Professor Purrkis Ponders Purple Pipes

A story about recycled water

Authored and Illustrated by
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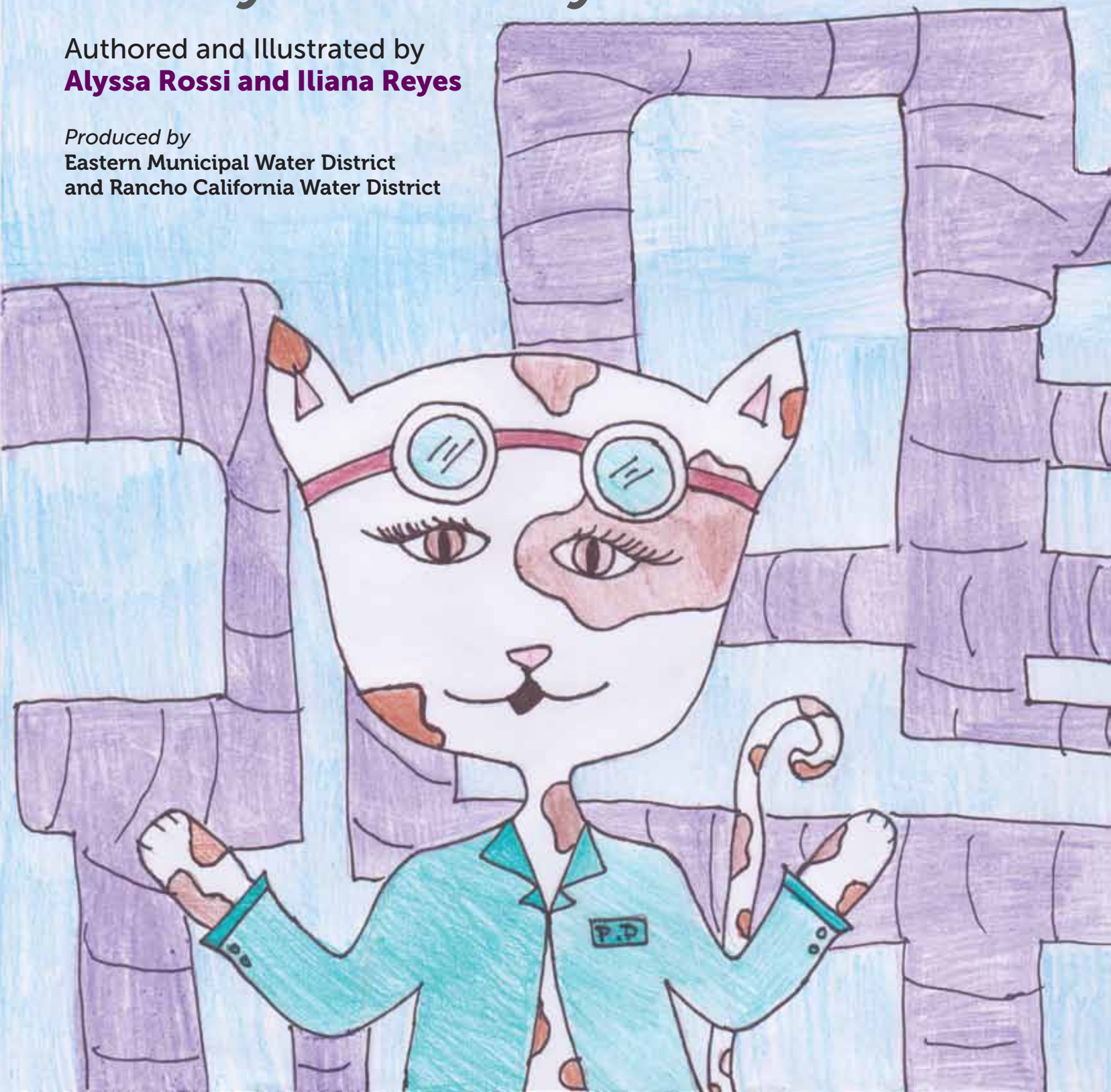
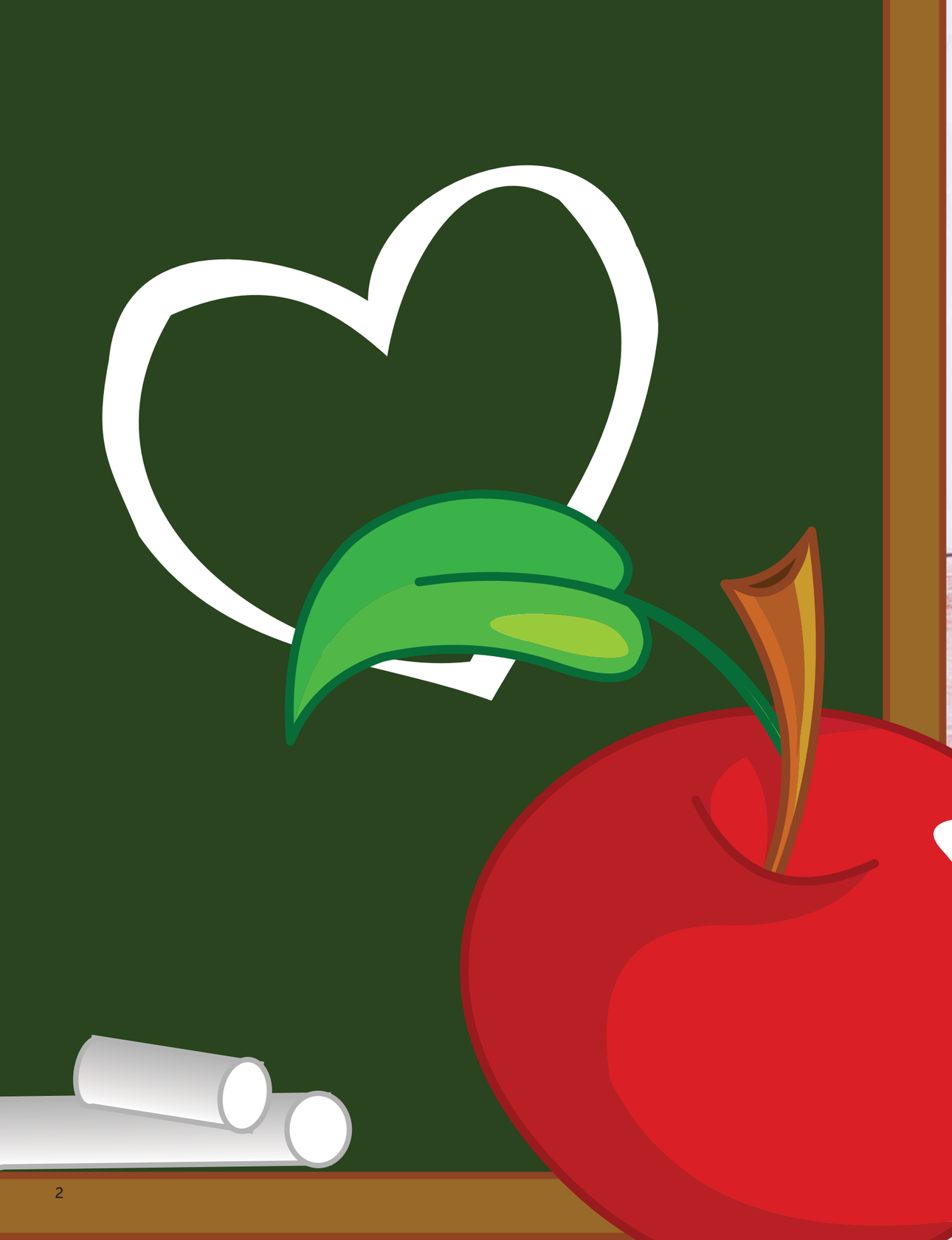
Produced by
Eastern Municipal Water District
and Rancho California Water District

