

What the River Carries

An Educational zine
on Ohio River Pollution

by ASHE
Gruenhagen



This project was created for
"My River, My Roots, My Freedom,"
an ArtWorks summer apprenticeship
program in collaboration with The
Well and America's River Roots Festival.
This youth apprenticeship lasted for
two months, and the 11 apprentices
involved created 8 Ohio River-inspired
projects to be viewed at America's
River Roots Festival

America's River Roots Festival is
a signature event to kick off
America's 250th celebration, elevating
the culture(s) of America's River cities.
We are grateful for their support. ♥

Proceeds from this zine will go
to The Ohio River Foundation.



Water pollution is measured from two different types of sources:

Point Sources that can be traced to a single source, like Factories.



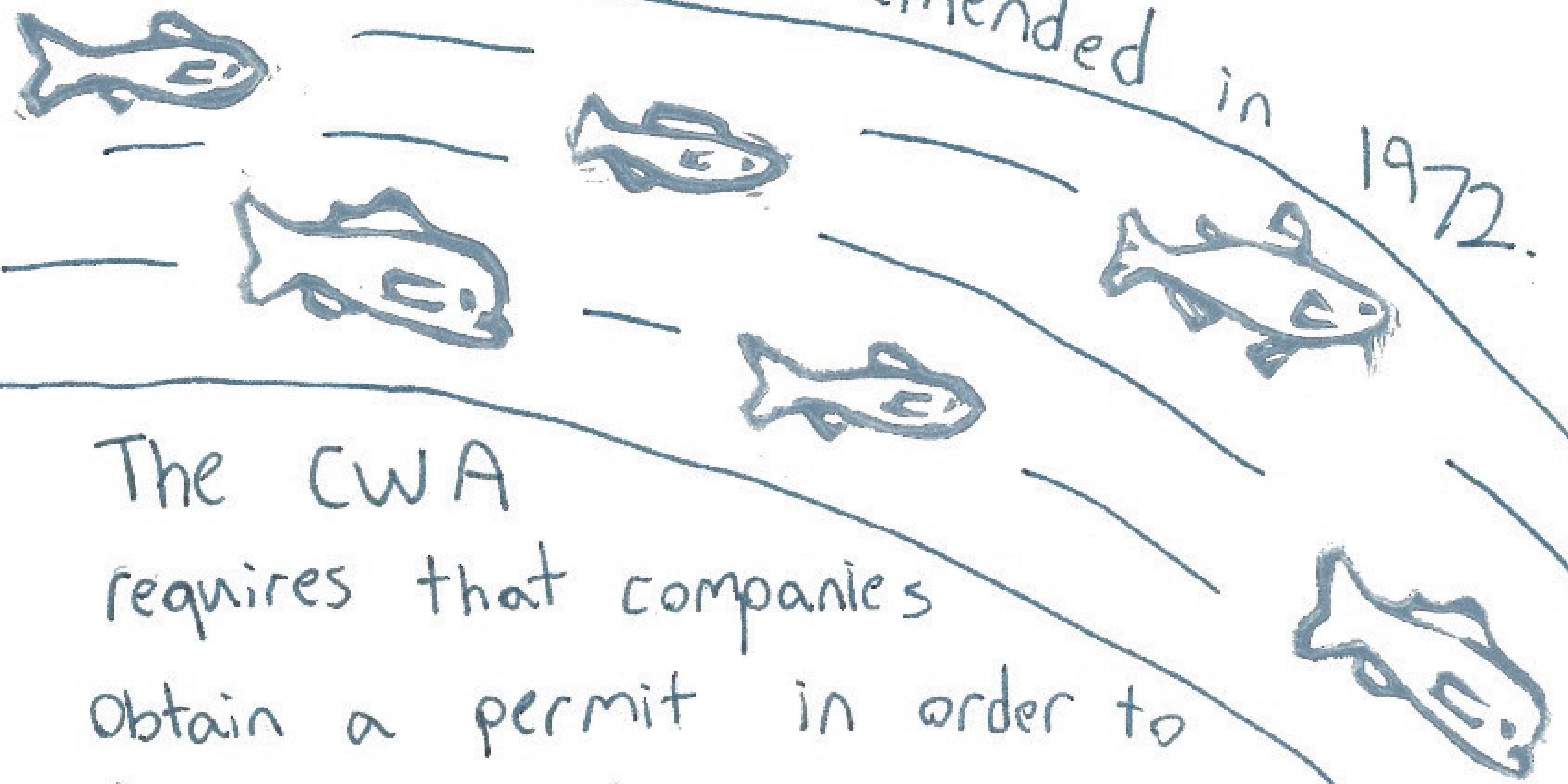
Non point

Sources (AKA runoff) that cannot be traced to a single origin point.

Things like urban & agricultural runoff.

Industrial Pollution

The Clean Water Act (CWA)
was enacted in 1948
but was only significantly
recognized and amended in 1972.



The CWA
requires that companies
obtain a permit in order to
dump wastewater into the river.
The pollutants companies can dump
and how much they can dump
is regulated by the EPA.

Environmental Protection Agency



Prior to the CWA, companies dumped untreated wastewater into the river, leading to reduced biodiversity, frequent river fires, and high acidity, almost as acidic as vinegar.

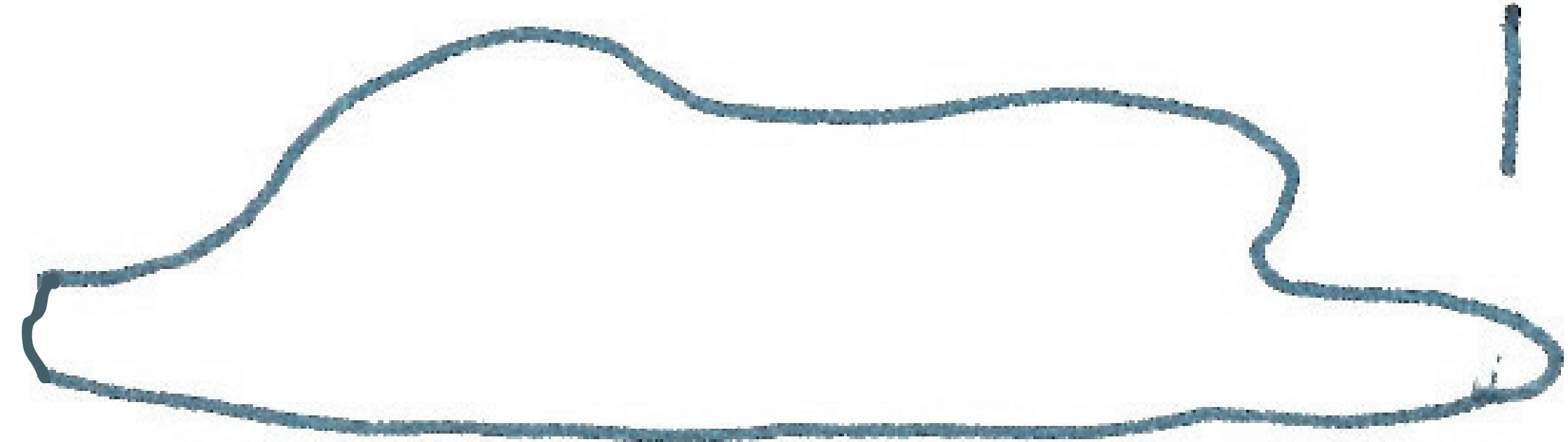
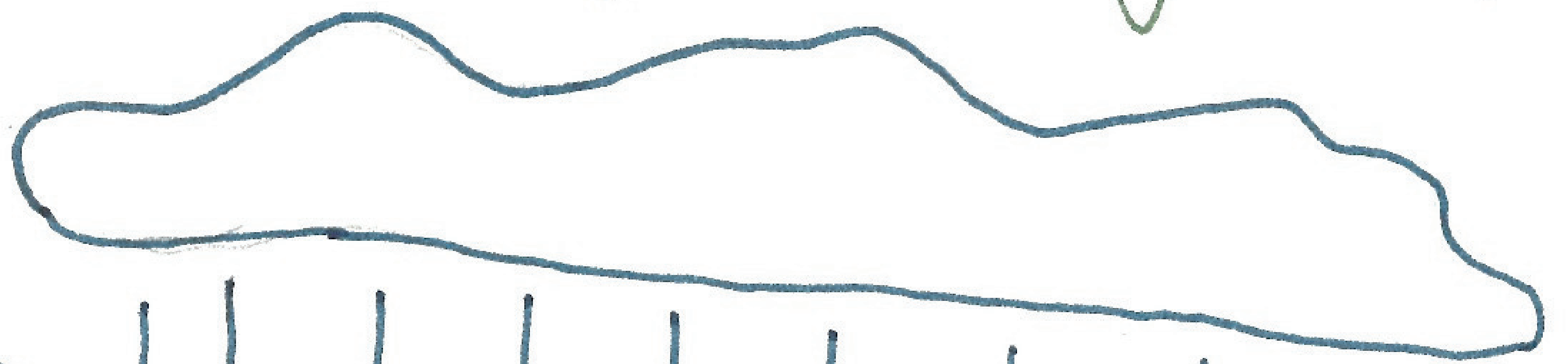


