

Kai and the Big Backyard Dig

A honu explains where our water goes, and why so many workers are coming to the yard.



A story to read together before the job starts



Aloha! I'm **Kai**. I'm a *honu*, a green sea turtle.

I live in the *kai*, the sea, right down the hill from your house.

Up the mountain is *mauka*. Down to the sea is *makai*. On our island, everything rolls downhill... even water.

Flush!

Splash!

Swish!

Every day in your house, water goes down the drain. Flush! Splash! Swish!

Where does it go?

Down a pipe... under the floor... into a big, deep hole in the yard.

That hole has a funny name. It's called a **cesspool**.



A cesspool is only a hole. It doesn't clean the water. It just lets it leak away.

Long ago, people thought the ground would clean it.

But our island is made of **lava rock**, and lava rock is full of cracks and little holes, like a sponge.



So the yucky water drips down, down,
down through the cracks... and rolls
downhill, *makai*, to the sea.

To **my** home!

And it isn't just your yard. On our island
there are about **48,600** cesspools. That
is a LOT of holes.

48,600

holes on our island





NO SWIMMING TODAY

When the water isn't clean, my reef gets sad.

The coral gets fuzzy with slimy algae.
The fish have fewer places to hide.

Some days the beach has a sign that says **No Swimming Today**, and the *keiki* have to wait.

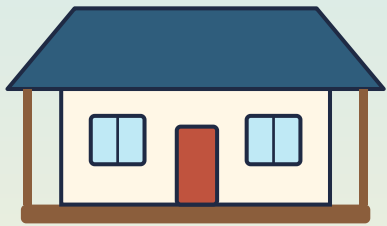
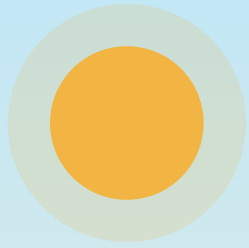


But here is the **good news!**

Your '*ohana* is going to fix it. Your yard is getting a new system that **cleans** the water before it goes back to the '*āina*, the land.

That's why so many people are coming to your backyard. Each one has a different job. Let me show you!





First comes **Auntie the engineer**.

She reads the ground like a book. She digs a small test hole and pours in water, then watches how fast the ground drinks it.

She measures your yard with a long tape, and then she draws a plan.