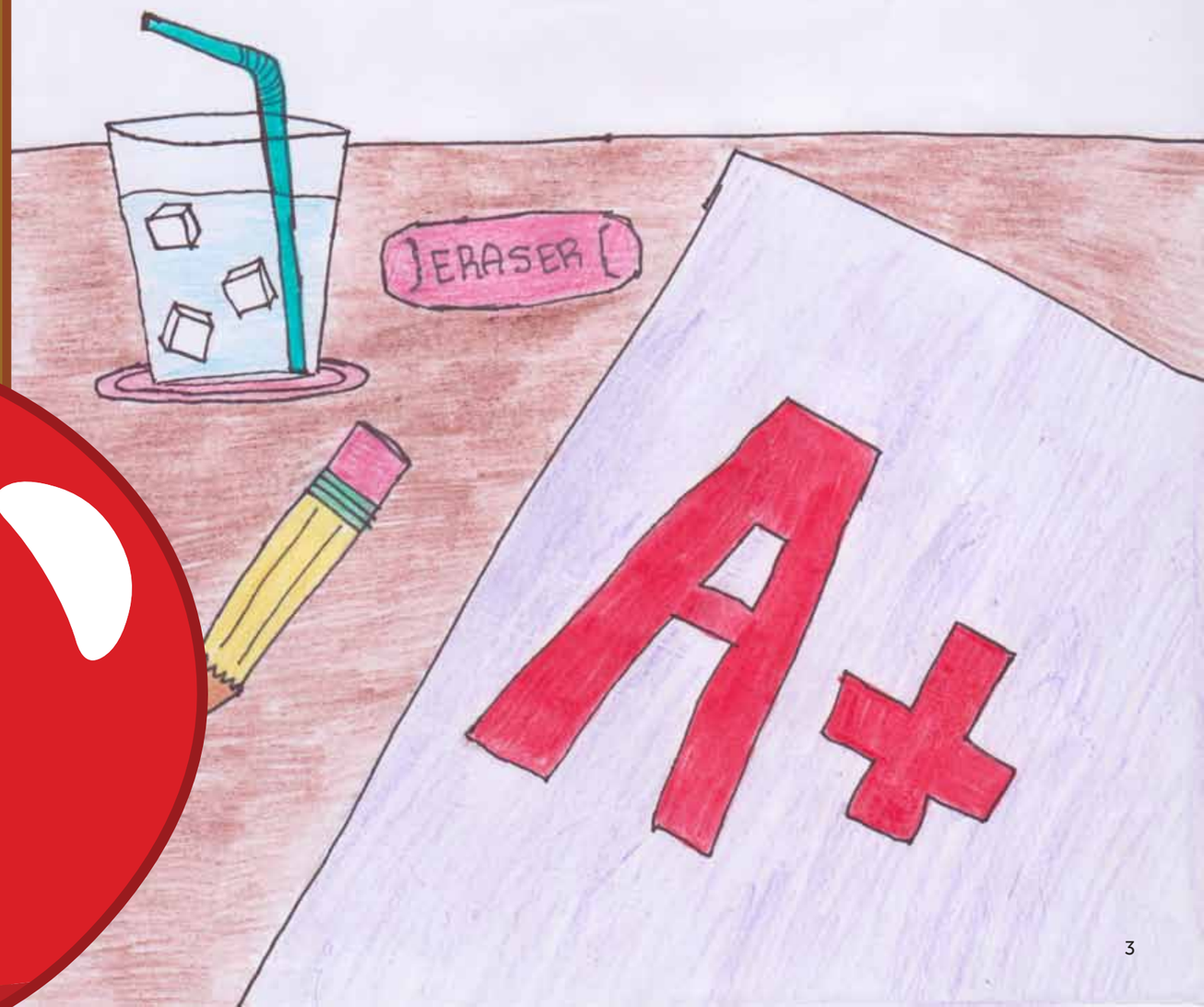




This story is dedicated to:

Mrs. Sarkis

(Otherwise known as . . . Professor Purrkis ☺)



"In two weeks we will learn about recycled water when we visit the Eastern Municipal Water District Regional Water Reclamation Facility," said the teacher, Mr. Hoo. "To prepare for the trip, I want you to create a poster about the process of recycling water. It will be due next week, and you may work together with two other friends. Make sure to work on it over the weekend. Class is dismissed! Have a great day! Remember to think purple!"

Otis Turtle, Claire Bear, and Presley Peacock agreed to work together to create their poster at Claire's house.

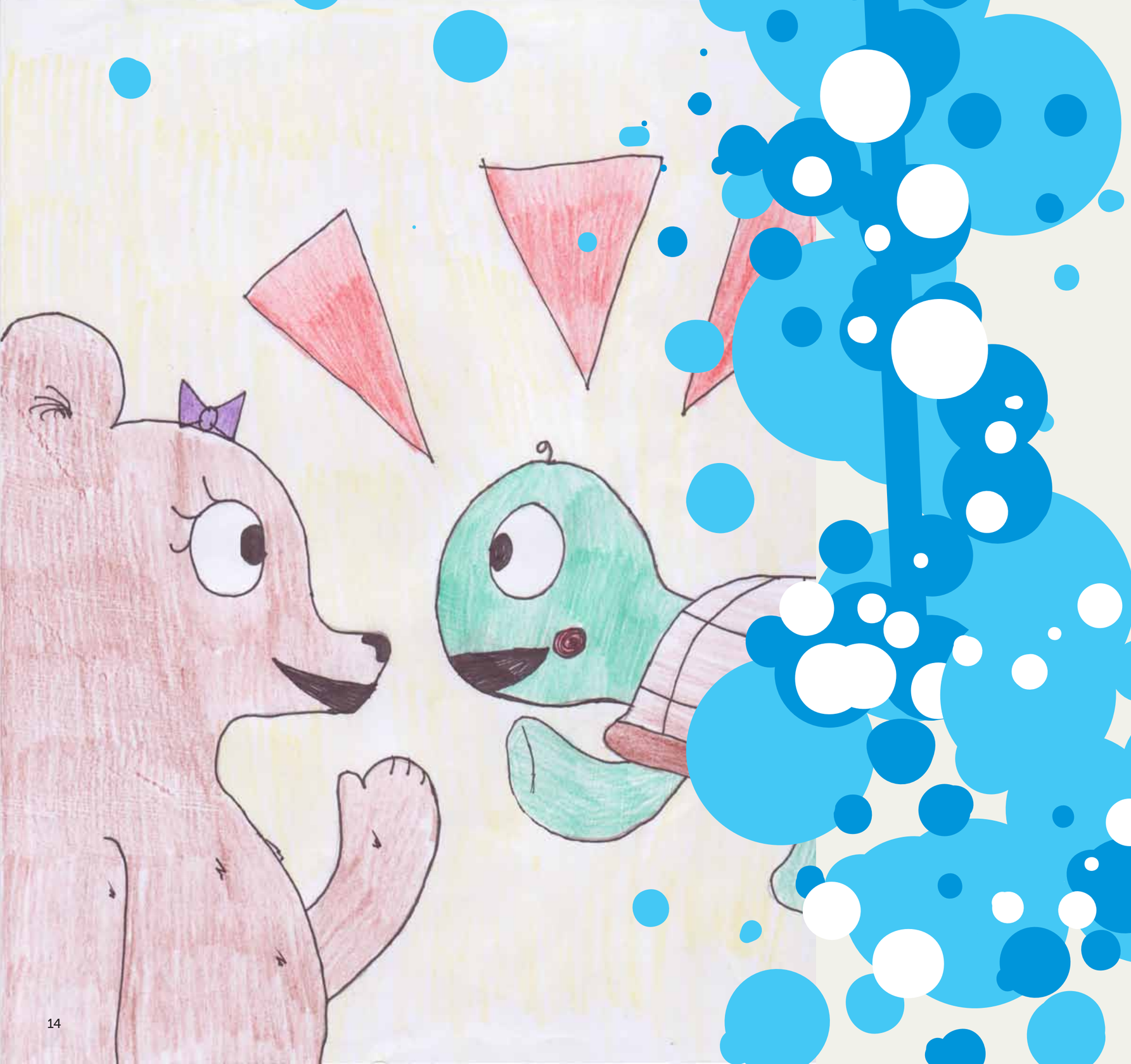
Presley and Otis called their moms to ask if they could go to Claire's house. Both moms said yes, and so the three friends headed over to Claire's house.

Mrs. Bear said hello to everyone and asked, “How about some cookies and milk while you tell me about your day at school?”

“Sure!” they all replied. Kids can’t resist cookies and milk.

As Mrs. Bear poured the milk, she asked, “What do you have to do for homework?”

“We have to make a poster about recycled water,” Presley replied. “It is due next week.”