Companies follow EPA Regulations by diluting wastewater before dumping it into the river. This is effective in the short term but will become unsustainable as more wastewater is dumped into the river.



Runoff Pollution

Agricultural Runoff carries sediment, herbicides, and pesticides. This is one of the most pervasive kinds of runoff due to how prevalent agricultural land is.

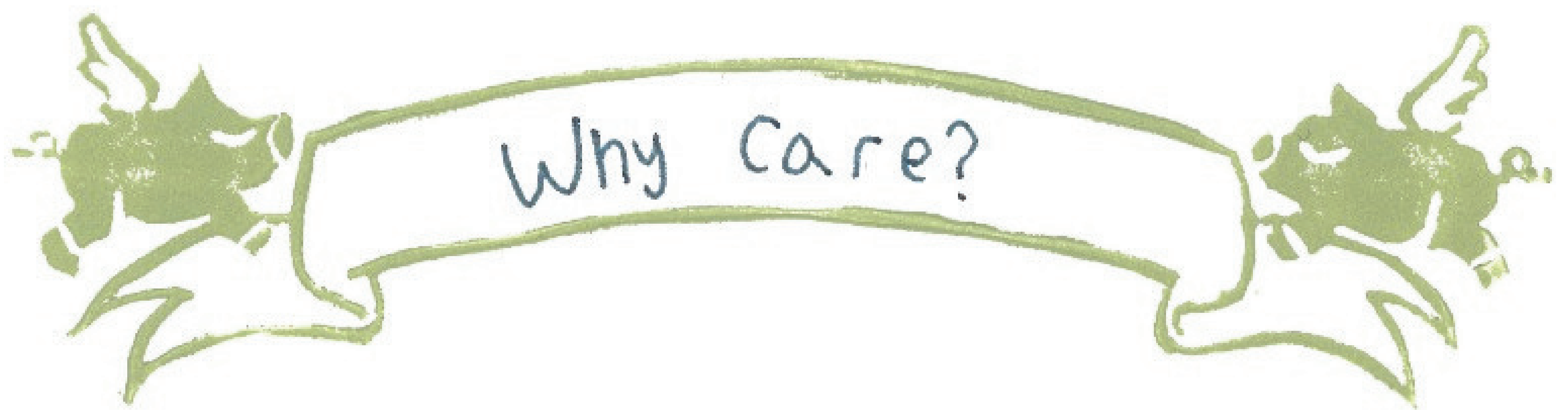


Acid Mine drainage happens when runoff comes in contact with Sulfurous minerals and forms acid that can leech heavy metals from rocks that it comes in contact with. This acid drains into rivers, often turning them orange.



