



Chemicals, wells and coconut shells

Chemical spills are easier to clean up before they reach groundwater

By Quinn Schwabauer

LODI HIGH SCHOOL

Almost everyone has poured or sprayed something on the ground; maybe it was oil, or maybe it was a pesticide. You didn't pour it in the water.

No harm, no foul, right? Wrong.

Whenever it rains, or whenever you turn on your sprinklers, the water picks up whatever is on your lawn and carries it with it as it seeps into the ground. It tunnels its way downward, straight into Lodi's groundwater supply.

When it comes to groundwater, Lodi has a big problem:

Pollution.

If you were to turn on the tap right now, about 40 percent of the water that comes gushing out is groundwater. That water is supplied by 28 different wells in town.

About one quarter of those wells pull up polluted water. That's not to say that the wa-

ter you are drinking isn't safe. It is. It just costs a lot to make it that way.

The contaminated wells run their water through carbon filters. However, that process isn't necessarily the expensive thing.

It's what the filters are made of: Coconut shells and activat-

ed coal. That's right, each year the City of Lodi spends almost half a million dollars on burned coconut shells and activated charcoal. Seems pricey, but that's because it's not the stuff you put in your barbecue. It's technical name is Granular Activated Carbon, and it removes chemicals from the water by sticking to them.

These filters are amazingly effective, and they need to be in order to keep Lodi's drink-

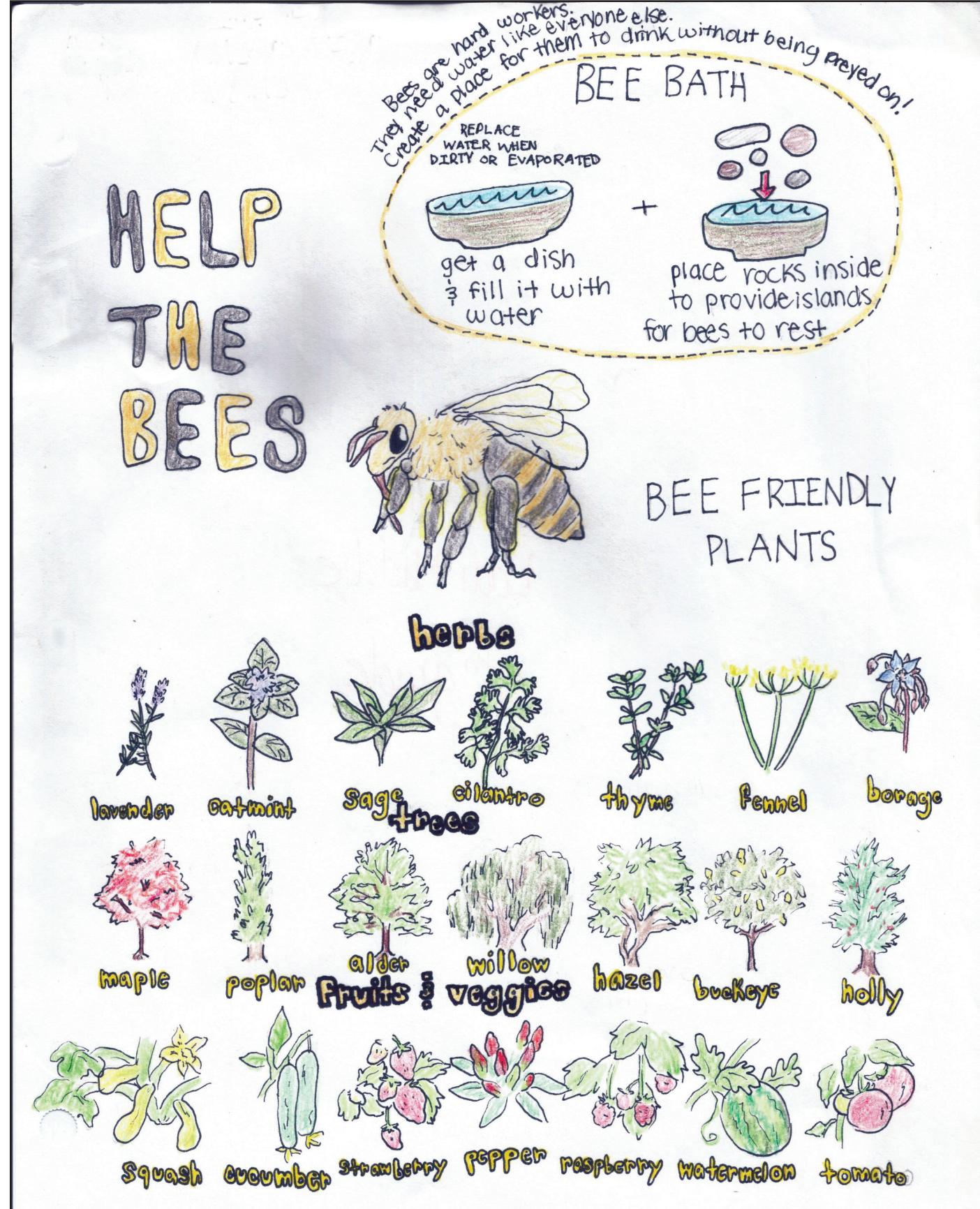
ing water safe.