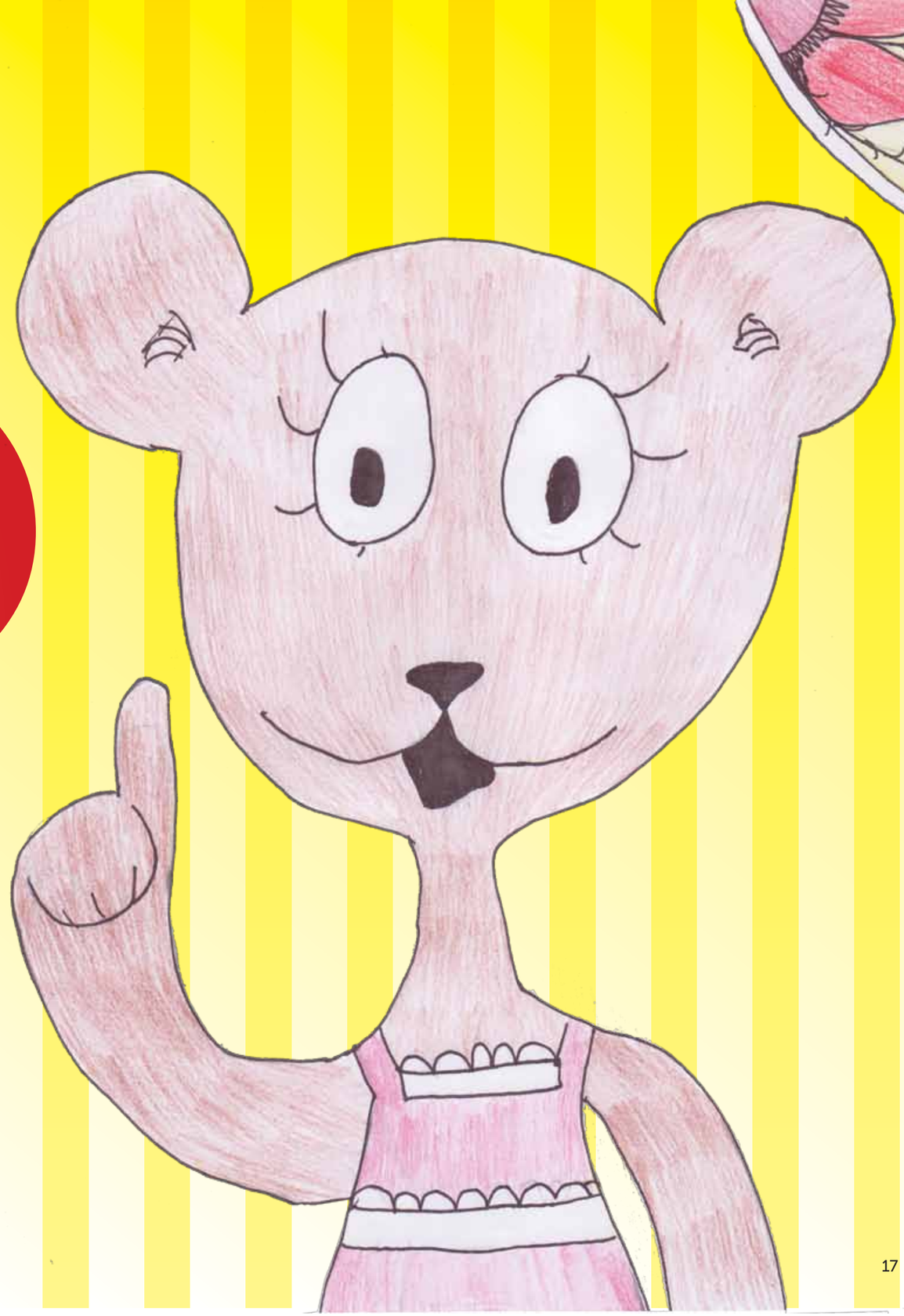


"Before we start, we have to learn where recycled water comes from," Claire said.

"Oh I think I know!" Otis said excitedly. "It comes from a magical water wizard that grants people any kind of water they want!"

"Not quite, Otis," Mrs. Bear said. "Why don't you go to Professor Purrkis's house? She said she is available anytime you have questions or need help on school projects. I will be happy to drive you to her home."

The three friends agreed that it was a good idea and headed for the car.

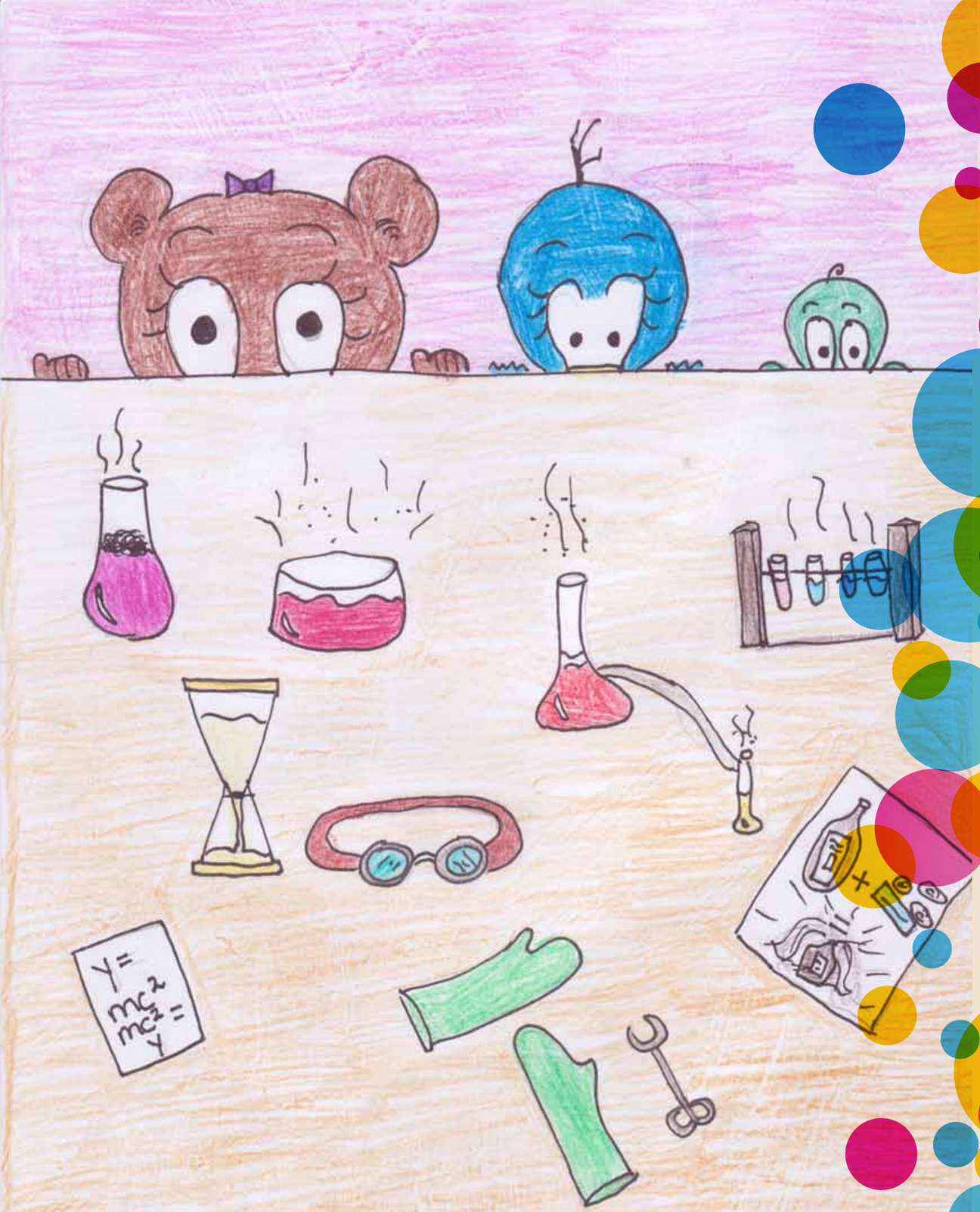


Mrs. Bear drove the kids to
Professor Purrkis's house.

When they arrived,
Claire knocked on the door, while
Mrs. Bear waited in the car. Professor Purrkis
opened the door and greeted them.

“Please come in!” she said.