Urban Runoff forms when water runs off of impervious surfaces (roofs, concrete, etc.), preventing water from absorbing into the ground. This water runs across roofs & streets, picking up contaminants like motor oil, grease, and paint before then going down storm drains and into waterways.





The Ohio River provides drinking water to >5 million people.

Pollutants can make water unsafe for consumption.

*PFA's — developmental effects, increased risk of some cancers, increased cholesterol

Nitrates — development & birth defects

Cyanotoxins — varying health concerns

Mercury — in-utero exposure can lead to increased risk of neurological issues.

*We don't know a lot about PFA's so take this with a grain of salt

Marginalized communities are disproportionately affected by pollution due to exclusionary zoning laws, and the issues faced from pollution are often met with inaction or unhelpful solutions from representatives who don't actually live in the community. Oftentimes it's left up to the community themselves to come up with solutions.



Mussels are good monitors of stream quality, can purify water, and ease nutrient overloads.

The Ohio River has one of the most diverse freshwater mussel communities with 130 species recorded.

Unfortunately, human impacts, such as river pollution, have led to the endangerment of 70% of species and extinction of 11 species.

Excess nutrients from fertilizer runoff leads to increased Algal Blooms.

Cyanobacteria blooms specifically release cyanotoxins that, as stated previously, can be harmful to humans and wildlife.





The Mill Creek, a tributary of the Ohio River helped to launch industrial development in the area and turned into an industrial dumping ground full of waste from the pork industry,

soap production, and chemicals.

