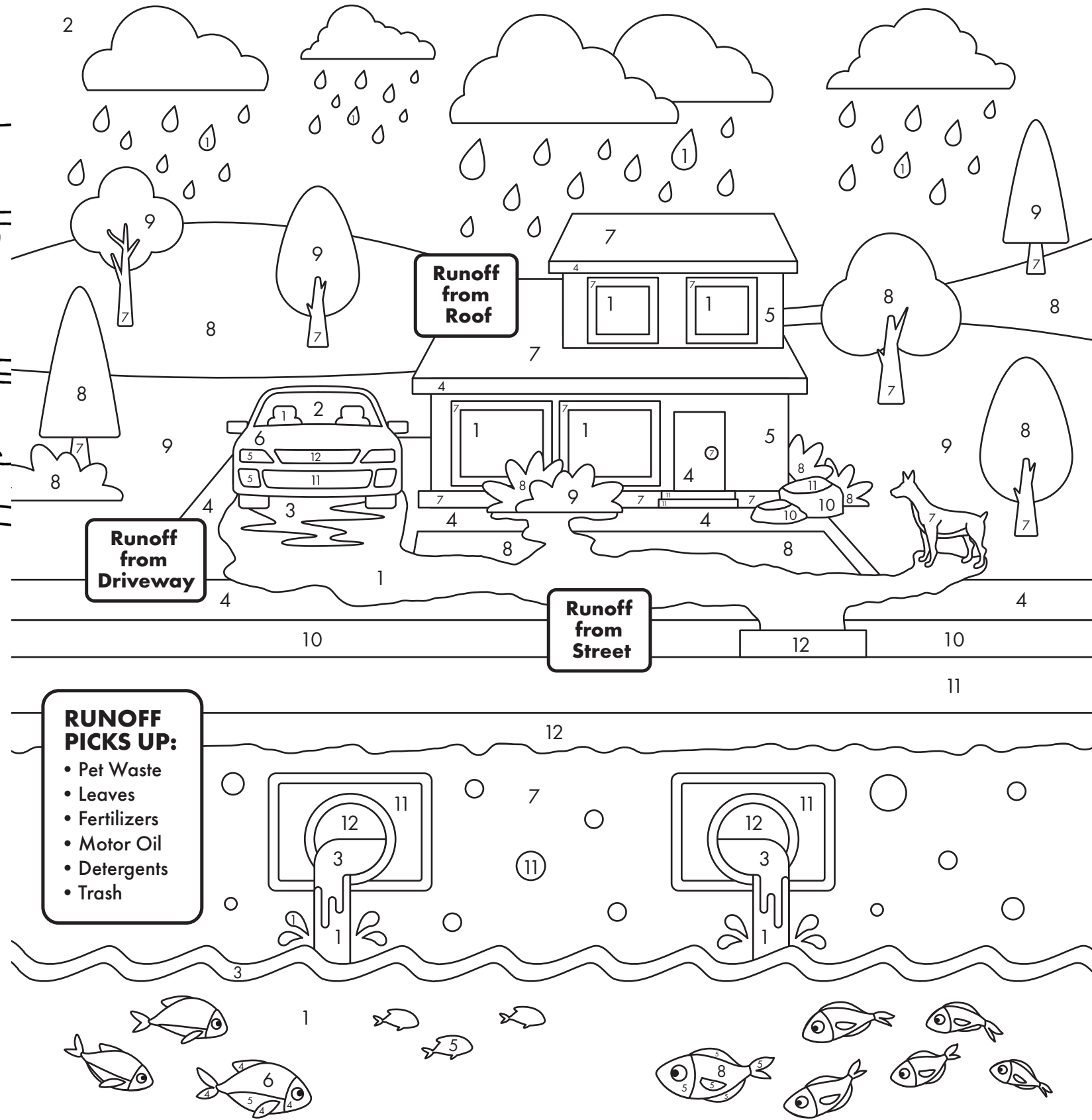
SWEEP-E can pick up and hold over 1 ton of trash & debris



STORMWATER RUNOFF CARRIES POLLUTANTS INTO OUR WATERWAYS



PROJECTCLEANWATER.ORG



RUNOFF PICKS UP:

- Pet Waste
- Leaves
- Fertilizers
- Motor Oil
- Detergents
- Trash

1. Blue 2. Light Blue 3. Purple 4. Tan 5. Orange 6. Red 7. Brown 8. Green 9. Light Green 10. Dark Grey 11. Light Grey 12. Black

Pollution Detectives

Can you find these common sources of pollution in your local park?