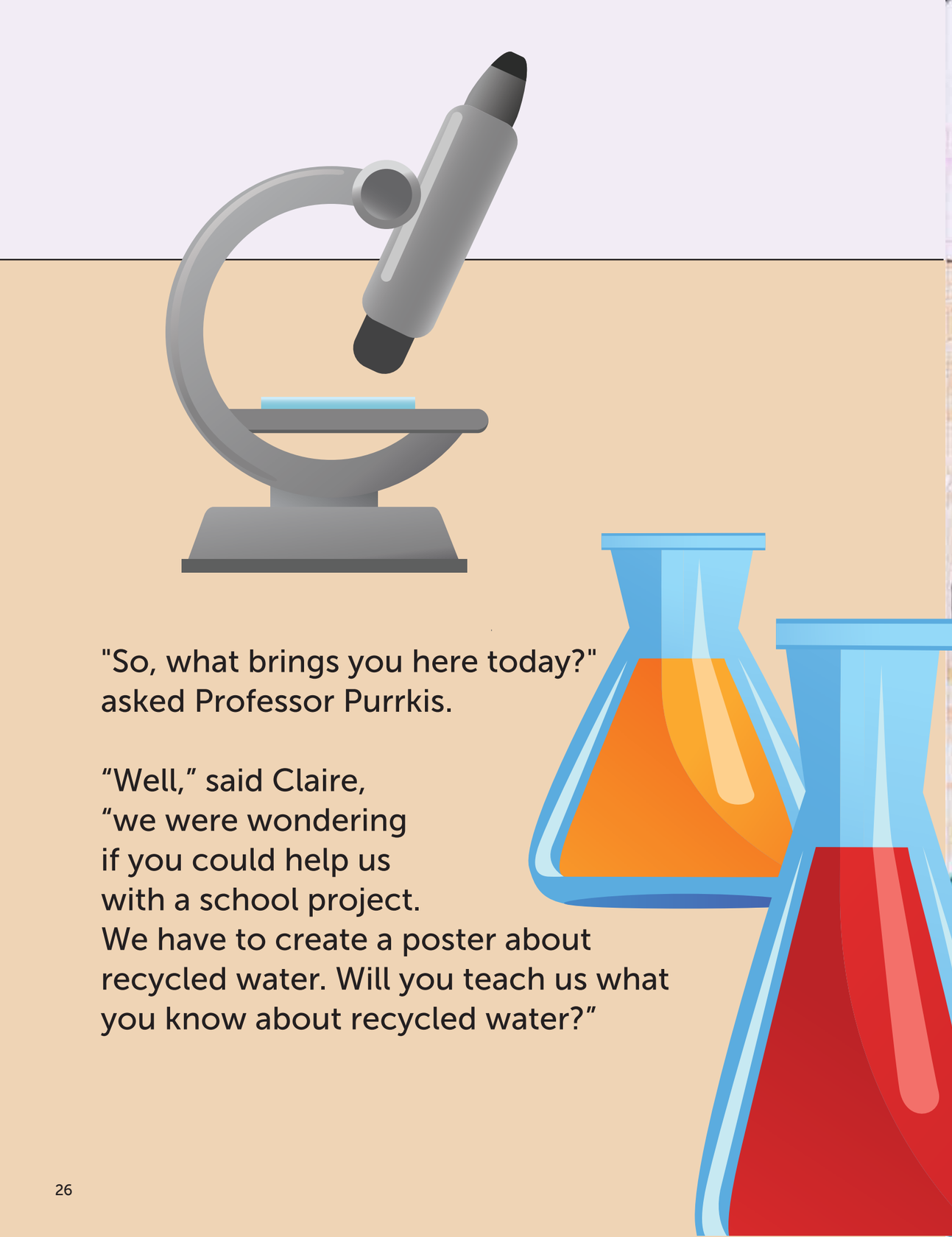
Once the three friends were safely in the
house, Mrs. Bear left to run errands.



As they walked into the house, they stared in amazement at what they saw before them. There were several bottles, test tubes, papers, and safety equipment.

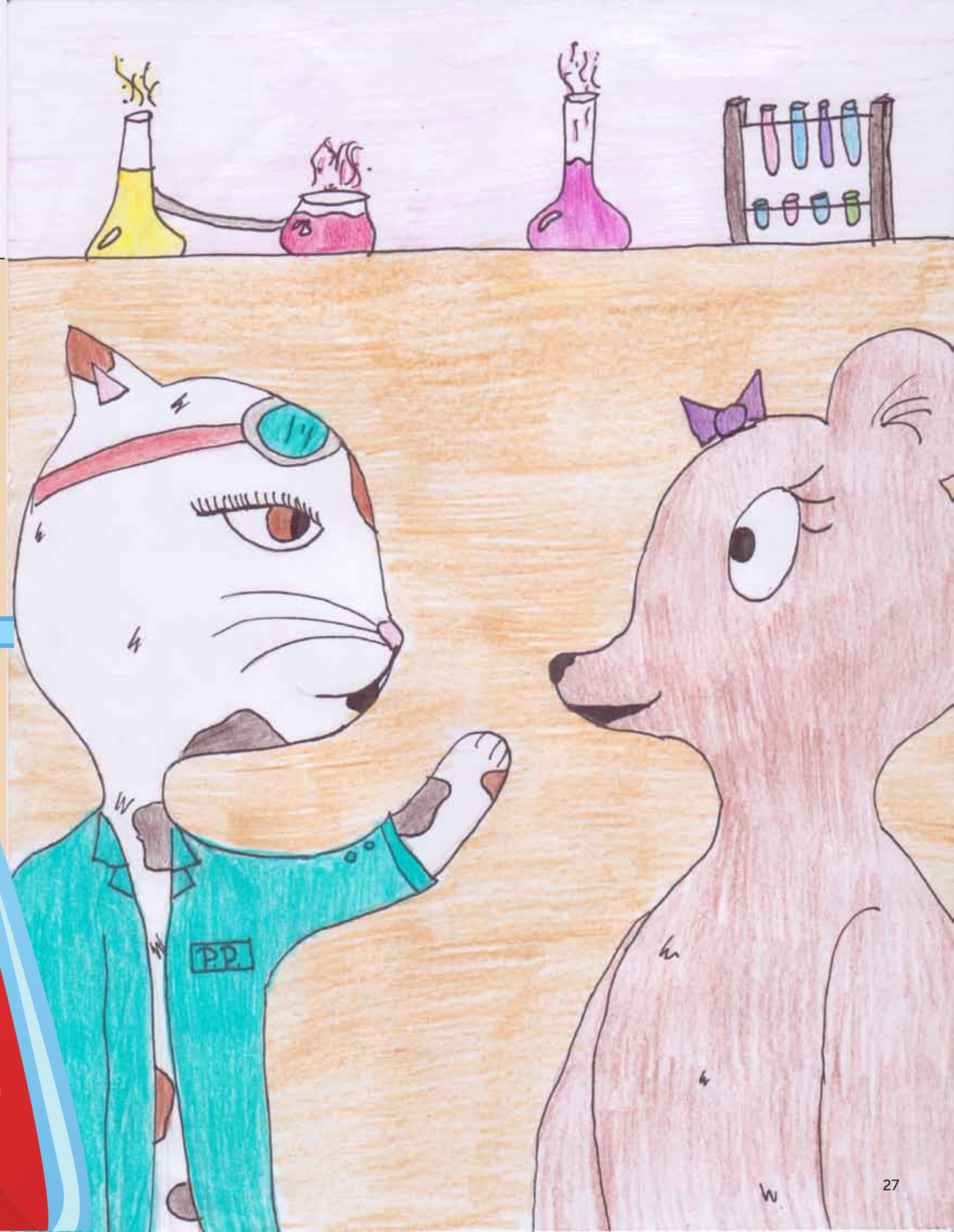
Otis moved to touch one of the glass tubes.
"Cool! What are these?" he asked.

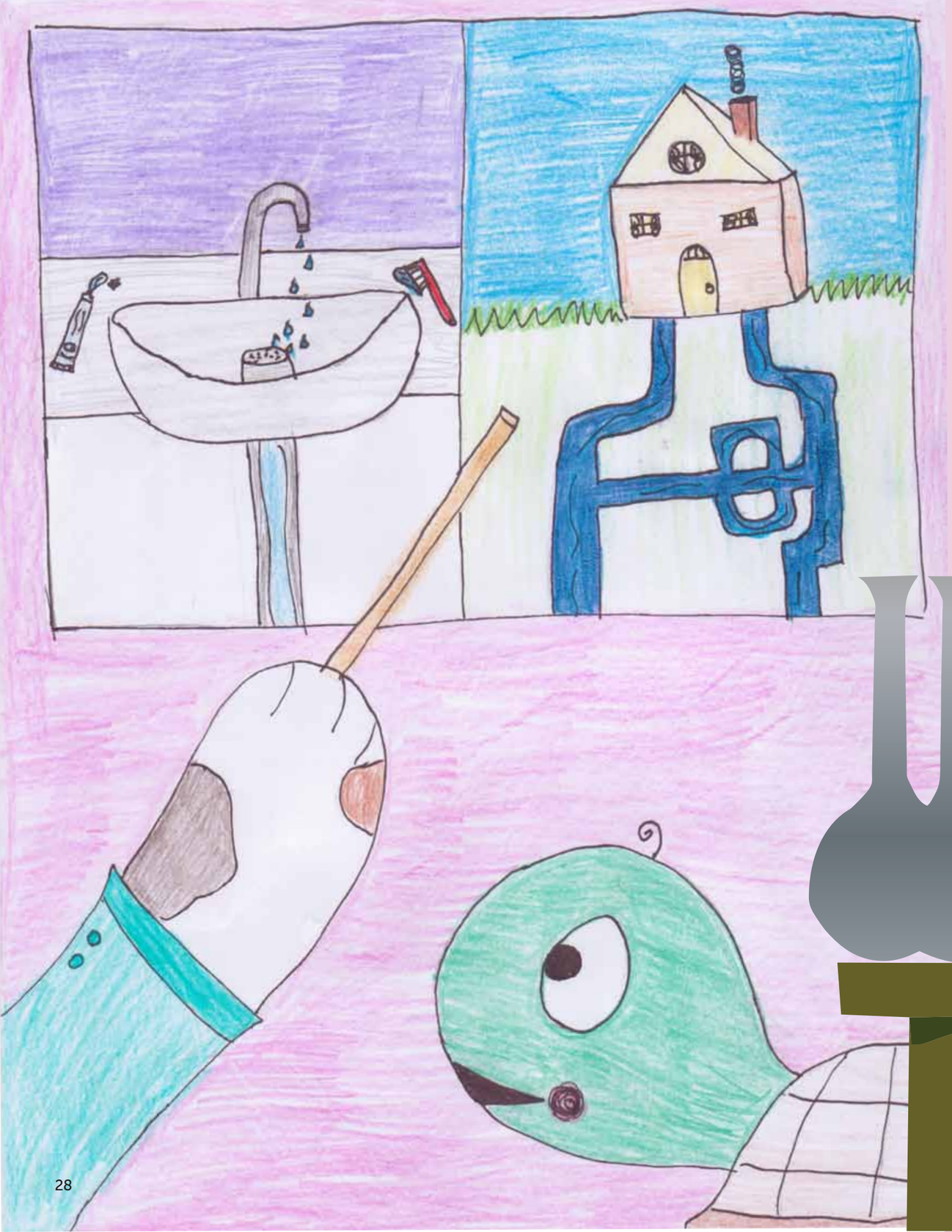
“NO! Don’t touch that!” Presley exclaimed,
as Otis quickly moved away from the tubes.