by 1997
there were

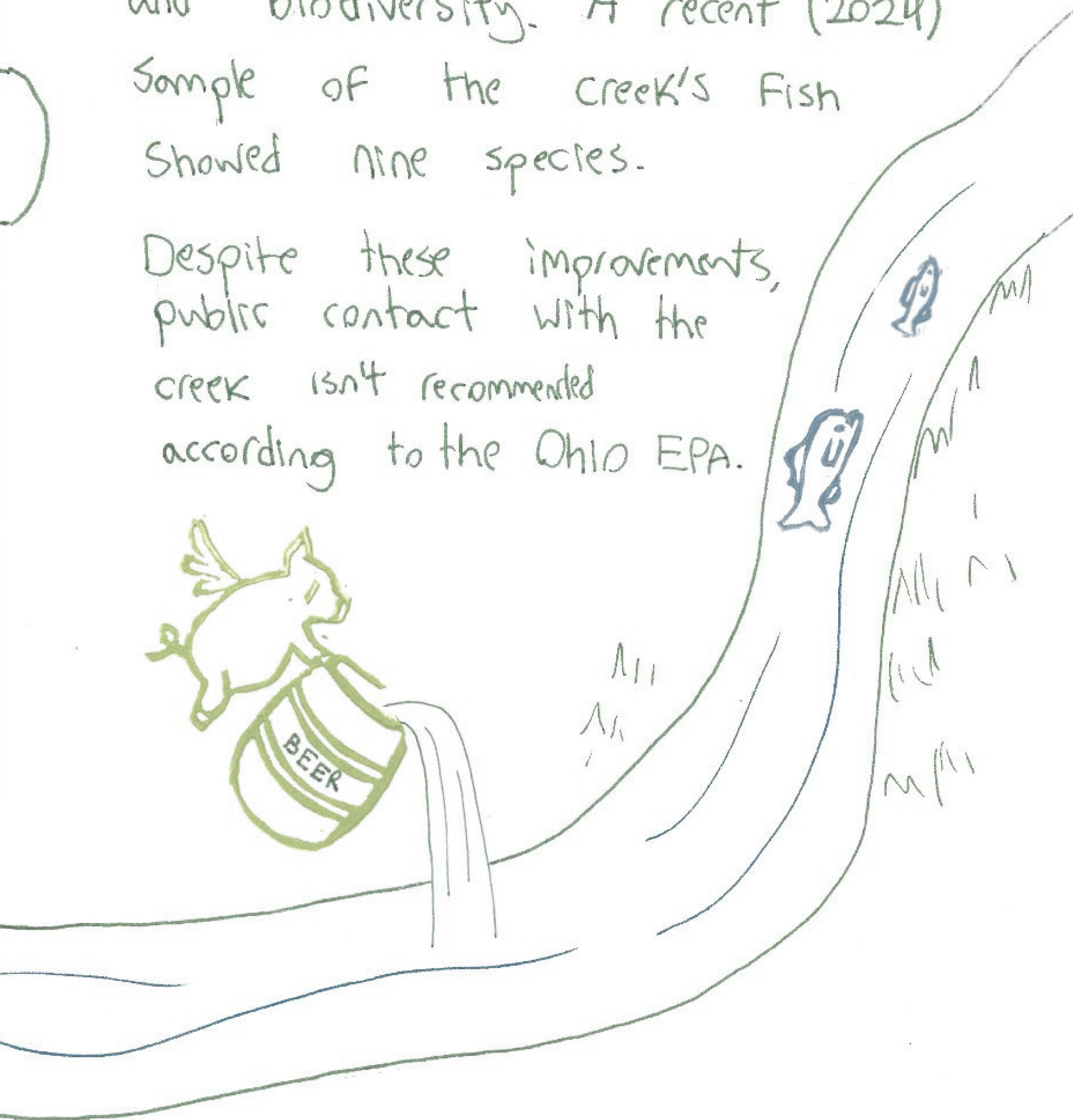
NO Fish,

e. coli was rampant,
it was dangerous
to swim in the
creek, and large
sections were nearly
devoid of native plants.



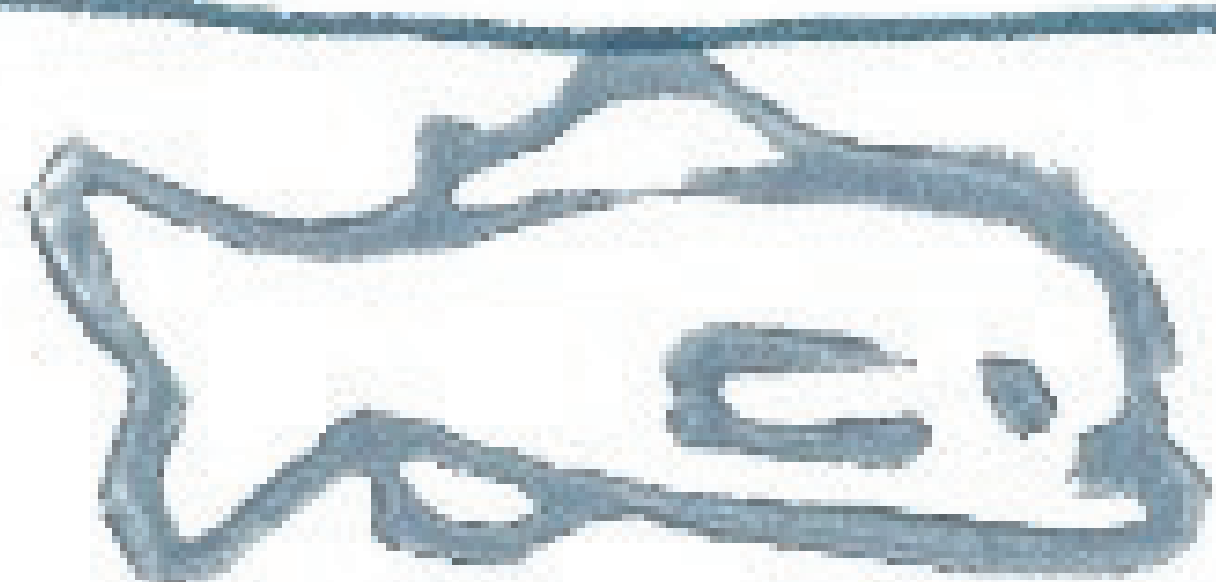
The Mill Creek Alliance has led restoration efforts and the creek has seen tremendous improvements in water quality and biodiversity. A recent (2024) sample of the creek's fish showed nine species.