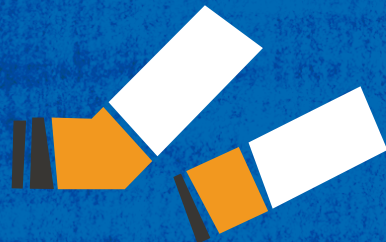
Plastic Bags

Look for discarded plastic bags caught in trees, bushes or on the ground. These bags can easily be carried away by wind or rain and end up in storm drains.



Cigarette Butts

Look for cigarette butts on sidewalks, in parks or near bus stops. These small items contain harmful chemicals that can wash into storm drains when it rains.



Beverage Cans and Bottles

Watch for empty soda cans, water bottles and juice boxes. These containers can contribute to litter and potentially pollute stormwater if not correctly disposed of.



Food Wrappers

Search for fast food wrappers, snack wrappers or empty chip bags that have been discarded improperly. These items can easily be blown into storm drains during windy weather.



Remember

Don't touch or interact with the source of pollution directly. Just observe and promote responsible behaviors to protect stormwater and prevent pollution.

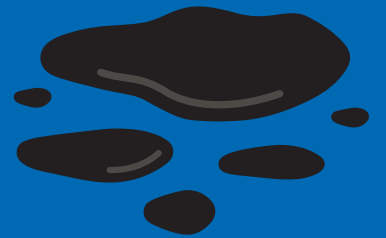
Dog Waste

Spot dog waste that still needs to be cleaned up. They can identify areas where pet owners may need reminders about picking up after their pets to prevent stormwater contamination.



Oil Stains

Point out any dark, oily stains on the pavement or parking lots. These stains may indicate leaked motor oil from vehicles, which can eventually find its way into storm drains.



Puddles with Rainbow Sheens

Look for rainbow-colored sheens on puddles or standing water. These sheens often indicate the presence of oil or other pollutants, which can harm the environment.



Overflowing Trash Bins

Observe overflowing trash bins or areas with scattered litter. Children can take note of these locations to promote proper waste disposal and prevent litter from entering storm drains.



Broken Sprinkler Heads

Look for broken or malfunctioning sprinkler heads in lawns or gardens. These broken heads can cause excessive water runoff, leading to erosion and potentially carrying pollutants such as fertilizers into storm drains.



Project Clean Water:

Empowering Youth Stormwater Stewards



At Project Clean Water, we believe in the power of youth as environmental stewards and champions for change. Our mission is to engage and educate young individuals in becoming proactive Stormwater Stewards, safeguarding the health of our waterways and creating a sustainable future.

Through interactive programs and hands-on activities, we empower youth to take action and make a difference in their communities. We provide them with the knowledge and tools to understand the importance of stormwater management and the impact of pollution on our watersheds.

By fostering a sense of environmental responsibility, we inspire young minds to become Pollution Detectives, investigating and identifying sources of pollution in their neighborhoods. They learn to protect our watersheds by keeping their communities clean, preventing litter and promoting responsible waste disposal.

We nurture a sense of ownership and pride in our local ecosystems through initiatives like the Pollution Detective Challenge and the Watershed Warriors Program. Youth participants engage in drainage marking, rain garden design and water pollution experiments, equipping them with practical skills and knowledge to mitigate stormwater pollution.

Our goal is to cultivate a generation of passionate advocates for clean water, equipping them with the tools, resources and confidence needed to drive meaningful change. By engaging youth as Stormwater Stewards, we aim to create a ripple effect beyond the individual, inspiring their peers, families and communities to take collective action.

We can build a future where clean and healthy waterways are cherished and protected. Join us at Project Clean Water as we empower youth to become the next generation of leaders, working towards a sustainable and vibrant environment for all.

What is Project Clean Water?

Project Clean Water is a county-wide initiative dedicated to protecting water quality in San Diego County. Project Clean Water supports efforts encouraging greater awareness of everyday actions people can take to reduce runoff and stormwater pollution. The Project Clean Water website, ProjectCleanWater.org, serves as a resource to the public on water quality information and a Regional Clearinghouse of regional water quality data for State and Federal regulatory bodies.

