Claire and the Invisible Water

Story by:
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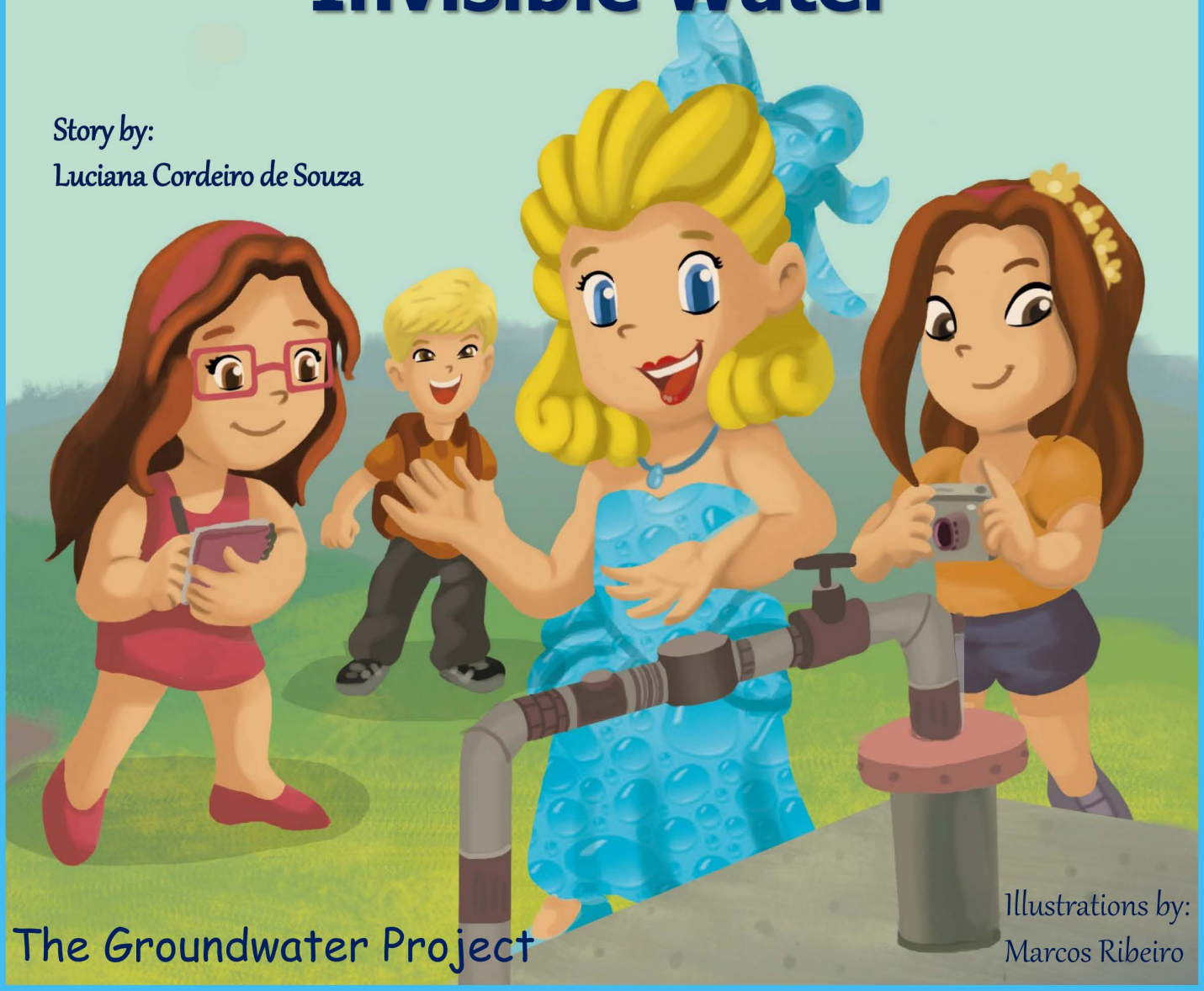

The Groundwater Project

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CLAIRE AND THE INVISIBLE WATER
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Preface

This story was born during my Ph.D. research in Environmental Law as a way to educate my nephews Mary Ann, Junior, and Guilherme, in a way they could understand the importance of saving the environment, especially our beloved sister water, a topic that I have been researching for more than 20 years. But how to teach kids about water without using technical and legal terms? That´s when Claire was born: a little drop of water that transforms itself into a girl, offering a unique and playful moment for the little kids, with enchantment and magic. We tried to make the invisible groundwater visible by presenting aquifers in this story. In this way, the water becomes a friend to the kids. We care for and protect our friends!

Luciana Cordeiro de Souza

It is a rainy afternoon.

Inside, Mary Ann and her friends Kate, Bill, Joy and Sid are working on a group project for science class. They cannot agree on a topic for the project. Júnior and Guilherme are watching television.

Sissi the dog is asleep.

They look for a topic on the internet.

"Let's do a project about water," Mary Ann says. She thinks back to a few months earlier, when she and her brother Júnior were brushing their teeth. As the water ran out of the bathroom faucet, a water droplet with big, beautiful eyes landed at the edge of the sink. She and Júnior were amazed. The little water droplet could talk and was named Claire!

"Claire told us not to waste water," Mary Ann explains to her friends. "We should only use what we need. Water is a precious resource, and we cannot live without it. Claire said we all need to be Water Guardians."

Her friends just laugh. "How can a water droplet talk?" they all ask.