Despite these improvements, public contact with the creek isn't recommended according to the Ohio EPA.





To combat the core issues of Ohio River pollution we need Federal funding.



The Ohio River Basin Alliance (ORBA) released the Ohio River Basin Restoration and protection plan for public comment (until 7-18-25).

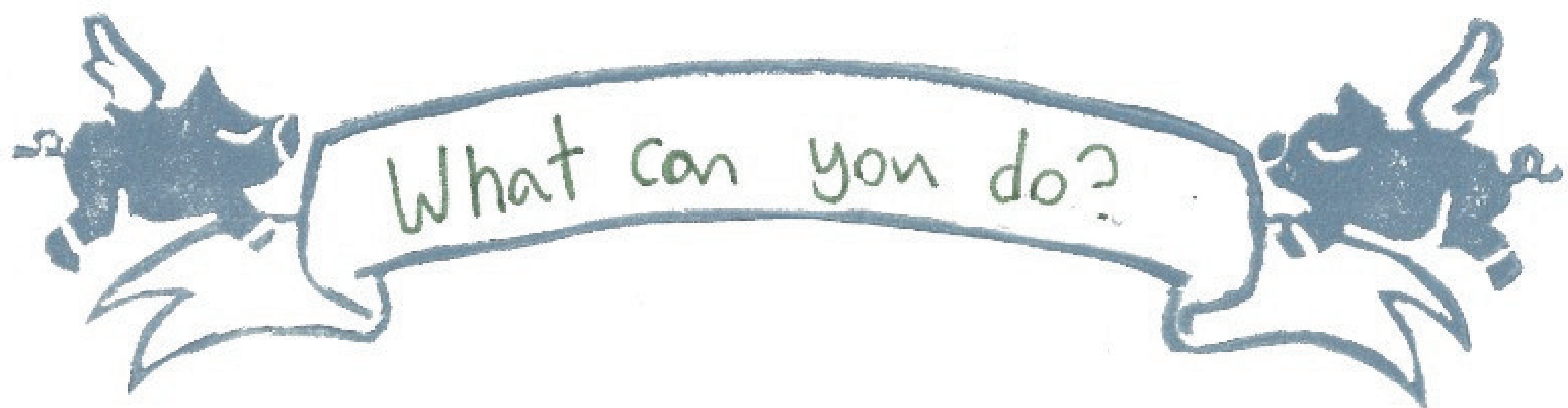


The plan lays out the basin wide plan to restore and protect the river and the funding needed to do so.



To get updates on ORBA's plans you can become a member for free on their website. They also have groups/committees you can join to support various initiatives such as flood risk management & river education.