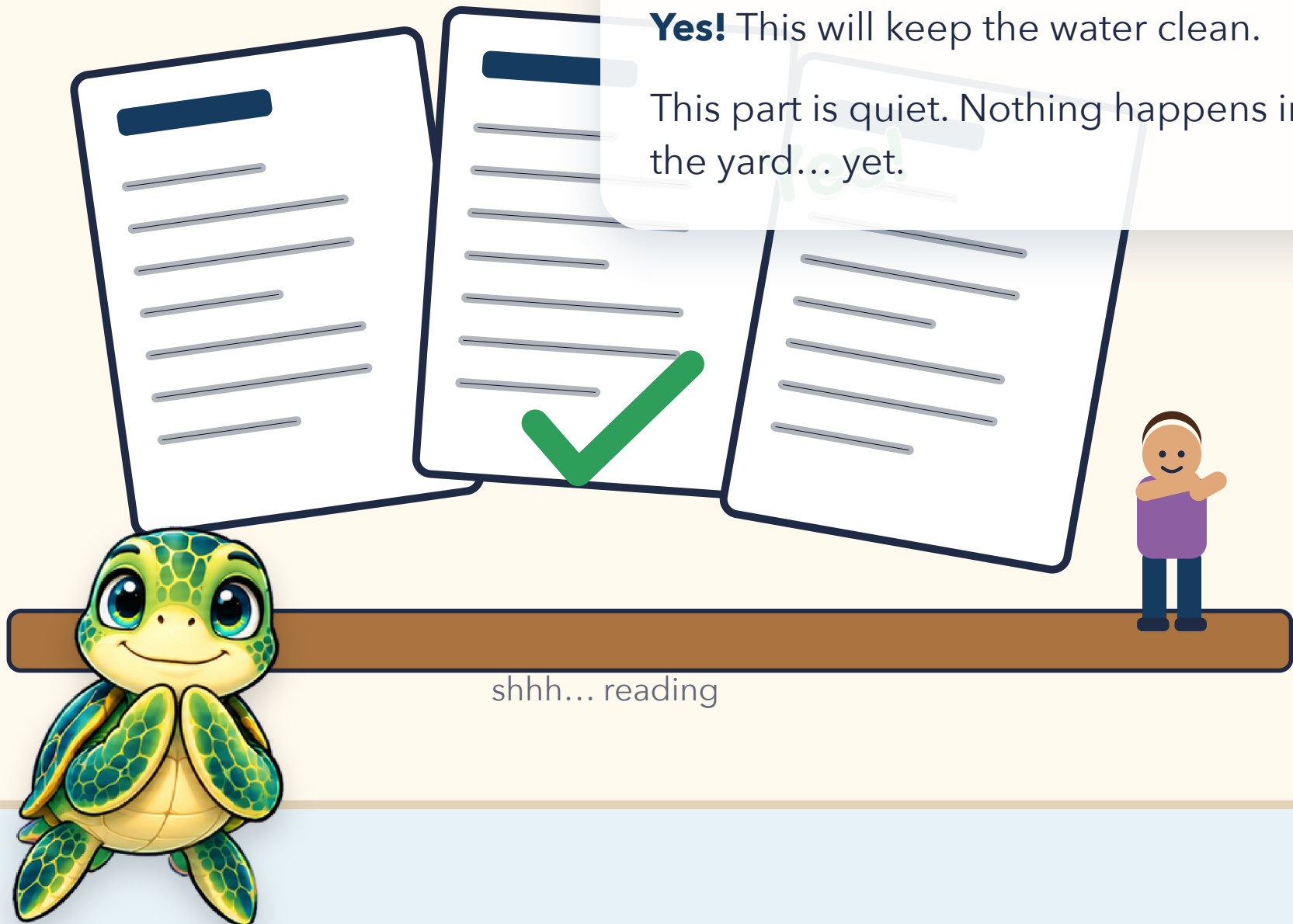
Department of Health

the water-keepers for all of Hawai'i

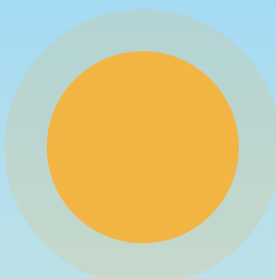
Then Auntie's plan goes to the **Department of Health**. They are the water-keepers for all of Hawai'i.

They read every page. Then they say: **Yes!** This will keep the water clean.

This part is quiet. Nothing happens in the yard... yet.



shhh... reading



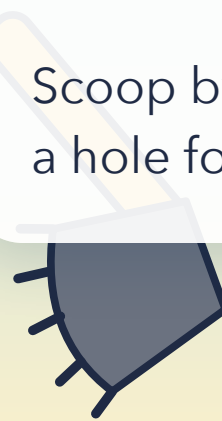
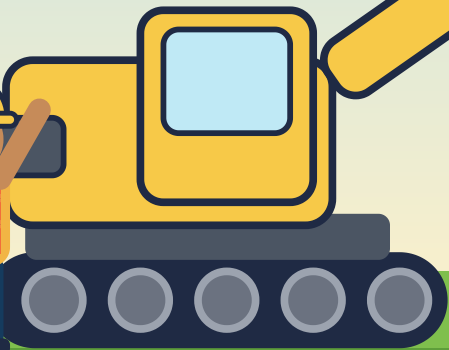
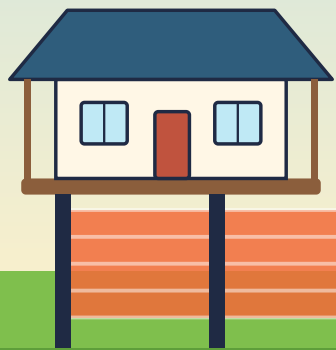
RUMBLE!

RUMBLE!

Then one morning... RUMBLE,
RUMBLE!

Here comes the **excavator**! It has a long arm and a big scoop. Uncle drives it. He wears a hard hat and boots.

Scoop by scoop, the excavator digs a hole for the new tank.

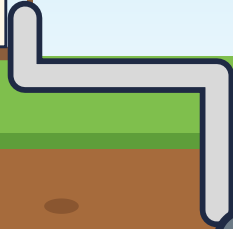


Here comes the truck with the big **tank**!

Here come the workers with the pipes.
Here comes the **plumber** to join the
pipes to your house.

Sometimes an **electrician** comes too,
because some tanks have a little motor
that blows bubbles.