Who is involved in Project Clean Water?

Project Clean Water involves everyone who lives in San Diego County. The initiative is coordinated through 21 governmental agencies, the County, Port of San Diego, San Diego International Airport, and the 18 incorporated cities within the county, and it aims to involve a wide range of regional groups, nonprofits, businesses and individuals.

Why is this issue important?

Project Clean Water is about supporting clean water and healthy communities. Many people are not aware that stormwater entering our storm drains is not treated, which means pollutants from runoff, including trash, chemicals, pet waste and more, can contaminate our rivers, lagoons and the ocean. The good news is that each of us can take steps to reduce this potential damage.

Water Pollution Experiment

Conduct a simple science experiment to demonstrate the effects of pollution on water quality. Children can fill separate containers with clean water and water mixed with pollutants like oil, food coloring or dirt. Observe and discuss the differences in clarity and appearance.

Materials Needed

- Several clear containers or jars
- Clean water
- Pollutants such as oil, food coloring and dirt
- Stirring utensil (e.g., spoon or stick)
- Optional: Magnifying glass or microscope for closer observation



Procedure:

- 1** Gather the clear containers or jars and label them accordingly (e.g., "Clean Water," "Water + Oil," "Water + Food Coloring," "Water + Dirt").
- 2** Fill each container with the same amount of clean water. Ensure the water level is consistent in each container.
- 3** Choose one pollutant to add to each container. For example:
 - In the "Water + Oil" container, add a small amount of oil and stir gently.
 - In the "Water + Food Coloring" container, add a few drops of food coloring and stir.
 - In the "Water + Dirt" container, sprinkle some dirt or soil into the water and stir.
 - Leave one container labeled as "Clean Water" without any added pollutants.
- 4** Observe and discuss the initial appearance of each container. Take note of the color, clarity and any visible changes.
- 5** Allow the containers to sit undisturbed for some time (at least a few hours or overnight) to allow the pollutants to settle.
- 6** After the designated time has passed, observe and compare the containers again. Discuss the changes that have occurred.
 - Notice the differences in clarity, color and overall appearance between the containers with pollutants and the clean water.
 - Observe any sediment, floating particles or changes in transparency.
- 7** Encourage discussion and ask questions:
 - What did you observe in the containers with pollutants compared to the clean water?
 - How do pollutants affect the clarity and appearance of water?
 - Why is it important to keep our water clean and free from pollutants?
- 8** Optional: Use a magnifying glass or microscope to examine the water samples more closely, observing any microscopic particles or changes.

Note: After the experiment, it is essential to properly dispose of the polluted water and contaminants according to local regulations. Ensure that children understand the importance of protecting our water sources and the consequences of pollution.

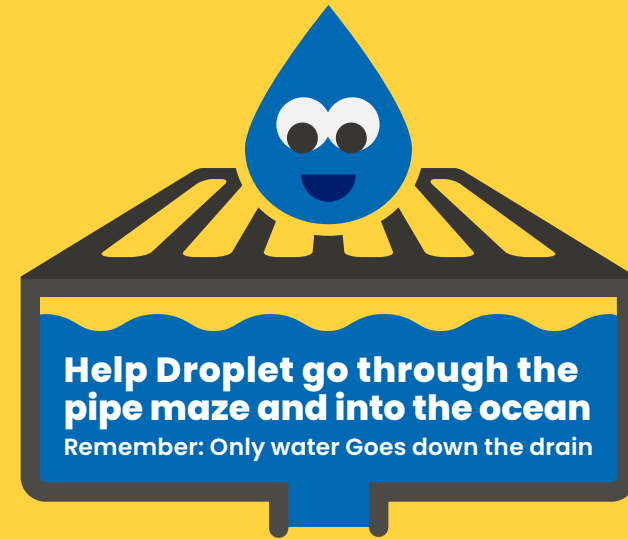
Welcome to the Stormwater Maze Adventure

Get ready to learn about the journey of stormwater through a maze representing a stormwater system. Help our character navigate the maze while avoiding pollutants and making environmentally friendly choices.

Let's begin!