"So, what brings you here today?"
asked Professor Purrkis.

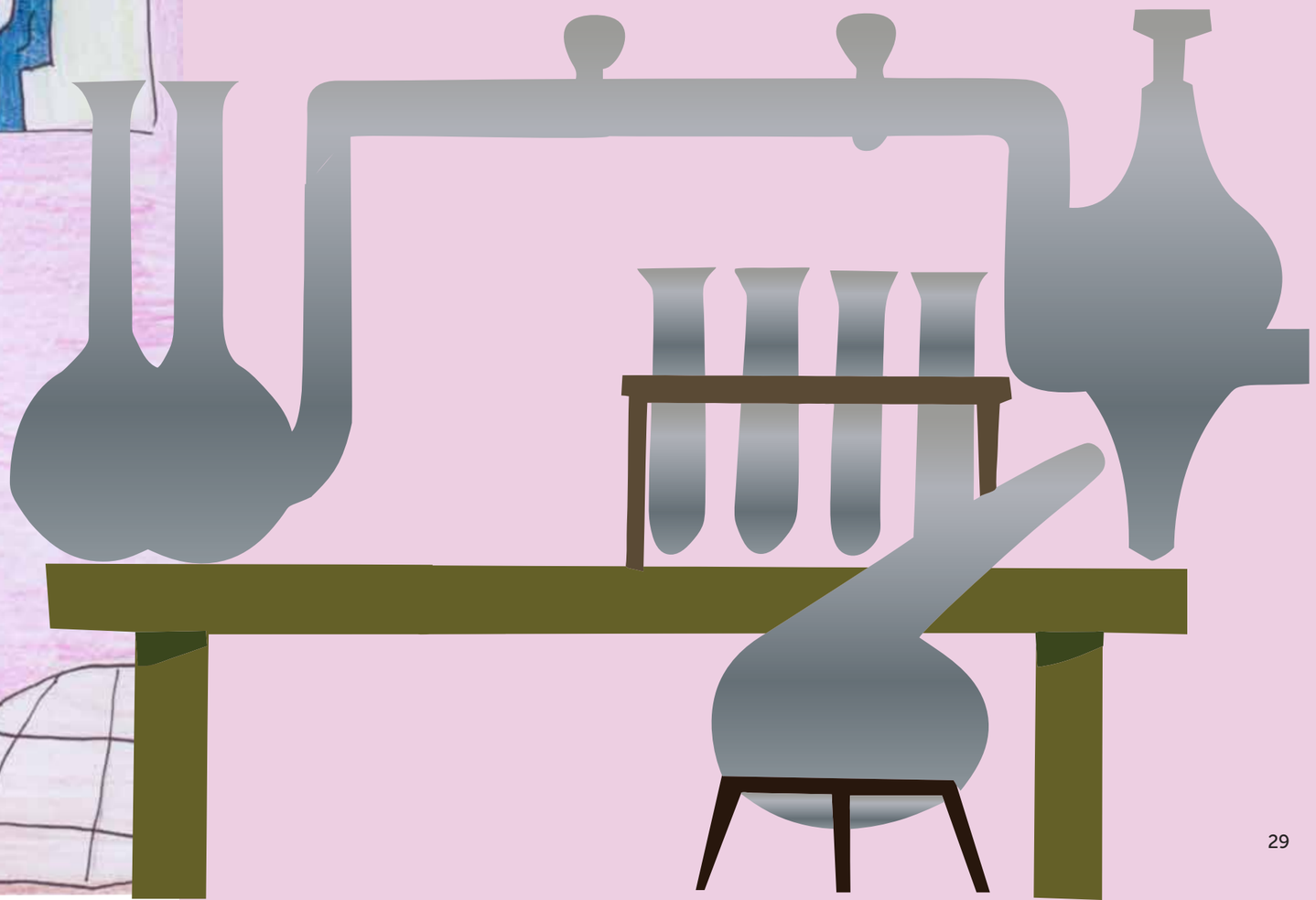
“Well,” said Claire,
“we were wondering
if you could help us
with a school project.
We have to create a poster about
recycled water. Will you teach us what
you know about recycled water?”





“Of course I will!” Professor Purrkis responded. “Recycled water is water that has been used and is then recycled. For example, the water you use to brush your teeth goes down the drains in your home and flows out into the sewer pipelines that are in the ground, deep under the street. Next, the dirty water, which we refer to as waste-water, flows through the sewer pipelines to a wastewater treatment facility, where it is collected and cleaned.”

"What do they do to clean the water?" Otis asked.



"First, the wastewater passes through a screen that removes the large items that cannot be cleaned. The wastewater continues to the grit chamber where heavier materials like sand and gravel are removed. Next, it flows into the primary treatment tanks."

"What happens in the tanks to clean the rest of the wastewater?" Presley asked.

"Well, first the wastewater goes through the primary treatment process where more than 50 percent of the pollutants are removed," Professor Purrkis explained. "Next, it goes into the aeration tank where microscopic bugs eat the remaining pollutants."

"How big are the bugs?" asked Otis.

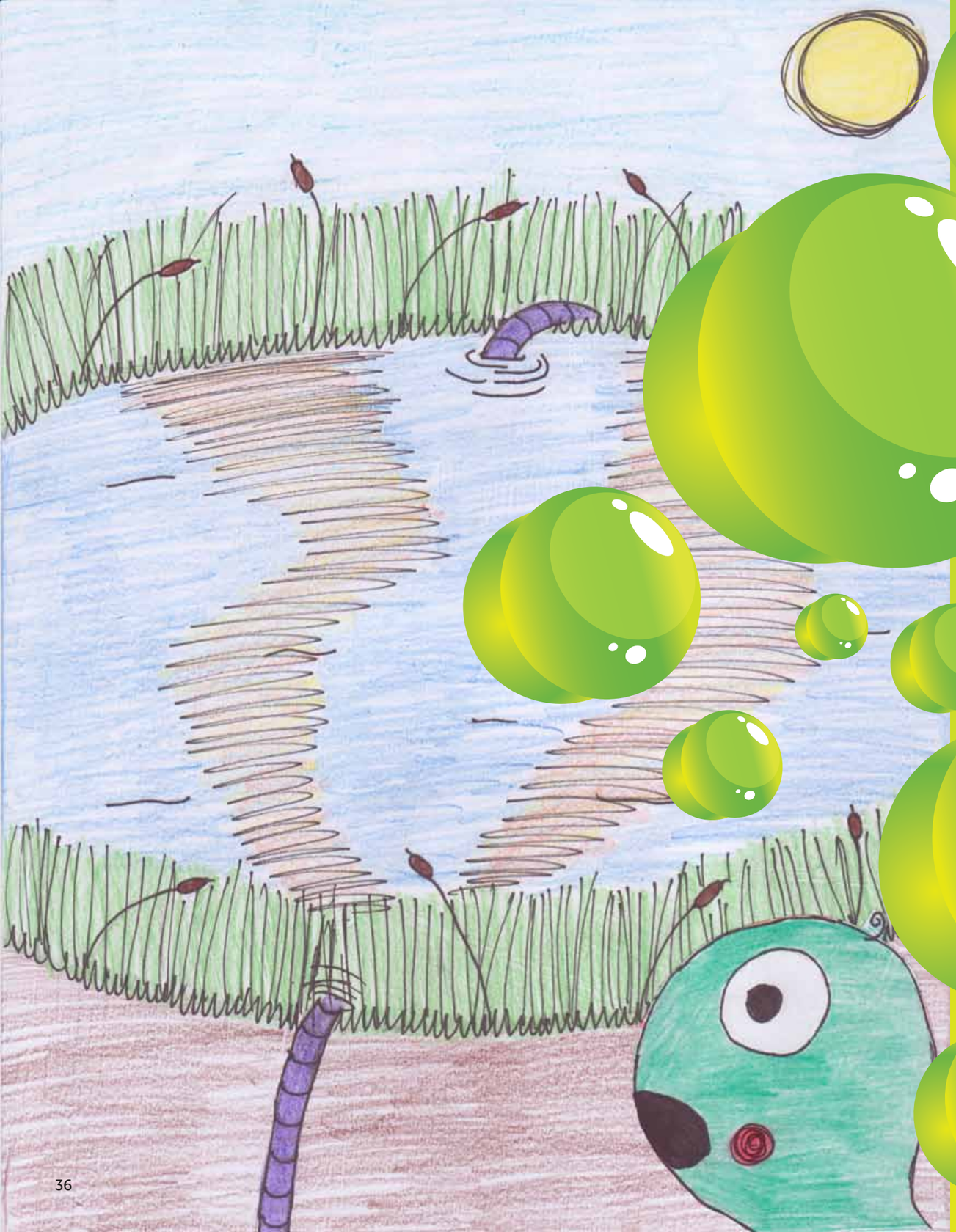
"They are actually quite small, Otis," replied professor Purrkis. "You can only see them under a microscope. They are what we call microorganisms."

