

Hazards & Hydrology

Rivers are powerful, predictable and persistent.

The force of moving water against an obstacle does not double when the water speed doubles. It increases with the square of the change. So if the speed doubles, the force increases by 4. If the speed triples the force increases by 9.

Table shows how approximate force changes with increase in current speed.

| Current Speed MPH | Force on Legs LBS | Force on Body LBS | Force on Boat LBS |
|-------------------|-------------------|-------------------|-------------------|
| 3 | 16.8 | 33.6 | 168 |
| 6 | 67.2 | 134 | 672 |
| 9 | 151 | 302 | 1512 |
| 12 | 269 | 538 | 2688 |

Subjective vs. objective hazards:

- Poor judgment
- River hazards don't care if you don't recognize them
- Flooding dramatically increases risk

Water Reading

Upstream vs. downstream: Watch the boil line in an eddy. If the ends turn and point downstream, the eddy will be easy to exit. If the boil lines turn and point upstream, the eddy will be difficult to exit. The size and strength of the eddy is, of course, a factor to be considered.

Eddies and Eddy Lines

Waves

Hydraulics

Strainers

Horizon Lines

Undercut Rocks

Broaching Rocks

Foot Entrapment Risks