Tips

- Read each description or prompt carefully before making a choice.
- Think about the potential consequences of your actions on the environment.
- Stay focused and trace the path accurately to avoid getting lost in the maze.



Instructions:

- 1 Start at the beginning of the maze and guide the character towards the endpoint, representing the ocean or a clean water body.
- 2 Use a pencil or your finger to trace the path through the maze—make sure to follow the arrows and stay within the maze borders.
- 3 Along the way, you'll encounter various obstacles representing common pollutants found in stormwater. Avoid these pollutants by taking alternative paths or making eco-friendly choices.
- 4 Whenever you come across a pollutant obstacle, read the description or prompt associated with it and choose the environmentally friendly action to take.
- 5 Make sure to follow the correct path based on your chosen action. If you make the right choice, continue on the correct path. If you make the wrong choice, the maze might lead you back to a previous point to try again.
- 6 Keep navigating through the maze, making smart choices and avoiding pollutants, until you reach the endpoint representing the clean water body.
- 7 Congratulations! You successfully helped our character navigate the stormwater system maze while protecting our waterways. Take a moment to reflect on the importance of making environmentally friendly choices to keep our water clean.



Remember, the Stormwater Maze Adventure is not just a fun activity, but also an opportunity to learn about stormwater pollution and how our choices can make a difference. Have fun exploring the maze and discovering the importance of protecting our water resources!

Stormwater Stewards Quiz

Develop an interactive quiz that tests children's knowledge of stormwater protection. Include questions about pollution prevention practices, the role of storm drains, and the impacts of pollution on ecosystems. Offer small rewards or certificates for completing the quiz successfully.

What is stormwater?

- a Rainwater that is collected for drinking purposes.
- b Water from melting snow that fills rivers and lakes.
- c Water from rain or snow that flows over the ground and into storm drains.

What is the purpose of a rain garden?

- a To collect rainwater for gardening purposes.
- b To create a beautiful garden with colorful flowers.
- c To absorb and filter stormwater runoff.

Why is it important to protect stormwater in San Diego?

- a To protect watersheds from pollution.
- b To keep our communities clean.
- c To protect marine life.
- d All of the above.

What should you do with household chemicals and paint?

- a Pour them down the storm drain.
- b Dispose of them in the trash.
- c Take them to a hazardous waste collection facility.

Which of the following can contribute to stormwater pollution?

- a Trash and litter.
- b Motor oil and pet waste.
- c Fertilizers and pesticides.
- d All of the above.

True or False: Storm drains connect directly to rivers and oceans.

- a True
- b False

How can you help prevent stormwater pollution in your community?

- a Pick up litter and dispose of it properly.
- b Use environmentally-friendly products.
- c Limit the use of pesticides and fertilizers.
- d All of the above.

What is the main purpose of marking storm drains with pollution prevention messages?