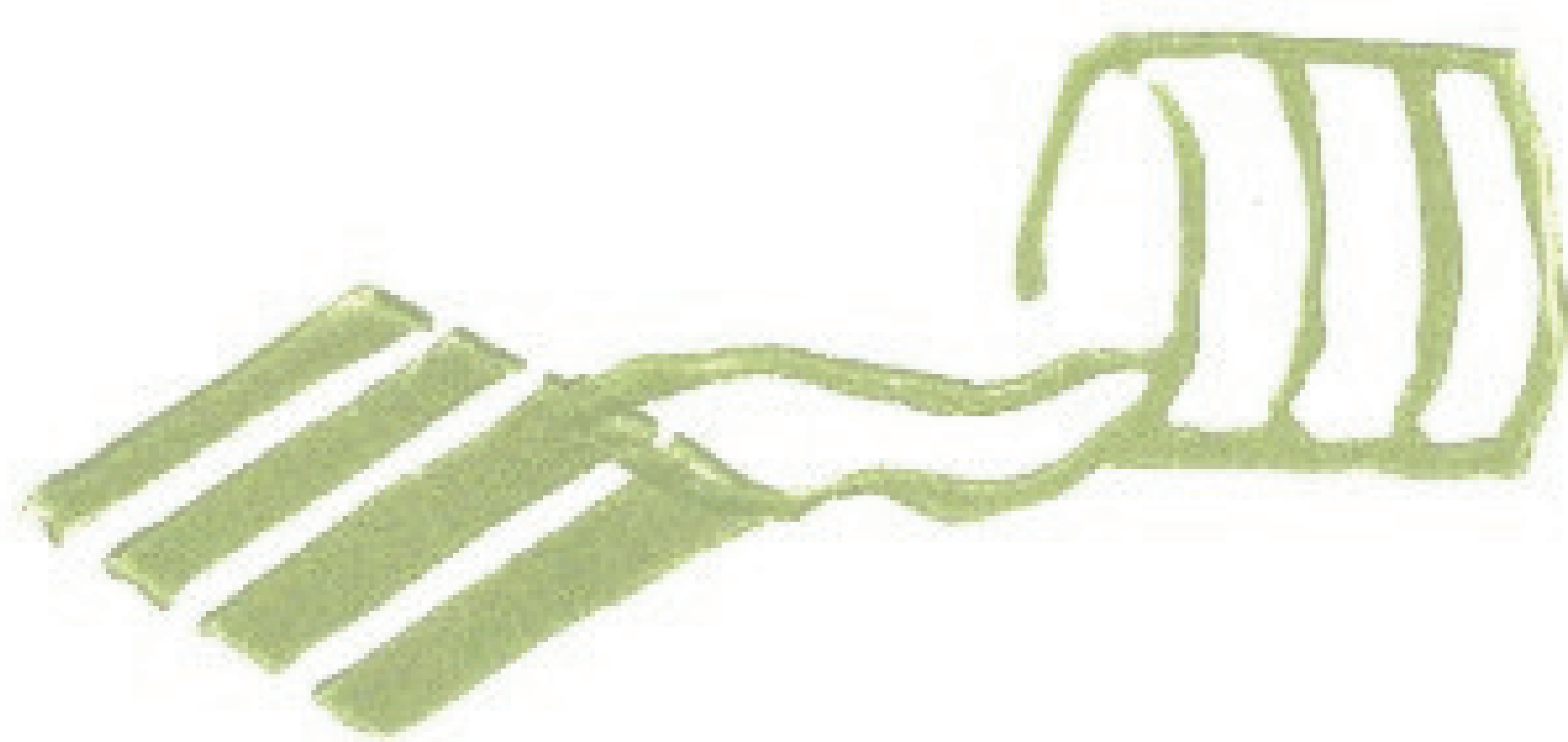
DONATE

(Ohio River Foundation
Foundation For Ohio
River Education, National
Wildlife Foundation)



use natural fertilizers
like compost or bonemeal
instead of chemical
fertilizers.

