Recreation on rivers and streams is a safe, wholesome outdoor activity. However, low-head dams can be a threat to an unwary boater, swimmer or wader. Of all the things you may encounter on a river or stream, the low-head dam is one of the most dangerous. In fact, if an engineer designed an efficient, unattended, self-operated drowning machine, it would be hard to come up with anything more effective than a low-head dam under certain flow conditions.

There about 250 dams in the Commonwealth that meet the statutory definition of run-of-the-river dams. These dams are supposed to be marked under the law. However, as many as 2,000 Pennsylvania dams can show the dangerous hydraulic characteristics of low-head dams under certain flows. What's more, a dam that may look safe can suddenly become very dangerous if flows change suddenly, such as during periods of high water or after storms. The dam can become a monstrous death trap when river levels are up. If river travel is something you plan for this year's recreation, whether canoeing, kayaking, swimming or cruising, be familiar with the river's dangers.

From upstream low-head dams may be virtually undetectable.

**Note:** This particular dam is now well marked both on the bridge and above and below the dam.

Hazards exist not only from going over the dam, an obvious source of danger, but also from being caught in the backwash below the dam, where the power of the water is sometimes overlooked. Anything caught in this backwash below the dam is trapped and recirculated round...
and round, making escape or rescue difficult. A person caught in the backwash of a low-head
dam in certain flows will be carried to the face of the dam, where water pouring over it will
wash him down under and back beneath the boil. When the victim struggles to the surface,
the backwash again carries him to the face of the dam, thus continuing the cycle.

To complicate matters, these dams are sometimes loaded with debris, such as tires and logs
on the surface and rocks and steel bars on the bottom, posing another serious problem for
the recirculating victim. If rescue is not immediate and the victim is to survive and escape this
water trap, he must go down with the current coming over the face of the dam, stay as close
to the bottom as possible, and try to get past the crest of the boil before resurfacing. This
maneuver is very difficult, and few have done it.

Another method of escape, with rescuers available, is for the victim to attempt lateral
movement across the dam after each cycle. This involves proper breathing control and great
endurance. If the victim is able to work his way to the side of the dam, rescuers may then be
able to assist him out of the powerful backwash. In either case, the chances of survival are
much greater if the victim is wearing a PFD.

Dams do not have to have a deep drop to create a dangerous backwash. During periods of
high water and heavy rains, the backwash current problems get worse, and the reach of the
backwash current is extended downstream.

Illustrated is the hydraulic backwash current action characteristic of low-head dams. Boaters,
swimmers, waders and anglers can get too close to the downstream side of the dam. They
can then become drawn or sucked into the backwash current that takes them to the base of
the dam and are forced underwater. Victims are then pushed away from the dam underwater.
When the victim surfaces, he can get drawn back in toward the base of the dam, starting the
cycle all over again.