The chemicals that pollute our groundwater can be extremely harmful.

The three major pollutants are TCE, PCE, and DBCP.

Carbon from coconut shells works best for removing chemicals called TCE and PCE, while activated coal works best to remove the pesticide DBCP. TCE, also known

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Above: Kieren Nicholas Bedford of Lodi Middle School shares tips for creating a bee-friendly garden to help the vital pollinators. Below: A moth by Haylee Falkenberg and a dragonfly by Justin Anselmi.



VINEWOOD ELEMENTARY SCHOOL

What is an Earthkeeper? Heritage School answers

HERITAGE ELEMENTARY SCHOOL

Eriberto

An Earthkeeper is a cleaning machine that helps the world and protects the environment.

Roxie

An Earthkeeper is a group of people who clean up garbage. For example, at Heritage School, fifth- and sixth-

graders clean around the school to keep it clean. It is a good thing to do because otherwise we will have garbage all around. So, that is what I think an Earthkeeper is.

Raquele

An Earthkeeper is someone who cares about their environment and cares about the Earth's health. Earthkeepers pick up trash from non-Earthkeepers who don't

care about the Earth. The Earthkeepers are kids who want to make a change in life! An Earthkeeper is a hero.

Darlene

An Earthkeeper is a person who "saves the world" from it being polluted, and keeps the world clean. They help the environment stay nice and clean.

PLEASE SEE KEEPERS, PAGE 4

Storm Drain Detectives visit San Francisco Bay

By Hayley Hower

LODI HIGH SCHOOL

shark that we were also able to touch!

After that, we went over to the portside of the boat and caught plankton. We took the ocean sample and examined it under our microscopes and identified the micro-organisms. Of course, being in Storm Drain Detectives we tested the pH, oxygen levels, nitrates and more of the sea water we collected. On the day we went, April 1, 2016, the weather was fantastic and the water tested to be all normal. Therefore, we are doing our job so far of protecting the ocean wildlife.

The Marine Science Institute's (MSI) main goal is to make learning about the environment we live in fun for all ages.

Our day consisted of many fun group activities on Pier 39 and at the Redwood City headquarters for MSI. While we were on the boat we gathered mud in a frantic "mud grab" by throwing a claw on the bay's ocean floor. We were then able to find invertebrates by sifting through the mud. After we were done, we had to take an oath, that we promised to protect — no matter how ooey gooey — the creatures of the ocean floor by putting the mud on our faces!

Later, we set a giant net out behind the boat. We caught many fish and had to identify all of them. It took a lot of teamwork to pull up that giant net. We were able to touch all of our findings, but interestingly enough, the group before us caught a leopard

shark that we were also able to touch!

The trip to San Francisco with Storm Drain Detectives (SDD) held a lot of firsts. We were able to see and feel the living organisms that impact our human life daily. High school peers and fifth-graders were able to witness and gain knowledge about the bay and Delta that we live very near to, and why they are so important to our daily lives.

