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The ‘Killer in Our River’

Understanding Safety Around Dams

By Katelyn Riley

Each year, dozens of lives are lost on America’s waterways at structures called low-head or “run-of-the-river” dams. Among the victims are boaters, kayakers, swimmers, anglers and emergency responders.

The Dangers of Low-Head Dams

Low-head dams are characterized by their low height — usually with a 1-foot to 15-foot drop off — which allows water to flow over the top of the dam. Below the surface, the water falling over the dam creates highly aerated, circulating currents that trap people and objects underwater against the face of the dam. These forces are a practically inescapable trap for even the strongest, life-jacket-clad swimmer or often boats and kayaks as well. Due to this danger, these structures have earned the title of “the killer in our river” or “drowning machines.”

People are often unaware of these dangers, or they underestimate their risk of falling victim to them. Many drowning victims deliberately jump from or float over them without knowing the risks. Others suddenly encounter them, as low-head dams are notoriously difficult to spot from upstream. The victims of these dams also include many would-be rescuers and first responders, several of whom have lost their lives trying to save others caught in the hydraulic current. Regardless of the cause or intention, outings on waterways can end in tragedy.

The late Dr. Bruce Tschantz, professor emeritus of the University of Tennessee, documented 377 fatalities at low-head dams from 1960 to August 2016, with the majority — 91 percent — occurring from April through August during the summer recreation season. Swimming, boating and fishing account for most incidents at dams in the United States.

‘Keep Your Distance, Keep Your Life’

If people choose to go out on a waterway for recreational purposes, encourage them to study the area closely beforehand, or be sure to provide them with information about dam locations. It is important that they are aware of the location of these structures, so they are ready to exit the water if approaching one. Provide them with the following tips:

- Study a map beforehand to locate potential dams and hazard locations or ask a local for more information about dam locations
- Always be alert for potentially dangerous situations
- Always portage around the structure or turn around well before reaching the dam when kayaking, canoeing or boating



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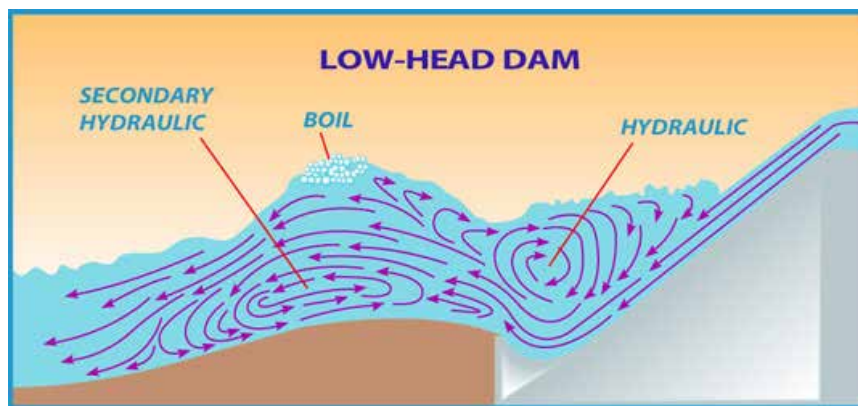


Diagram of a hydraulic roller, the most prevalent hazard of low-head dams.

- Obey all posted signage and barriers in the area
- Let someone know when and where you are heading out and when to expect your return
- Never enter the water to try and help someone. Instead, call 911 and use a remote assistive device, such as a rope or throw bag, to try and pull them back to safety

Most importantly, remind them — “Keep Your Distance, Keep Your Life”: Always stay a safe distance away from dams both upstream and downstream to avoid drowning.

Awareness, Advocacy and Action

There are several ways to take action in your community, improve safety of dams and ensure the well-being of community members. The first step is simply to tell patrons about the risks. Before anyone heads out to a waterway, make sure they are fully aware of the potential dangers. It is also helpful to get in touch with local recreation outfits, such as kayak and boat rentals, hiking groups, conservation groups and others to discuss their education programs.

Common Safety Hazards

Hydraulic Roller – The most prevalent hazard at low-head dams around is what is called the **hydraulic jump** or **roller**. The hydraulic roller is a current formation that arises at the base of a dam. When water falling over the crest of the dam hits the downstream surface, it can create a circular current that pushes anything in it downward to the riverbed, along the bottom, up to the surface of the water and back into the face of the dam (see the graphic for a visual representation of this type of current). This roller can be extremely strong and trap swimmers, boats and large debris in it, creating a major drowning and battering hazard. This hazard is also present near spillways of larger dams or at any flow from a structure into a body of water.

The water above and just downstream of a roller can appear to be boiling and is, in fact, often referred to as the **boil**. If you are on a river for any reason – be it swimming, fishing or boating – and see an area of churning water, always make sure to exit the waterway and go around the area by land, re-entering the water well downstream of the hazardous area. However, note that the presence of a hydraulic roller does not guarantee there will always be a large boil present. Sometimes the water surface around a dam can appear calm or inviting. This does not mean it is safe. You must always exit a waterway in the area of a dam.

View 16 More Common Safety Hazards at <https://damsafety.org/public-safety-around-dams/public-safety-hazards>.

These groups are often the best experts in the area who know the location of dams and hazards and can be great resources for making sure people stay safe around dams.

There are many free resources available to aid in better understanding the dangers of low-head dams and the importance of this issue. In cooperation with state dam safety programs, the Association of State Dam Safety Officials (ASDSO) has launched numerous programs and resources to provide dam owners, dam operators and the public with crucial safety information. The ASDSO public safety website, www.damsafety.org/public-safety, houses safety guidelines, trainings and accessible education about low-head dams and many other types of dams. ASDSO has also partnered with the Indiana Silver Jackets to create two awareness videos, “Over, Under, Gone” (www.pbs.org/video/over-under-gone-killer-our-rivers/) and “Be a Dam Champion,” (www.youtube.com/watch?v=q1XJsFYExU&t=4s), which can be found for free at the ASDSO website. Both videos are aimed at a teenage to young-adult audience.

Currents around low-head dams can be swift and unpredictable. It is critically important to not only understand the scope of this danger, but also to be aware of the many ways you can keep yourself and others safe and avoid a tragedy. And remember — Keep Your Distance, Keep Your Life. 🌿

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