"It is so cool that they use microorganisms to clean the water!" Otis replied. "What happens next?"

"The wastewater flows into the secondary clarifier tanks, through tertiary filters, and on to the chlorine contact chambers for disinfection," Professor Purrkis explained.

"Chlorine is a chemical that is used to disinfect our water, isn't it?" asked Claire.

"Yes it is, Claire," Professor Purrkis responded. "After chlorine has been added, the clean and disinfected wastewater becomes recycled water that is safe and reliable for reuse."



"Where does the recycled water go after it has been cleaned?" Otis asked.

Professor Purrkis replied, "The recycled water goes into storage ponds that are like mini lakes, where it is stored until it is needed. At Eastern Municipal Water District, there is a multipurpose constructed wetlands that helps to polish the recycled water and get it ready for further use."

"What does it mean to polish the water?" asked Otis.

Professor Purrkis explained, "The remaining contaminants are removed."

"Oh, I see," said Otis. "Do we drink this water?"

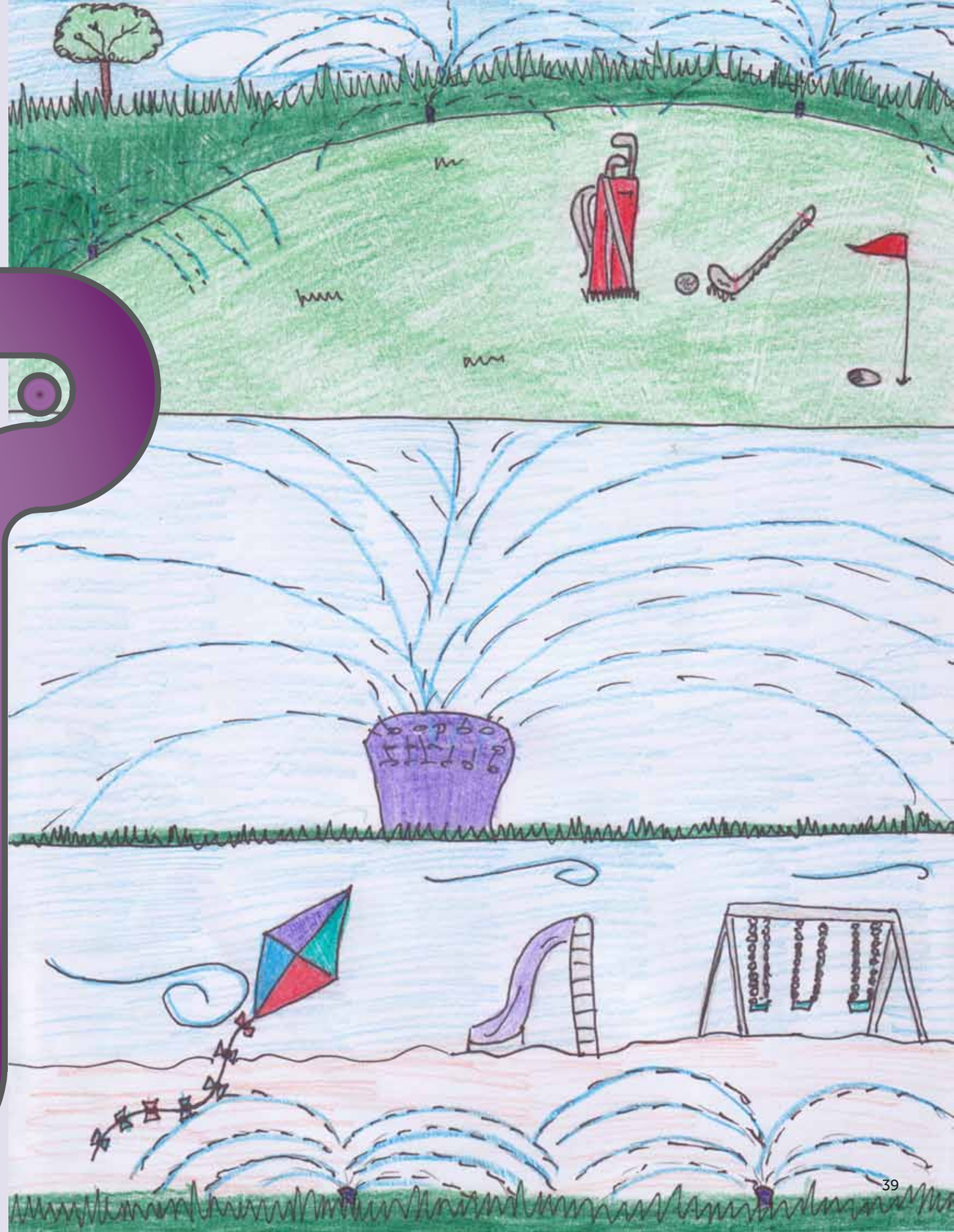
"At this time, recycled water is not used for drinking water," Professor Purrkis replied.

"If we don't drink recycled water, how do we use it?" Otis asked.

Professor Purrkis answered, "The recycled water is used for watering the landscapes of businesses, schools, golf courses, parks, and some farm crops."

"How can we tell the difference between fresh water and recycled water?" Otis asked.

"Well, kids, recycled water flows through purple pipes," Professor Purrkis answered. "Anytime you see purple pipes or purple sprinklers you know the water in the pipelines is recycled water that is used for watering landscapes and some farm crops. Great care is taken in the cleaning and disinfection process, which is what makes recycled water safe and reliable to use."



"Oh, we get it now!" they all replied.

"I have seen purple sprinklers and pipes at the park with signs about recycled water," said Otis. "Now I understand how the water is used!"

"I am so pleased that you all stopped by to learn about recycled water," said Professor Purrkis. "I hope you will be able to use this information to create a great poster." They assured her they would and thanked her for her help.

"We should start working on our poster now," Presley said.

