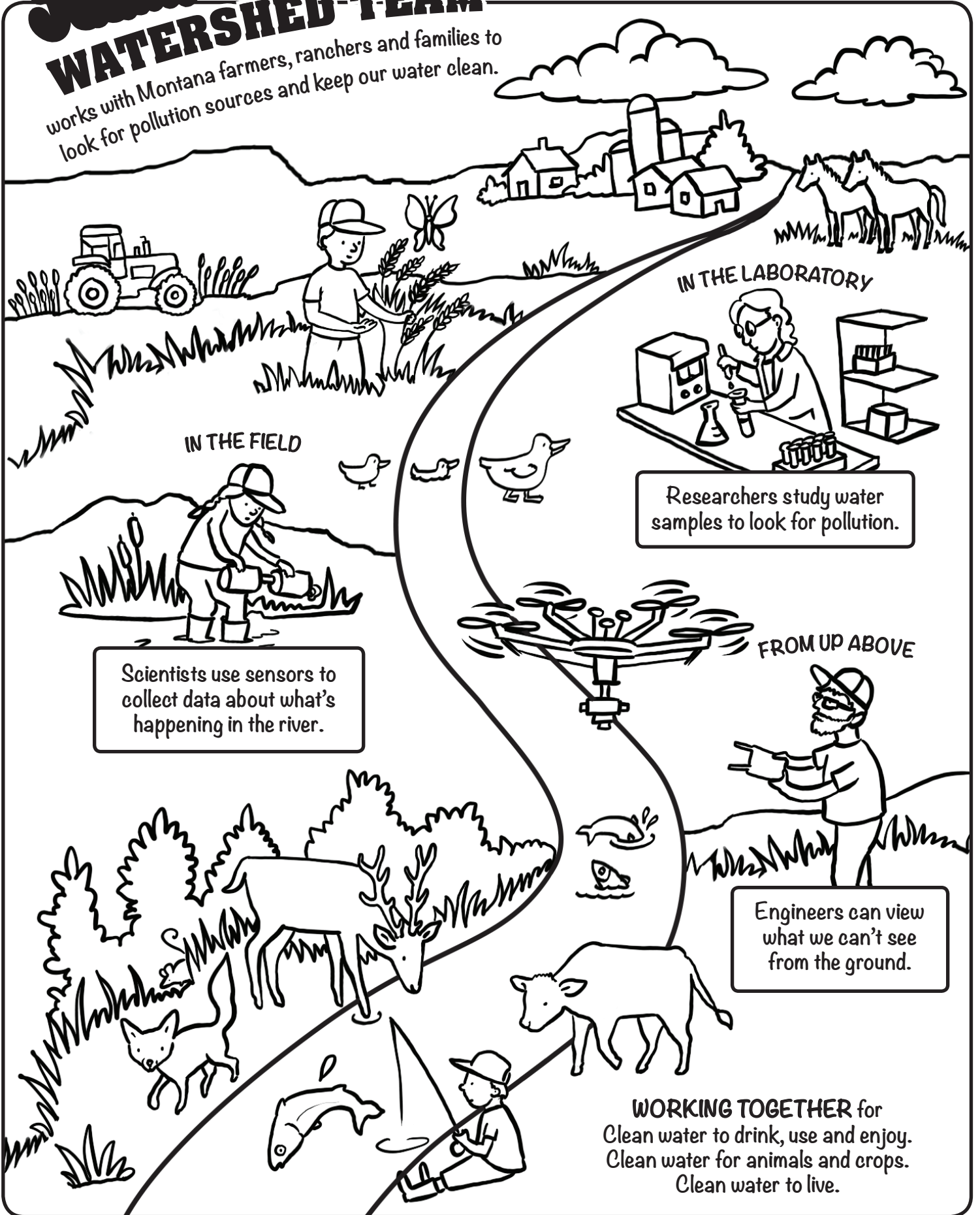


# South River CREWS\* WATERSHED-TEAM

works with Montana farmers, ranchers and families to look for pollution sources and keep our water clean.



MONTANA  
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IN THE FIELD

Scientists use sensors to collect data about what's happening in the river.

IN THE LABORATORY

Researchers study water samples to look for pollution.

FROM UP ABOVE

Engineers can view what we can't see from the ground.

**WORKING TOGETHER** for  
Clean water to drink, use and enjoy.  
Clean water for animals and crops.  
Clean water to live.

\*CREWS is the Consortium for Research on Environmental Water Systems

# Judith River CREWS\*

**Water** is one of Montana's most valuable natural resources. Whether in rivers, lakes, canals or underground, water is important for our homes, agriculture, businesses, recreation, wildlife and the environment. But water can easily become polluted, and scientists and engineers in Montana are working hard to figure out where pollution comes from and how it gets into rivers and soils. They are also studying how we can keep pollution out of our water or clean it up if it's already there.

One of their research sites is the Judith River, which begins in central Montana in the Little Belt Mountains near the small town of Sapphire Village. The Crow tribe called this waterway Buluhoa'ashe or Plum River, and Captain William Clark of the Lewis & Clark expedition named the river Judith to honor his sweetheart back home in Virginia.

The Judith River contains many types of fish and provides water, food and shelter for wildlife as it flows north and east out of the mountains, mainly across agricultural lands, until it joins the Missouri River in the White Cliffs area about 18 miles northwest of Winifred.

Farmers near the Judith River grow wheat, barley, dry peas and forage for livestock. Ranchers in the area raise mainly beef cattle along with some sheep and goats. Many farms and ranches have horses.

Because the Judith River is shallow and gravelly in many places, chemicals that farmers use to help their crops grow sometimes collect in the river water. Farmers, ranchers and people who live in nearby towns want to learn more about how they can take good care of their land and water, so scientists and engineers from Montana universities are studying everything from whether the shape of certain mountains and valleys cause more pollution to go into the river to how tiny particles of chemicals too small to see interact with the river water.

The Judith River is about 125 miles long with lots of smaller streams and ponds that feed into it, so scientists can't possibly study every section to see what's going on. They are using electronic machines called sensors that they put in the river to gather information. The sensors stay underwater for quite some time, collecting data about what is happening in the river nearby. When the scientists come back and take the sensors out of the water, they can see information about what chemicals were in the water, whether that changed based on how much water was flowing in the river, and how the river water changes from night to day (plants that live underwater release oxygen when the sun shines and stop producing oxygen at night). Because the sensors are out in Nature, weird things can happen to them — sometimes a cow crossing the water steps on one, or algae — which looks like green slime — can grow on the sensor and affect it.

Another way scientists collect information about the river is by flying drones with cameras on them over the river. The drone can go places that are hard to get to by foot, car or horse, and they help the scientists observe things that are difficult to see from the ground — like where the river twists and turns, and whether plants or algae are growing in certain places. Even though the drones never actually touch the water, the images they take with special cameras can help us know more about the water in the river and the lands around it. This is called remote sensing.

All the scientists and engineers that study the Judith River are part of a team called CREWS — the Consortium for Research on Environmental Water Systems. A consortium is a team, and this team is working together to help our Montana water stay clean and healthy for all to enjoy.

## Sources

<https://www.enjoylewistown.com/vacationing-in-lewistown-montana/hunting-adventures/judith-river>

<https://naturalatlas.com/rivers/judith-816224>



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