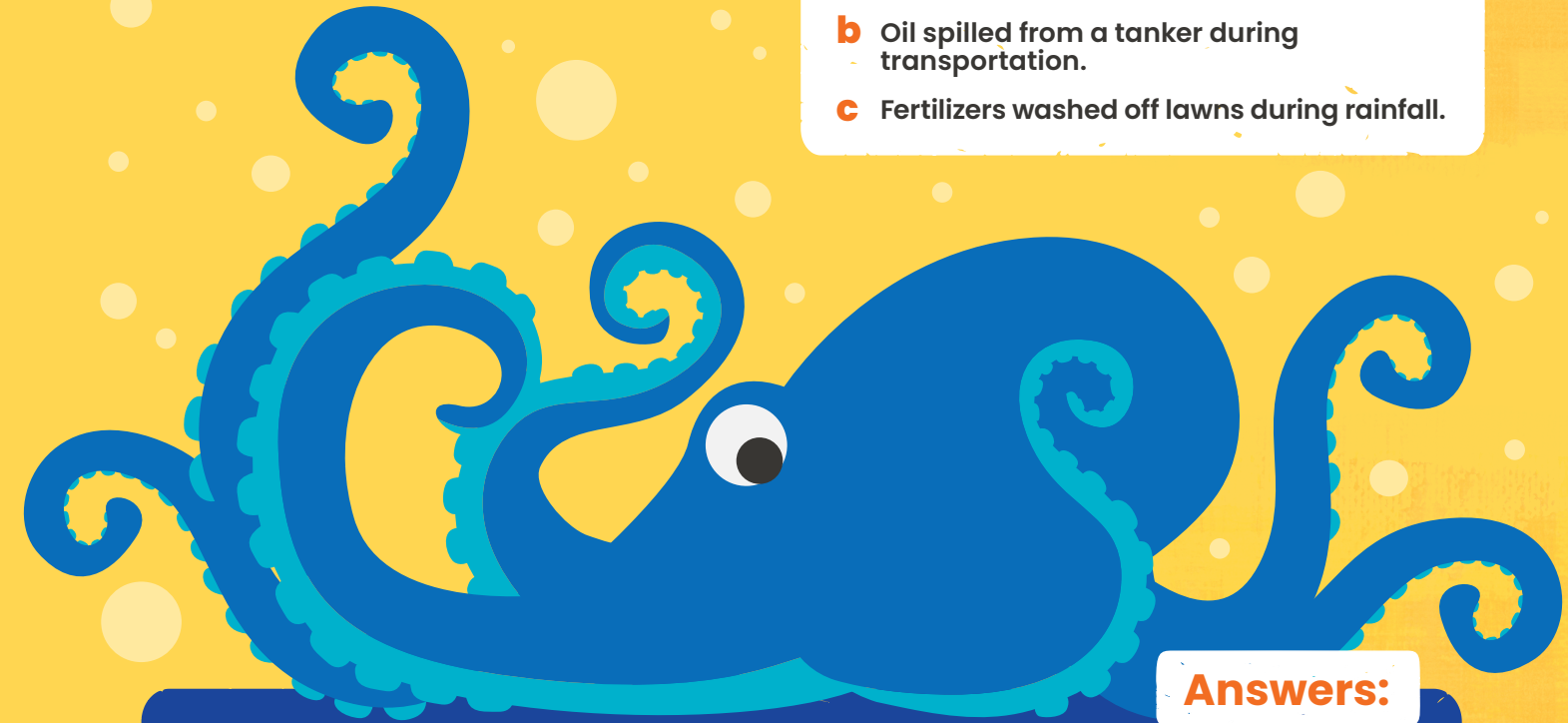
- a To create beautiful artwork in the neighborhood.
- b To raise awareness about stormwater pollution.
- c To indicate that the drain is clogged and needs cleaning.

What is a watershed?

- a A type of rainstorm.
- b An area of land that drains into a specific body of water.
- c A tool used to measure rainfall.

Which of the following is an example of non-point source pollution?

- a A factory releasing chemicals directly into a river.
- b Oil spilled from a tanker during transportation.
- c Fertilizers washed off lawns during rainfall.

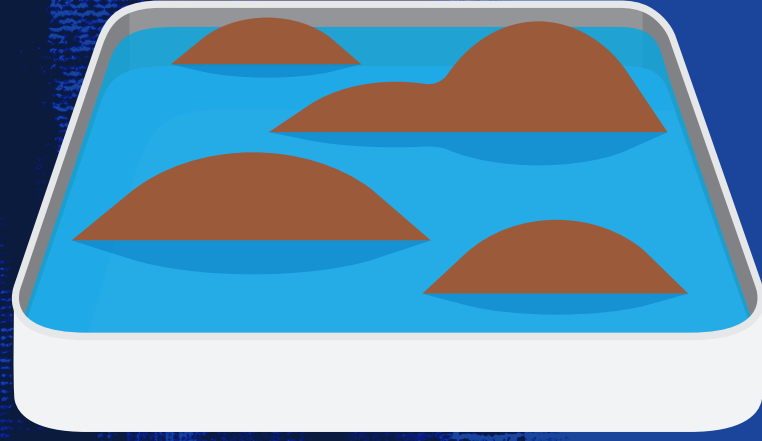


Answers:

- 1 (c) Water from rain or snow that flows over the ground and into storm drains.
- 2 (d) All of the above.
- 3 (d) All of the above.
- 4 (c) To absorb and filter stormwater runoff.
- 5 (c) Take them to a hazardous waste collection facility.
- 6 (b) False.
- 7 (d) All of the above.
- 8 (b) To raise awareness about stormwater pollution.
- 9 (b) An area of land that drains into a specific body of water.
- 10 (c) Fertilizers washed off lawns during rainfall.