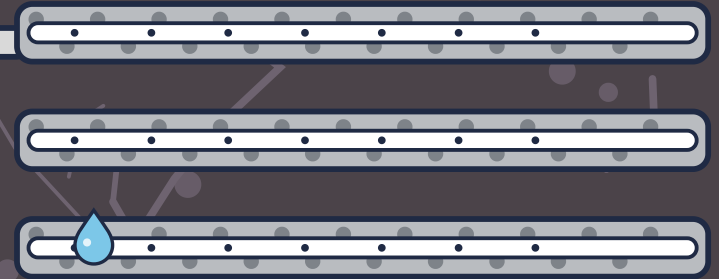




the tank



the gravel trenches



What does the new tank do?

Inside, teeny-tiny helpers called **bacteria** munch up the yucky stuff. The water sits and settles and comes out cleaner.

Then it trickles slowly into long gravel trenches, and the soil cleans it even more.



Before anything gets buried, Auntie the engineer comes back!

Click! Click! She takes pictures of every pipe and the tank, and checks it all matches her plan.

If something isn't right, the workers fix it first.



Click!

Click!



What about the old hole?

The **pump truck** comes with a long hose and... SLURRRRP! It empties the old cesspool.

Then the workers fill it all the way up with rock and dirt so nobody can ever fall in.

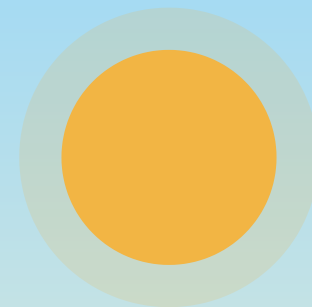
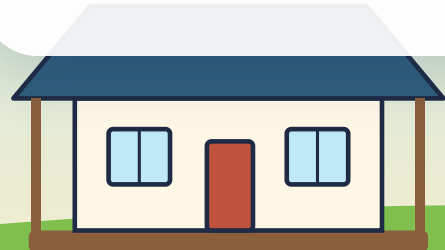
Bye-bye, old hole!



Then the excavator pushes the dirt
back. Pat, pat, pat.

The yard will look a little messy for a
while, with brown dirt where the grass
was.

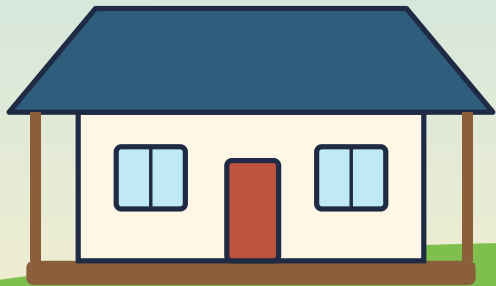
That's okay. Soon new grass will grow.



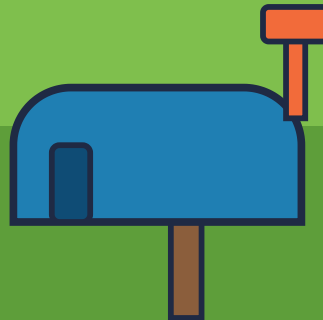
One more letter comes in the mail from the Department of Health.

It says: **APPROVED!** Now the new system can go to work.

Pau! All done!



Pau!



Kai's rules for keiki while the workers are here

1. The yard is the workers' place now. Watch from the window or the *lānai* with a grown-up.
2. Stay far away from the hole and the orange fence.
3. Big machines are loud. Cover your ears, or wear ear muffs.
4. Never talk to Uncle while the machine is moving. When it stops, wave!
5. Shoes on outside. There may be rocks and nails.
6. Ask your grown-up, "What is that worker doing?" Every person has a job.