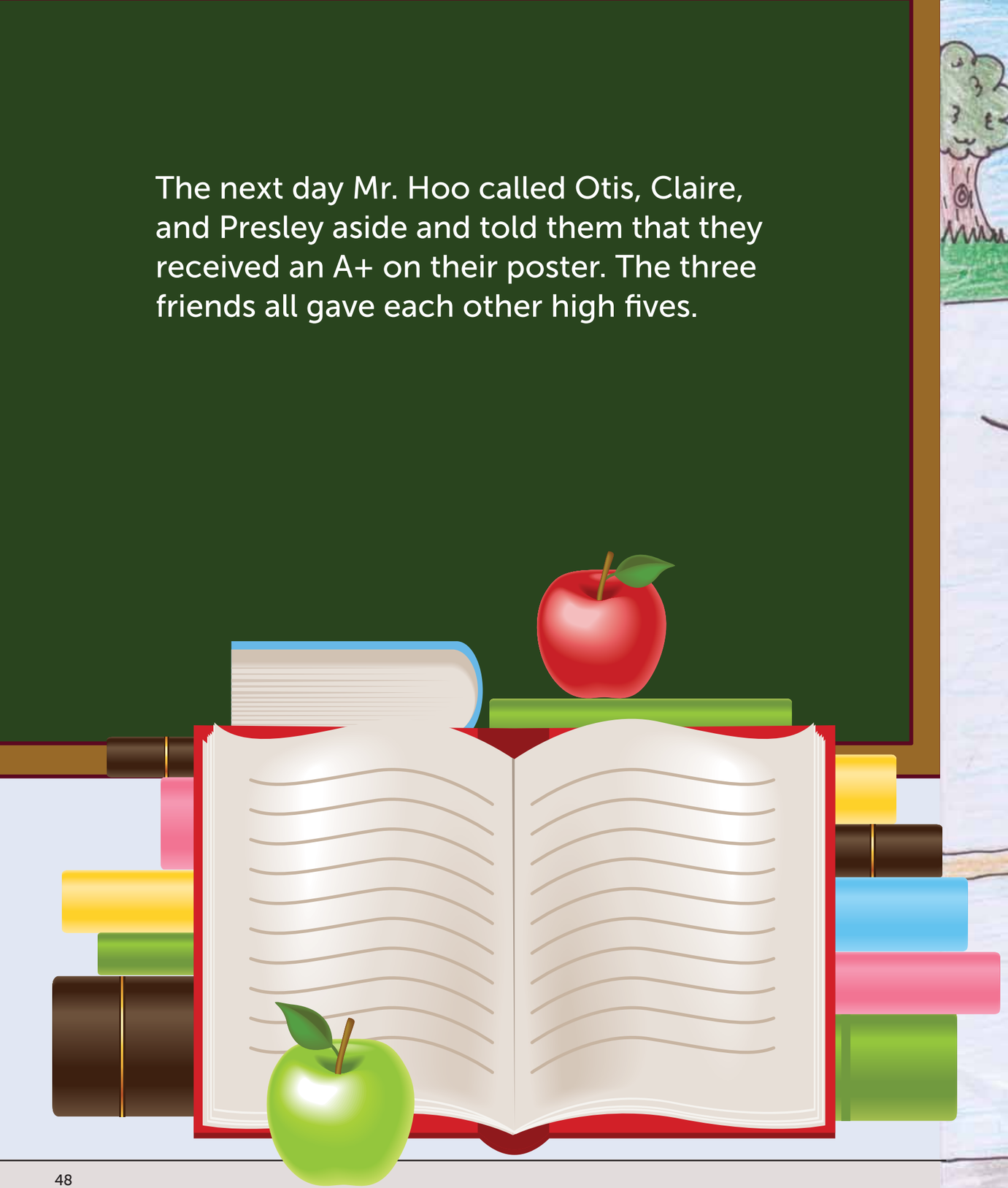
"Mr. Hoo would not like a poster that is not finished!" Claire said, as she called her mom to pick them up.

"We better head home to start working on it," Otis agreed.

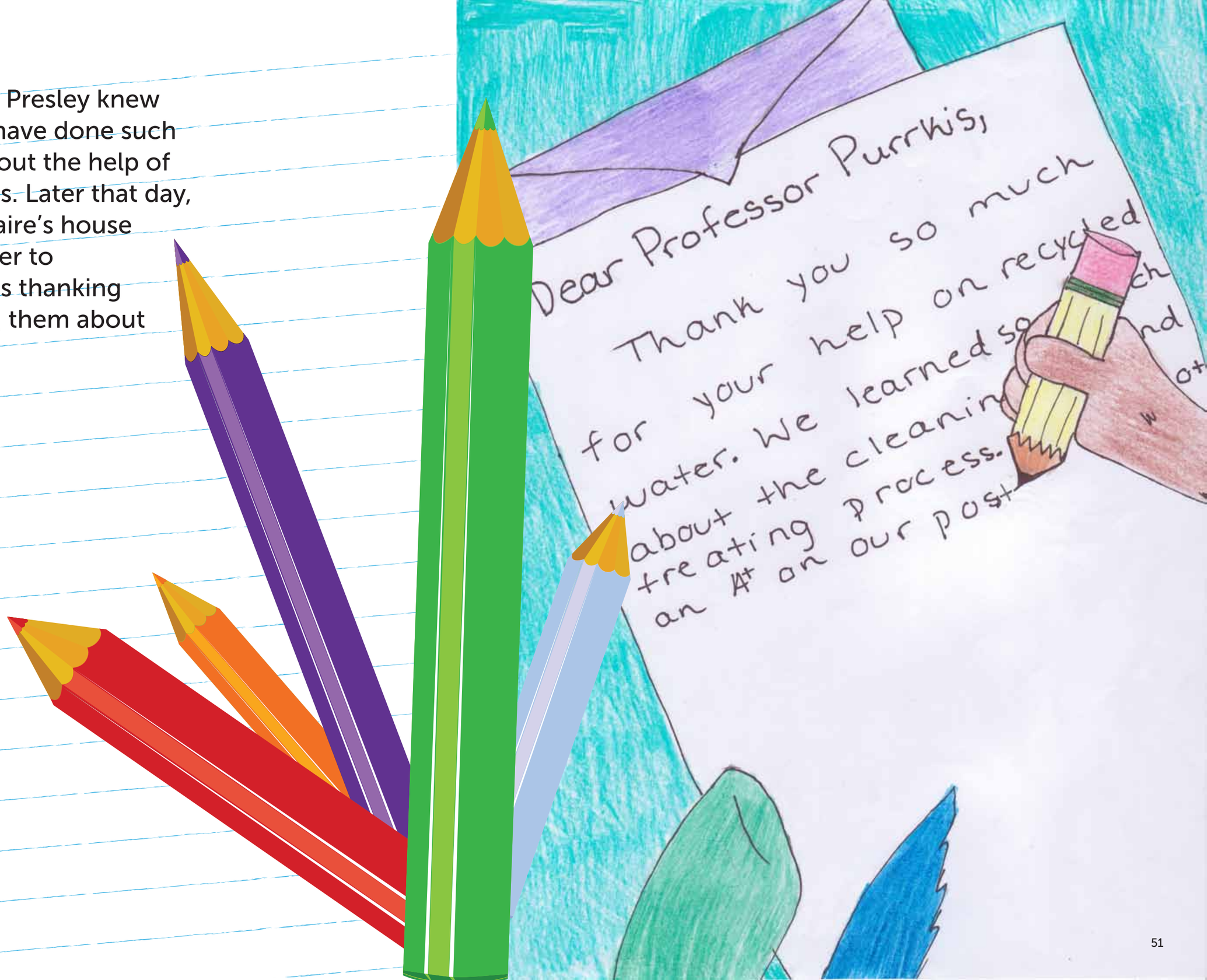
Presley, Otis, and Claire headed out
to the car where Mrs. Bear was waiting.
The three of them went back to Claire's house
to work on their recycled water poster.

The following week, the three students turned in their poster to Mr. Hoo. They were very excited to receive their grade because they had worked very hard to create a great poster using the information they learned from Professor Purrkis.

The next day Mr. Hoo called Otis, Claire, and Presley aside and told them that they received an A+ on their poster. The three friends all gave each other high fives.



Otis, Claire, and Presley knew they could not have done such a great job without the help of Professor Purrkis. Later that day, they went to Claire's house and wrote a letter to Professor Purrkis thanking her for teaching them about recycled water.



The following day at school, Mr. Hoo told the class, “Next month we are going to be doing a similar project, but this time it will be about backflow prevention.”

Otis, Claire, and Presley all knew just who to go to learn about backflow prevention.

Professor Purrkis!

Vocabulary Words:

Aeration Tank: An enclosed area where water is mixed with microscopic bacteria and then air is added. The oxygen promotes growth of the bacteria. The bacteria consume waste products in the water.

Backflow Prevention: A method to protect water supplies from contamination or pollution due to backflow.

Chlorination: The disinfection of water by the addition of small amounts of chlorine or a chlorine compound.

Disinfection: To cleanse so as to destroy or prevent the growth of disease-carrying germs.

Landscape: The enhancement of the appearance of land, especially around buildings, by altering its contours and planting trees, shrubs, and flowers.

Microorganisms: A tiny organism such as a protozoan, or bacterium that can only be seen under a microscope.

Microscopic: Invisible without the use of a microscope.

Multipurpose constructed wetlands: An area designed to focus on wastewater treatment, migratory and resident waterfowl and shorebird habitat enhancement, wildlife diversity, and public education and recreation opportunities.

Polish: To finish completely.

Pollutants: Any substance, as certain chemicals or waste products, that renders the air, soil, water, or other natural resource harmful or unsuitable for a specific purpose.