Watershed Model

Build a simple watershed model using sand, rocks, and small containers to represent different land features and bodies of water. Children can pour water onto the model and observe how it flows and collects in various areas, understanding the concept of stormwater runoff and pollution transport.



Materials Needed

- Large tray or shallow container
- Clay or modeling clay
- Sand
- Small rocks or pebbles
- Plastic toy animals or figurines
- Blue food coloring
- Water spray bottle
- Small plastic cups or containers
- Paper and markers (optional for labeling)

Procedure:

- Place the large tray or shallow container on a flat surface that can easily be cleaned or outside where water spillage is not a concern.
- Use clay or modeling clay to shape and create hills and mountains in one area of the tray. These will represent the high points of your watershed.
- Spread sand around the clay formations to cover the rest of the tray. This will represent the flat and lower-lying areas of your watershed.
- Place small rocks or pebbles along the clay formations and scattered throughout the sand. These rocks will represent natural features like trees, bushes and plants.
- Place plastic toy animals or figurines in different areas of the watershed to represent people and wildlife.
- Fill a small plastic cup or container with blue-colored water using the food coloring. This cup will represent a water source or a lake within the watershed.
- Position the water source cup at the highest point of the clay formations.
- Using the water spray bottle, gently spray water from the water source cup to simulate rainfall. Observe how the water flows down the hills and mountains, through the sand, and around the rocks and figurines.
- Observe and discuss how the water moves and collects in different areas, forming streams and rivers within the watershed.
- Take note of how the water interacts with the landscape and identify areas where it may accumulate or flow more quickly.
- Optionally, you can label different parts of the watershed model, such as hills, streams, rivers and the water source, using paper and markers.
- Experiment with different scenarios by adjusting the clay formations, adding barriers, or creating channels to observe changes in water flow patterns.
- Discuss the importance of watersheds, how they function, and how human activities can impact water quality and the ecosystem.
- Finally, have fun exploring and interacting with your watershed model, observing how water moves and understanding the concept of a watershed.

Note: It's important to properly dispose of the water used in the model to prevent any environmental impacts. Also, remind children not to ingest or touch the blue-colored water, as it may stain or be harmful if ingested.