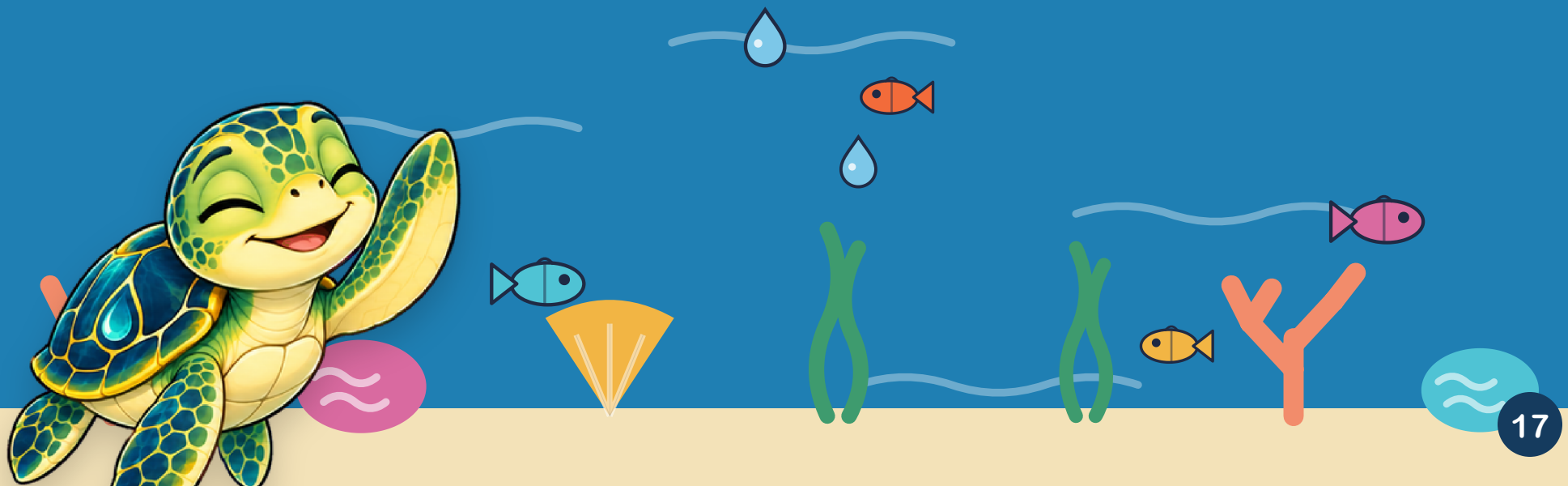


Now when you flush, and when you splash in the bath, the water gets cleaned before it goes back to the *'āina*.

And way down the hill, in the *kai*, my reef says **mahalo**.

Mālama 'āina. Mālama kai. Take care of the land. Take care of the sea.

Because it all rolls downhill... to me!



For the grown-ups

This book is for the week the trucks arrive. Hawai'i Island has about 48,600 cesspools, more than half of all in the State, and together they send about 29 million gallons of untreated wastewater into the ground every day. State law (HRS §342D-72) says every cesspool must be upgraded, converted or connected to a sewer by 2050. A conversion puts a treatment system between the house and the ground, so the water is cleaned before it reaches the aquifer and the sea.

The story follows the real sequence for an on-site system: a licensed engineer evaluates the site and designs it, the Department of Health approves the plans, a licensed contractor builds it and closes the old cesspool, the engineer inspects before backfill and reports to DOH, and DOH issues the written approval to use. Where a sewer line is available, the house is connected to the sewer instead, and there is no tank.

Things to talk about together

Where is *makai* from our house? Which worker did we see today, and what was their job? What do we do when the machine is moving? Why does the yard look brown right now?

'Āina Force coordinates information, introductions, documentation and communication for homeowners converting a cesspool on Hawai'i Island. Licensed independent engineers design, the Hawai'i Department of Health reviews and approves, and licensed independent contractors build, each under their own agreement with the homeowner. 'Āina Force does not engineer, permit or build. Facts from the State of Hawai'i Department of Health and HRS §342D-72. Kai is 'Āina Force's honu. This book may be printed and shared freely with families.



Who's in my yard?

Check them off as they come.

- ☐ **Engineer** reads the ground, draws the plan, takes the photos, writes the final report.
- ☐ **Department of Health** says yes to the plan, and yes again at the very end.
- ☐ **Excavator operator** digs the hole and the trenches, then puts the dirt back.
- ☐ **Delivery driver** brings the tank, the gravel and the pipe.
- ☐ **Plumber** joins the house pipes to the new tank.
- ☐ **Electrician** wires the air pump, if the tank has one.
- ☐ **Pump truck** empties the old cesspool before it is filled in.

Kai's Hawaiian words

'āina – the land

kai – the sea

wai – fresh water

honu – green sea turtle

keiki – child

'ohana – family

mauka – toward the mountain

makai – toward the sea

mālama – to care for

kuleana – responsibility

lānai – porch

pau – finished

mahalo – thank you

aloha – hello, love



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