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In addition, I want to raise awareness of water quality that leads to better lives for everyone. I am proud to keep my promise to help protect the wildlife of the ocean.

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My experience as a Storm Drain Detective

By Dylan O'Ryan

LODI HIGH SCHOOL

According to www.dosomething.org, approximately 40 percent of the lakes in America are too polluted for fishing, aquatic life, or swimming. This is a startling fact that we may have to come to in the city of Lodi. Pollutants like trash, plastic, cigarette butts, and much more can all have serious consequences on our very own community.

Storm Drain Detectives (SDD) investigates the effects of pollutants on our very own Lodi Lake. As an active member in SDD, I have had some memorable experiences that I would never have had without the program.

One of the many experiences that I have had is being an active member in the community. There is nothing like knowing that I am being proactive for the city I live in. Being able to test water quality in the very same place I enjoy what it may offer is simply fulfilling.

Another experience that I

have had while participating in Storm Drain Detectives is making connections. SDD has given me a chance to meet new people from all backgrounds of life.

Through the people I have met, I was able to volunteer at the NorCal Science Festival. At this festival, I was able to teach the public about how important keeping water pollution-free is. This festival at Tokay High

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PLEASE SEE DETECTIVES, PAGE 4



Learn more about Lodi Lake, plastic Student writers share facts you didn't know about our very own Lodi Lake and what happens to plastic after it is thrown out in the garbage. **2**



Nature appears in student artwork Lodi Unified students use their artistic and creative writing skills to celebrate local and Pacific wildlife, Lodi Lake and the Mokelumne River. **3, 6 & 8**



A year of raising young salmon Students from Heritage Elementary School spent the year helping several young salmon grow, and learning about their life cycle in the process. **6**

The process of cleaning water in Lodi

By Leslie Ortiz

HERITAGE ELEMENTARY SCHOOL

Have you ever thought about what happens to the water you use to take a shower, brush your teeth, and flush the toilet? Well, today I'm going to tell you!

First of all, it takes about six to eight hours for that water to go to a place called White Slough to be treated. When the water gets there it goes through a cleaning process.

The water goes through the primary treatment, and that's when tiny bugs

hold onto the waste, which sinks down and the bugs eat it.

Next, it goes through secondary clarifiers, where it all gets all clean.

But that's not all! Then it goes through UV disinfecting where all that clean water is good to use for agriculture and a power plant.

But that water is not for drinking even though it's clean enough for you to drink it without getting sick.

Plus, did you know that about 125 million gallons of water gets treated per day?

Heritage students do their part to help the planet



PHOTOS BY ROXANA MAGALLON/HERITAGE ELEMENTARY SCHOOL

Each Friday, students in the Earthkeepers club at Heritage Elementary School pick up trash from the school grounds. Above left: Miguel Arias, left, shovels old, dead leaves into a garbage bag held by Brian Garcia. Above: Earthkeepers cheer after another successful Friday cleanup. Left: Gaby Gonzalez gathers trash. Below: Food wrappers and other litter collected by the students is ready to be thrown away.



Left: Lisset Martinez and Nancy Jimenez decorate clay cut-outs for an art project. Below left: Monica Ortiz, left, Kathia Rodriguez, center, and Elida Orozco paint tiles. Below right: Faatihah Khan shows off the tile she made. Students created the clay tiles for a Mokelumne River watershed-themed trash receptacle on a recent Friday at Heritage Elementary School. Davis artist Donna Billick and her Rock Art team helped the students create shapes from clay and paint them. The pieces will now be fired at another location; the student art is expected to be installed in mid-June. The LUSD Got Kids Foundation and Cal-Waste helped to make the art project possible.

PHOTOS BY LESLIE ORTIZ/HERITAGE ELEMENTARY SCHOOL



DETECTIVES

CONTINUED FROM PAGE 1

gave me an opportunity to meet new people, learn new information and have fun.

One of the many experiences that I have had is to learn about how the way I live can have an impact on where I live. While studying the conditions of Lodi Lake, I was also gaining experience on how something so simple can affect a wonderful ecosystem greatly.