52 WAYS TO H₂O

I PLEDGE TO TAKE 52 ACTIONS TO PROTECT MY WATER

01 <input type="checkbox"/> W	Get ready for another year of loving your water! Whether you are recommitting or signing up for the first time, head over to ProjectCleanWater.org and take the pledge.	02 <input type="checkbox"/> W	Hey San Diego youth! Want to get involved? Sign up on our youth platform to connect with other water guardians.	03 <input type="checkbox"/> W	August is National Water Quality Month! This month, learn how you can monitor and find ways you can take care of the water in your area.	04 <input type="checkbox"/> W	Visit ProjectCleanWater.org and use "Find My Watershed" to discover which watershed you live in.
05 <input type="checkbox"/> W	Opt for reusable or washable cups, utensils or straws at your next outdoor picnic or BBQ.	06 <input type="checkbox"/> W	Bring a small trash bag on your next hike or nature walk and pick up trash you see on your adventure.	07 <input type="checkbox"/> W	This summer, participate in local cleanup events to remove litter from your favorite parks, playgrounds, and outdoor spaces.	08 <input type="checkbox"/> W	September 16 is World Cleanup Day. Take time to pick up trash in your area, or participate in "Love a Clean San Diego's Coastal Cleanup Day on September 23!"
09 <input type="checkbox"/> W	Take your car to a car wash instead of washing it in your driveway, or wash your car on your lawn to ensure runoff does not enter a storm drain.	10 <input type="checkbox"/> W	Rebate Incentive: Upgrade your irrigation. Get a free audit and upgrade your irrigation system for water and cost savings.	11 <input type="checkbox"/> W	Get familiar with common stormwater pollutants and reduce your own contribution of those pollutants.	12 <input type="checkbox"/> W	Share information with friends, family, and neighbors to raise awareness about stormwater pollution prevention.
13 <input type="checkbox"/> W	Plant a rain garden. Plant native plants or flowers in low or sloped areas of your yard to catch rainwater runoff.	14 <input type="checkbox"/> W	Celebrate America Recycles Day by only using reusable items today.	15 <input type="checkbox"/> W	World Soil Day was Dec. 5th. Research what kind of soil suits the plants in your yard to help retain storm water.	16 <input type="checkbox"/> W	Find out more information about rain barrels and look into using one on your property to capture rain water.
17 <input type="checkbox"/> W	Prevent stormwater pollution by making sure your outdoor trash cans are not overflowing.	18 <input type="checkbox"/> W	Remove any stands, ornaments, lights or tinsel from your tree before you put it out for collection.	19 <input type="checkbox"/> W	Bring reusable bags with you during your holiday shopping.	20 <input type="checkbox"/> W	Reduce your waste by opting for eco-friendly or repurposed gift wrapping and packaging.
21 <input type="checkbox"/> W	Feb 2nd is World Wetlands Day. Go visit a local wetland and enjoy the wildlife. Take a photo and tag us!	22 <input type="checkbox"/> W	Use compost in your garden to conserve moisture, reduce runoff and to support ongoing vegetation.	23 <input type="checkbox"/> W	Skip watering before, during and after rain since your lawn or garden will have been watered naturally.	24 <input type="checkbox"/> W	Keep all household and landscaping items out of the storm drain. Remember, only rain in the storm drain!
25 <input type="checkbox"/> W	Arrange for a bulky item pick up for your spring cleaning.	26 <input type="checkbox"/> W	It's fix a leak week! Check out our blog for tips on how you can prevent water waste and pollution.	27 <input type="checkbox"/> W	Use a Landscape Watering Calculator to create a watering schedule based on your zip code, soil and sprinkler type in your irrigation zone.	28 <input type="checkbox"/> W	Take an unwanted item to a licensed drop off zone.
29 <input type="checkbox"/> W	Get familiar with your local recycling options and guidelines.	30 <input type="checkbox"/> W	Choose quality pet toys, or sustainable toys made from compostable fabric, that has minimal packaging to cut down on unnecessary waste.	31 <input type="checkbox"/> W	Celebrate National Recycling Month by replacing one single-use plastic item with a sustainable alternative.	32 <input type="checkbox"/> W	Adjust sprinklers to avoid watering sidewalks, driveways or other impervious surfaces.
33 <input type="checkbox"/> W	Avoid single-use waste and use cutlery that you can wash and reuse.	34 <input type="checkbox"/> W	Wear eco-friendly, mineral-based sunscreens. Mineral-based sunscreens are safer for the environment and coral reefs.	35 <input type="checkbox"/> W	Celebrate National Recycling Month by replacing one single-use plastic item with a sustainable alternative.	36 <input type="checkbox"/> W	To protect the environment from fats, oil and grease pollution, capture cooking oil in a sealable container before placing in the trash.
37 <input type="checkbox"/> W	Get familiar with your local recycling options and guidelines.	38 <input type="checkbox"/> W	When bathing your pets outdoors, ensure you are using shampoo that is natural, biodegradable or chemical-free.	39 <input type="checkbox"/> W	Celebrate National Recycling Month by replacing one single-use plastic item with a sustainable alternative.	40 <input type="checkbox"/> W	Celebrate Earth Day by participating in a beach or river clean-up.
41 <input type="checkbox"/> W	Get familiar with your local recycling options and guidelines.	42 <input type="checkbox"/> W	Drop off any non-working appliances at your local scrap metal recycler.	43 <input type="checkbox"/> W	Use much around plants to retain moisture and reduce the need for frequent watering.	44 <input type="checkbox"/> W	Donate a usable item to charity.
43 <input type="checkbox"/> W	Get familiar with your local recycling options and guidelines.	44 <input type="checkbox"/> W	When bathing your pets outdoors, ensure you are using shampoo that is natural, biodegradable or chemical-free.	45 <input type="checkbox"/> W	Use our Report Pollution tool if you see anything other than water from a rain event in the curb, gutter, alley or street.	46 <input type="checkbox"/> W	Donate a usable item to charity.
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Pledge to take one action each week to protect your waterways.
projectcleanwater.org/52

W Youth friendly



52 WAYS TO H_2O

PLEDGE TO PROTECT YOUR WATER
Take Small Actions to Reduce Stormwater Pollution

Put your name here

I pledge to:

projectcleanwater.org/52