Primary treatment: A basic wastewater treatment method that uses settling, skimming, and often chlorination to remove solids, floating materials, and pathogens from wastewater.

Process: A continuous action, operation, or series of changes taking place in a definite manner.

Professor: a teacher of the highest academic rank in a college or university, who has been awarded the title Professor in a particular branch of learning.

Reclamation: the recovery of useful substances from waste products.

Recycled water: The use of treated and processed wastewater for useful purposes like agricultural irrigation, industrial processes, toilet flushing, and groundwater replenishment which is also called a groundwater recharge.

Regional: A specified district or territory.

Reliable: Worthy of trust.

Reuse: To use again especially in a different way or after recycling or reprocessing.

Safe: Free from harm or risk.

Secondary clarifier: Settling tanks that remove microbes from wastewater.

Storage ponds: A man-made pond that temporarily stores organic wastes such as wastewater.

Wastewater: Water that has been used, as for washing, flushing, or in a manufacturing process, and so contains waste products; sewage.

Recycled water is SMART:

SAFE—Recycled water involves treating wastewater to a high level so it can be reused for almost any purpose except drinking. Every day, recycled water is safely used to irrigate crops, for manufacturing processes, to fill some of our lakes, and to keep landscapes beautiful.

MONEY-SAVING—The cost of recycled water is significantly less than the regular potable (drinking) water rate.

AVAILABLE—Recycled water is in great demand. Currently almost 100 percent of EMWD's total production capacity is used. It's a drought-proof supply that can be available even if potable (drinking) water is restricted.

RESOURCEFUL—Every gallon of water that can be reused means that one more gallon can remain underground; or one more gallon doesn't need to be imported from Northern California or the Colorado River. With more than 50,000 acre-feet of recycled water produced annually by EMWD, recycled water is a significant resource.

TIMELY—To meet future water demands and avoid shortages due to drought, recycled water enables EMWD to reduce its dependence on expensive, and increasingly unreliable, imported water.

Fast Facts:

- Recycled water pipes are purple
- Since recycled water is used for non-drinking purposes, a separate set of distribution pipelines deliver recycled water.
- EMWD has been recycling water within its service area since 1966 when the District began delivering recycled water to local farmers for the irrigation of feed and fodder crops.
- Recycled water is already widely used throughout California to irrigate landscapes for:
  - Sport fields
  - Recreational
  - Parks
  - Median areas
  - Agriculture irrigation
  - Golf courses
  - Schools
- Recycled water is also used for environmental enhancement of wetland areas.

Acknowledgements

Eastern Municipal Water District Education Specialist Malea Ortloff developed the award-winning Write Off program, now in its fifth year, in an effort to encourage a greater understanding of our most precious resource, water, in both elementary and middle school students. Malea uses a cross-age approach, which allows older students to write stories focusing on water-related issues geared toward younger (elementary) students. Once the winning story is selected and published, Malea designs curriculum that is grade-level appropriate and also keeps the water message in the classroom for a longer period of time. This year several hundred entries were received, making it a challenge to select a winner. The winning story is an entertaining, engaging, and informative narrative about recycled water that is sure to be a hit with elementary school students.

Eastern Municipal Water District wishes to thank the following students, teacher, graphic designer, and advisory committee members for their collaboration and contributions in the development of this book.

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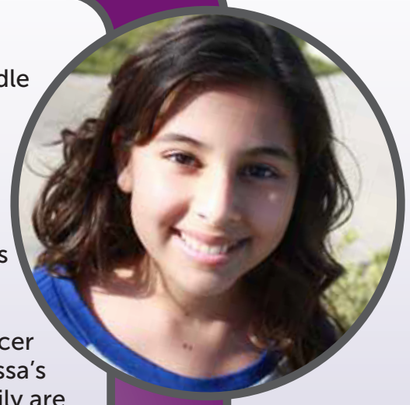

Iliana Reyes is a sixth-grade student who attends Temecula Middle School. She was born in 2001 and lives in Temecula, California with her sisters and brother. She has two dogs, and her favorite sport is tennis. Iliana's favorite color is blue, and she enjoys drawing and playing the flute.

Alyssa Rossi's family includes her parents and sister. She loves going on walks with her dad, playing board games with her mom, and kicking the soccer ball around with her big sister. Alyssa's favorite things to do with her family are hiking and watching family movies. She has a cat who loves to snuggle and a dog who loves to pay tug-of-war. Alyssa is a sixth-grade student at Temecula Middle School. Her favorite color is purple, and she loves to play the piano. She loves to play soccer and hang out at the beach.

Mrs. Sarkis has been teaching at Temecula Middle School for 23 years. She loves encouraging her students to write creatively. She enjoys watching these young writers gather their ideas and put them into these stories. Mrs. Sarkis noted, "Alyssa and Iliana spent hours of their own time researching, writing, editing and illustrating this story. They both are such hard workers and give 100 percent in everything they do. They truly have a love of learning."

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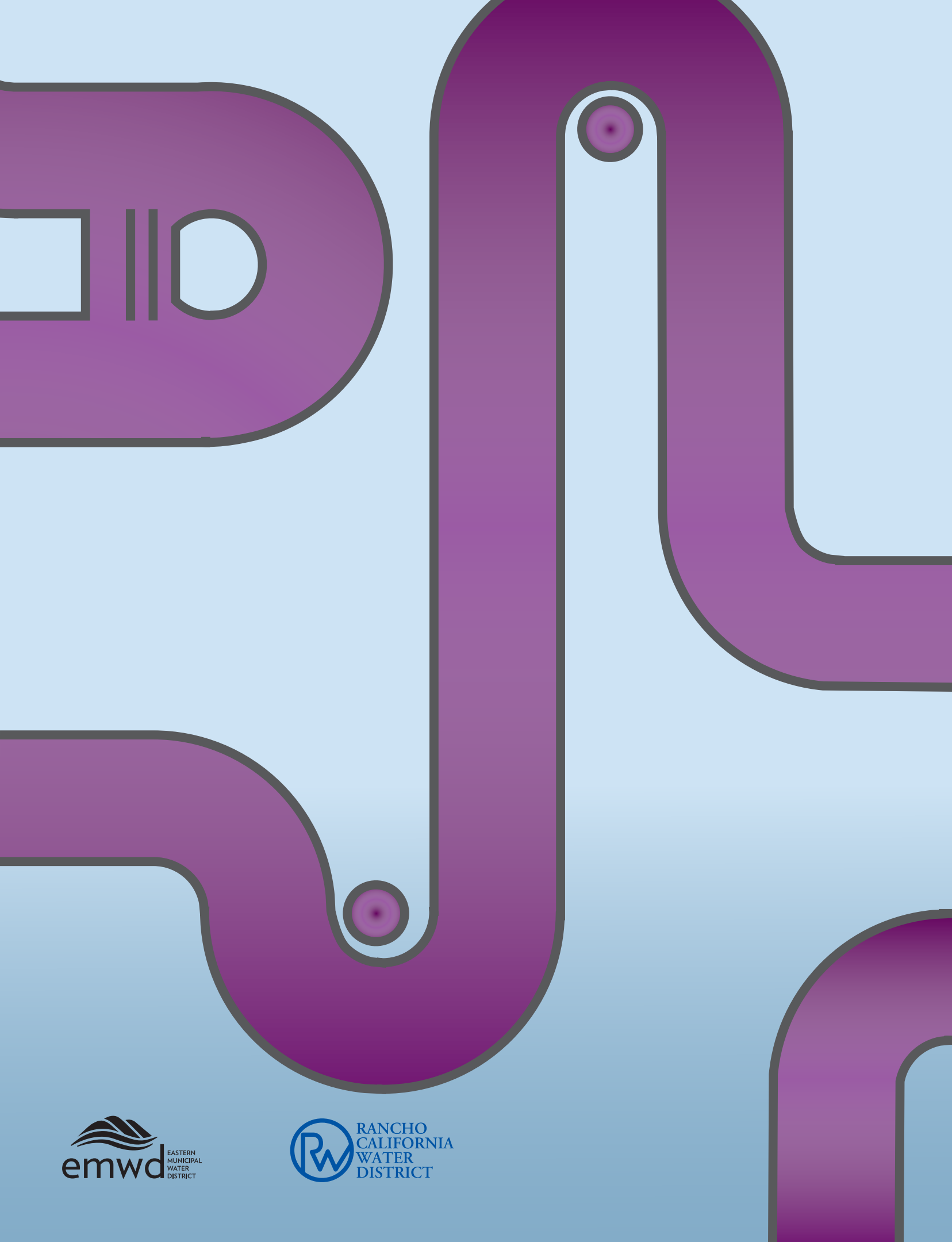
RANCHO CALIFORNIA WATER DISTRICT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