



# What's Your Drip Code?

*Resources From Missouri Stream Teams And A Current Effort To Improve Environmental Health In Missouri Communities*



City of Ozark Stream Team.

“What is your drip code?” If asked that question, you might ask, “What *is* a drip code?” We all know what a ZIP code is, but what *is* a drip code?

In this context, a drip code refers to the local watershed where you live. If asked the question, “What is a watershed?”, how would you respond? In my two decades of working as a water educator, I have found that the most common answer to that question, if posed to a class of fourth graders, is “The shed out back where water is stored.” Smart answer, but not the answer I was hoping to hear when teaching about water quality. I was hoping to hear an answer similar to “A watershed is an area of land that drains precipitation to a certain body of water, such as a creek, river, wetland, or lake.” Another answer for watershed could be “drainage basin or catchment” or “an area of land defined by

its elevation from which all water within it flows by gravity to a downstream body of water.” Correct! Good answers!

A drip code is just another way of asking, “What watershed do *you* live in?” Do you know the answer? Do the residents of your community know *their* watershed?

In 1989, a group of fly fishermen and community members of Waynesville, noticed their local stream had become trashed with litter, so they decided to take action. They invited Governor John Ashcroft to the banks of Roubidoux Creek, and the Missouri Stream Team Program was born – an effort to mobilize and equip volunteers for stewardship of their local waterway. Thirty-five years later, more than 6,000 Missouri Stream Teams have formed, with each team participating in voluntary actions in

their community, such as litter pick-up events, water quality monitoring, storm drain stenciling, tree planting and educational events. Today, with the support of sponsor agencies including the



**The Roubidoux Fly Fishers signed up as the first Missouri Stream Team in 1989 to help improve their local fishing stream in Waynesville, Mo. Since then, over 6,000 Missouri Stream Teams have formed throughout the state. Missouri cities and towns can sign up to be a Missouri Stream Team and receive free resources for caring for their local waterways.**

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Missouri Department of Conservation (MDC), the Missouri Department of Natural Resources (DNR) and the non-profit Conservation Federation of Missouri, the Missouri Stream Team Program provides Missourians and their communities with resources, trainings and tools to educate people about local

watersheds and take positive actions for water stewardship.

Cities and towns in Missouri may not be aware of the resources available to them through the Missouri Stream Team Program. Did you know that your city or town can sign up to be a Missouri Stream Team? Individuals,

organizations, or local governments can form their own stream team by completing a simple online form<sup>1</sup>, and there is no cost. Pick your team name, such as your city's name, or something more creative, and your city or town will receive a stream team identification number. Once recognized as a stream team, you are eligible to order free supplies for community litter pick-up events, including trash bags and leather gloves, and appreciation items for community volunteers, including t-shirts, stickers, and other small prizes. Cities and towns can also order free tree seedlings once a year for planting near local streams. In exchange for the free supplies and appreciation items, the Missouri Stream Team Program asks to receive a simple post-activity report so they can accurately report the number of volunteers, volunteer hours and positive actions completed.

The Missouri Stream Team Program also offers free training opportunities for city staff and community volunteers. Cities or incorporated areas with populations greater than 10,000 or greater than 1,000, within a larger urban area may be required to have a Municipal Separate Storm Sewer System (MS4) stormwater permit through DNR. There are currently more than 160 local areas (most are cities and counties, but some are universities and military bases) in Missouri that have requirements to meet as part of their MS4 stormwater permit. For communities recognized as MS4s and whose community's stormwater is regulated by an MS4 permit, participation in Missouri Stream Team activities can fulfill certain requirements of this permit – including the requirements for public education and training. City staff who complete Volunteer Water Quality Monitoring (VWQM) training through the Missouri Stream Team Program will receive skills and water quality monitoring equipment that can be used to monitor community streams and evaluate illicit discharges. Several Stream Team activities count as best management practices for MS4 permit requirements.<sup>2</sup>

So why do Missourians care about the quality of water in our rivers, lakes and streams? The answer to that question is different for each person. The local creek



**Municipal staff are eligible to receive free training in water quality monitoring through the Missouri Stream Team Program. Your city or town can sign up to be a Missouri Stream Team for free at [www.mostreamteam.org](http://www.mostreamteam.org). Missouri Stream Team activities can help fulfill some requirements of MS4 (Municipal Separate Storm Sewer System) permits.**





**The city of Hannibal (Stream Team #4705) coordinates a litter pickup event as part of their actions to improve environmental health in their community. The Missouri Stream Team Program provides free trash bags, gloves, and t-shirts for litter pickup events.**

in your community may be where they played as a child, caught crawdads with their siblings, and where they now take their own grandchildren to play and spend precious time outside and away from electronic screens. People may have their favorite fishing spot, swimming hole, float stream, or lakeside getaway, where they can find solitude in nature or make good memories with family and friends. In addition to our individual need to have clean water for drinking, bathing, and cooking, having clean water for recreational activities is one aspect that makes many Missouri communities an attractive place to live or visit.