While gaining a lot of educational experiences, I have had some memo-

rable and funny situations. While the City of Lodi is fixing up the dam, Lodi Lake is drained. Since the bottom of the lake is dirt and there was water on top of that, there is mud. While I was testing the water, I accidentally fell in the mud! I then had to walk all the way to drop off the testing equipment all muddy.

Another funny time was at the NorCal Science Festival, I was running a booth that demonstrated how pollutants like bug spray gets into the water ways. This model used red drink powder that would then dye the water. Using this method by the end of the

day dyed my hands all red.

The most important experience that I have had through SDD is one that I can apply to all of life. That lesson is to always listen and re-check important projects. While testing Lodi Lake I was testing the dissolved oxygen in the water. I did not check what mode I was on, this gave me a wrong outcome. My teachers, Mrs. Turner and Mrs. Grant, told me to go all the way back to re-test the dissolved oxygen, or the amount of oxygen in the water.

This may seem like a very small lesson, but it truly taught me to always double-check and simply be aware of

what I am doing. This lesson will help me through future school, jobs and life.

Storm Drain Detectives is available for people who are in the fifth grade and above. The only requirement is that you have to be transported to and from Lodi Lake. It is simply a wonderful program to participate in and I strongly recommend it to anyone interested.

Overall, Storm Drain Detectives will give you experiences, connections and friends for life. It provides a lifetime of values and principles that you may not learn without SDD.

FILTERS

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as trichloroethylene, is a carcinogen, meaning it causes cancer. It is used by newspapers to clean printing presses and mechanics to clean machinery.

PCE, otherwise known as tetrachloroethylene or perchloroethylene, in small amounts can give you headaches or make you dizzy and uncoordinated. High amounts of PCE can make you pass out and may even be fatal. PCE can be used the same way as TCE; however, it is mainly used in dry cleaning.

DBCP stands for dibromo-chloropropane. It is used by farmers as a pesticide to kill nematodes. Nematodes are small worms that eat the roots of grapevines.

However, DBCP doesn't just hurt nematodes. It can cause kidney and liver damage. It also causes infertility in men, meaning it makes them unable to have children. Irresponsible disposal or use of these chemicals has helped them find their way into our water.

This doesn't mean that the polluted water we are pulling up now was polluted recently. In fact, the water pulled up from Lodi's wells, and most other wells, has probably been in the ground for at least 40 years. Laws making chemical dumping like this illegal only really began to be enforced in the 1980s. Chemical dumping had been going on since the 1940s.

Enforcement of these laws, along with a huge local cleanup effort, has changed things immensely. The main funders of the cleanup are the very companies that polluted the water just 40 years ago. Lodi's groundwater is getting cleaner day by day.

The next time you have chemicals to throw away, dispose of them safely, or they'll end up in the very water you drink.

KEEPERS

CONTINUED FROM PAGE 1

Hector

An Earthkeeper is a person who cleans the environment to keep it safe.

Paloma

A person who helps the world. An Earthkeeper cares about the planet.

Fernin

An Earthkeeper is a person who cleans up trash everywhere.

Brian

A person who cleans up our school and picks up trash in school, and out of our school.

David

Responsible, trustworthy, neat, and loves to keep our world clean.

Diego

An Earthkeeper is a person who is a responsible and loving person towards Earth. An Earthkeeper is a protector of Mother Nature. An Earthkeeper is a person who keeps the Earth clean.

Faatihah

An Earthkeeper is a person who takes care of Earth and the environment around us. An Earthkeeper wants to keep Earth and our environment safe.

Miguel

An Earthkeeper is a person who is devoted to keeping our planet one of the greenest and cleanest places in the universe. They also are responsible for the cleaning of our school campus.

Hermelinda

Earthkeepers are an awesome group of fifth- and sixth-grade kids who pick up garbage on Fridays after school. They are trying to make the world and our school a better place! That's the meaning of an Earthkeeper.

Gaby

An Earthkeeper is someone who cares about the planet and has the courage to do something to help save the world. An Earthkeeper is someone who should never litter, not even when someone is seeing you or not ... "respect"!

Mariajose

An Earthkeeper is a person who strives to make this world a better place by not polluting the world, but by doing the complete opposite. Earthkeepers "save the world!"