"It was magic," Mary Ann whispers. "The water droplet turned into a girl. Her eyes were blue like the ocean, and she was dressed all in blue."

Mary Ann's four friends laugh even harder. They laugh so loudly that Sissi, who was sleeping on the armchair, wakes up and starts barking.

Mary Ann turns her back on the group and stares out the window. "Why don't they believe me?" she wonders. She opens the window a bit. She breathes in the fresh smell of the rain as it falls on the garden. At that moment, some rain splashes through the open window. One of the water droplets turns into a girl in blue. Her dress shimmers like water.

"I am so glad to see you, Claire!" cries Mary Ann. She hugs the girl and turns to her friends. "Now do you believe me?"

The children are now laughing in amazement. They are talking all at once. In the excitement, Sissi begins jumping up and down. "Woof, woof, woof!"

With all the noise, Júnior and Guilherme join the group. "Where have you been, Claire?" asks Júnior excitedly. "I have been conserving water just like you told me to."

“Good job, Júnior!” Claire says. “I have seen the invisible water. I am here to tell you all about it.”

“Invisible water! What is that?” shouts Guilherme.

“I know what it is,” Joy interrupts.

“You do not! Joy, you always think you know everything,” says Kate.

“I think it is magical water that you drink to become invisible.”

Next Bill interrupts. “Maybe the water is just hidden.”

Soon everyone is talking at the same time, until Mary Ann yells “Quiet, everyone! Listen to Claire!”

The children can hardly stand still. What can the invisible water be?

Claire presses her finger to her lips. "Listen to the raindrops falling on the roof? Do you know where the raindrops are going?"

Everyone leans up to the window. Raindrops are landing on the soil in the garden. Raindrops are landing on the roof and running into a drain.

John, who was quiet until this point, begins to describe what he is seeing. "Some of the water is used by plants, and some flows into rivers."

"That's right, John!" says Claire. "Do you remember the water cycle from school? Rainwater seeps into the soil until it reaches rivers, lakes, and oceans. Then it evaporates and returns to the atmosphere, forming clouds."

Everyone nods in agreement.

Claire continues, “Some of the water that seeps into the soil remains underground where we cannot see it. This is the invisible water. We call it groundwater.”

“Wow! Like swimming pools hidden underground?” asks Guilherme.

Kate and Joy decide they both want to swim in this pool and have a swimming race.

Claire laughs. “No, the groundwater is not in a swimming pool! It collects in the small spaces between grains of sand and in cracks in the rock. The layer of soil or rock where the groundwater collects is called an aquifer.”

Júnior has been looking at his computer.

"Brazil has two large and important aquifers: the Guarani Aquifer in Brazil, Argentina, Uruguay, and Paraguay, and the Alter do Chão Aquifer in the northern part of Brazil."

Everyone agrees. It would be fun to learn more about the invisible water in Brazil's aquifers.

South America

The group starts their research. They find maps of the aquifers and learn about the types of soil and rock that make up the aquifers. They ask Claire for more details.

"Claire, have you ever lived in an aquifer?" asks Kate.

"Yes, but I do not stay in an aquifer all the time," answers Claire. "I move slowly through an aquifer and then return to the ground surface, where I stay for a while in a river, lake, or ocean. Then I evaporate into the atmosphere and collect with other droplets in a cloud. Then I fall back to the earth as rain and seep into the ground to become invisible water again. I am always moving around!"

"If water is always moving in the water cycle, why do we need to protect it? Why do we need Water Guardians?" asks Joy.

"Water can become polluted," Claire says. "Everyone needs to take care of the earth. Pollution above ground in the soil can enter rivers, lakes, and oceans. Pollution can move below ground and into groundwater."

"If people drink water from a polluted aquifer, it can make them sick," says Mary Ann. "I want to prevent pollution and be a Water Guardian!"

Claire smiles at the group. "I hope you will all be Water Guardians."

Mary Ann and her friends learn how water is taken from an aquifer for drinking.

Sid finds information from a group of groundwater scientists called the Brazilian Groundwater Association. "You dig a well and place a pump in the well. Groundwater moves into the well and is pumped to the surface."

Joy is reading along with Tiago. "It is not just a matter of digging a hole! To avoid polluting the aquifer, a well needs to be properly built by trained drillers, engineers, and geologists." They draw a picture of a water well for their project.

Mary Ann finds an experiment that they can add to their presentation. She takes two clear glasses, one filled with water and the other filled with sand. Everyone watches as she pours the glass of water into the glass of sand. "See! This is just like an aquifer, where water fills the spaces between grains of sand. Just like the water, pollution can also fill the spaces."

Claire claps along with the rest of the group. "Well done, Mary Ann! The glass of sand and water is a great model of a sand aquifer."

After Mary Ann's presentation, Claire says, "I am glad you could learn about my life in the water cycle. Water is everywhere and within every living thing. Take care of water in the atmosphere, in the rivers, lakes and oceans, and in the aquifers! If you do this, you will all be great **Water Guardians**."

Sid tells Claire, "When I grow up, I will study hard to protect groundwater aquifers. I am going to be a geologist and protect the invisible water!"

Everyone in the group promises to be a Water Guardian. They spend the rest of the afternoon finishing their science project. They are excited to share the information with their class.

As the rain ends, Claire hugs everyone goodbye. She leaves through the window to join the other water droplets and return to the water cycle. She promises to visit them again with tales of her water adventures.

Try Mary Ann's experiment with the glasses of water and sand. What will you do to protect the invisible water?

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