As your city's drinking water and wastewater operators are aware, there are many water contaminants of concern that can be either harmful for human consumption or harmful for the animals and people who live downstream. Pollutants of concern for drinking water and wastewater include bacteria (measured as *E.coli*), nutrients (such as nitrogen and phosphorus), sediment (which causes turbidity), heavy metals, pesticides or other chemicals, and more recently PFAS (per- and polyfluoroalkyl substances) or "forever chemicals."

One increasingly concerning pollutant of our nation's waterways and a substance that has been shown to be

harmful to human health is plastic. We see it everywhere we go, it seemingly surrounds us, even in grocery stores. You may have seen an accumulation of single-use plastic bottles under a bridge in your city or covering storm drains in your community. The production of plastic began soaring in the 1960s, and plastic production has increased 230-

fold since the 1950s, with now more than 450 million tons produced globally, each year. More than half of the plastics ever produced have been made since the year 2000. The result is plastic litter accumulating in local waterways and ultimately the oceans. Microplastics (plastic particles between 5 mm to 1 mm in size) have been found to be ubiquitous in the environment – being found in the most remote of places, including deep ocean trenches, mountain peaks and inside animals and the human body.

Mountains of new research are unveiling the harmful effects of plastic pollution on our individual human health and the environment. Research has shown plastics leach toxic chemicals, including endocrine disruptors, carcinogens and reproductive toxicants (substances that negatively impact the reproductive system). Plastic particles have been found in the human brain, heart, liver, kidneys, and placenta, and in semen, blood, breastmilk, and newborn stool. A plastic product of significant concern to human health is polystyrene foam. Often used for food packaging, polystyrene is known to leach carcinogen chemicals into food and beverages, especially when contents are hot, acidic or high in fat. Recent research has also shed light on chemical exposure from artificial turf surfaces, which

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Water within the dark line flows first to the Missouri River, and then to the Mississippi River



Water to the right of this dark line flows to rivers and streams that enter the Mississippi River.

## Where does the water in your community flow?

**In Missouri, all of our communities are in the Mississippi River watershed, with water from rivers eventually flowing to the Gulf of Mexico. For about half of our state, rivers and streams flow into the Missouri River, before entering the Mississippi River at St. Louis.**

are manufactured with endocrine-disrupting chemicals, heavy metals and PFAS. These chemicals, in addition to the plastic particles that constitute artificial turf, wash into nearby streams through stormwater and runoff.

Most Missourians may not be aware of the health impacts of plastic used in their daily lives. Although some businesses and organizations have made strides to reduce plastic use in their establishments, it remains true that the use of single-use plastics in Missouri is still prolific. Missourians currently pay for the costs of plastic pollution and waste management. The Missouri Stream Team Watershed Coalition is partnering

with the Missouri Foundation for Health to facilitate discussions about tangible actions that Missourians can take to reduce plastic use, and the negative health effects of plastic. We encourage every city or town to take this simple 10-question survey<sup>3</sup>, that will help facilitate new resources for reducing plastic use in Missouri communities.

Missouri is rich in water resources, when compared to many other states and nations around the world. The many flowing rivers, streams, groundwater aquifers, springs and reservoirs that are found within Missouri provide a regional abundance of this life-giving resource. Even in times of measured drought that

may be negatively impacting individual communities and farms, overall, Missouri is a water-rich state. Having an abundance of clean water to supply your community is critical to the growth and long-term health and sustainability of your community. Likewise, minimizing pollution from your community is critical for improving the health of residents and the health of other nearby communities in your region. A region rich with clean, abundant water, healthy people and vibrant natural resources will serve to attract people, whether it is tourists seeking a weekend getaway, or people seeking a new community to live in for years to come. Participating as a Missouri Stream Team is one simple action that communities can take to make their community an environmentally friendly and healthy place to live. 🌿

### Where to find more resources:

<sup>1</sup>Missouri Stream Team Program – Sign-up as a Stream Team, order supplies, report an activity, find training resources at [www.mostreamteam.org](http://www.mostreamteam.org)

<sup>2</sup>Municipal Separate Stormwater Discharges (MS4) permit requirements and resources

<https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/stormwater/municipal-separate-storm-sewer-systems-ms4>

Email: [MS4@dnr.mo.gov](mailto:MS4@dnr.mo.gov).

<sup>3</sup>Take the 10 Question Survey for Missouri municipalities to see how you might receive resources to reduce plastic use in your community. Use the QR code below or <https://forms.gle/wS4VJW6KRc7AAQTG8>.



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