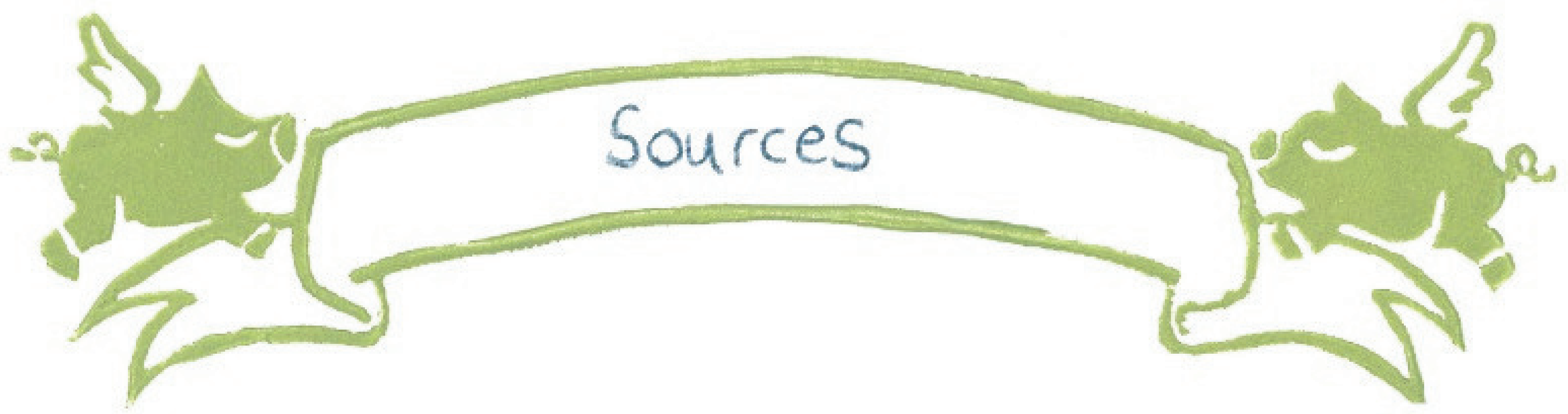
don't dump chemicals
near storm drains.



Drive less!
(carpool, bus, or bike!)

Participate in river
cleanups like the
Ohio River Sweep.





Inner cover:

<https://www.americasriverroots.com/>

Water Pollution

<https://kygis.maps.arcgis.com/apps/Cascade/index.html?appid=2f23548278794562852555531eb6de54>

Industrial Pollution

<https://www.ohiowatershed.org/the-ohio-rivers-history-of-contamination-and-progress-made.html>

<https://www.ohiowatershed.org/a-look-back-at-the-clean-water-act-movement-after-50-years.html>

Runoff Pollution

<https://www.epa.gov/nps/abandoned-mine-drainage>

<https://ohioriverfdn.org/ohio-river/issues/water-pollution/>

<https://primecontractorsupply.com/2025/04/10/the-impact-of-ohios-urban-expansion-on-stormwater-management/>

<https://www.ohio.edu/voinovich-school/research-impact/projects/rain-river>

Why Care?

<https://www.ohiowatershed.org/fighting-for-the-ohio-river-watersheds-mussels.html>

<https://www.cincinnati.com/story/opinion/2022/04/25/opinion-communities-fed-up-environmental-issues/7355853001/>

<https://www.orsanco.org/harmful-algae-blooms-habs/#:~:text=Nutrients%20and%20algae%20are%20a,and%20lasted%20over%20two%20months.>

<https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>

<https://www.lpm.org/news/2022-10-04/industry-dumped-more-toxic-pollution-into-the-ohio-river-than-any-other-u-s-watershed-in-2020>

<https://www.epa.gov/habs/what-are-effects-habs>

<https://www.epa.gov/mercury/health-effects-exposures-mercury>

<https://ohioriverfdn.org/ohio-river/ecology/ohio-river-mussels/>

Mill Creek

<https://ohioriverfdn.org/news/fishing-for-clues-about-stream-health-in-mill-creek-a-hopeful-story-of-resilience-and-recovery/>

<https://spectrumnews1.com/oh/columbus/news/2023/07/19/behind-the-decades-long-effort-to-restore-cincinnati-s-mill-creek>

ORBA/What can you do?

<https://www.ohioriverbasinalliance.org/>

<https://www.wcpo.com/news/local-news/hamilton-county/cincinnati/you-should-care-because-it-affects-you-nonprofit-warns-of-ohio-rivers-declining-water-quality>

<https://www.orsanco.org/wp-content/uploads/2016/12/Nonpoint-Source-Pollution-in-the-Ohio-River.pdf>

Ohio River Foundation

Donations



Other "My River, My
Roots, My Freedom"
projects





Sara M. and Michelle
Vance Waddell



ArtWorks

