

# General advice

**Do** ...Remove blockages such as large trees or debris that are underneath or against a bridge or culvert.

...Work with your neighbors to find mutually supportive solutions that do not harm property upstream or downstream.

...Contact Trout Unlimited to assist with design work and restoration.

...Contact state or federal resource agency about obtaining the required permits to use machinery in a stream or along a stream bank.

**Don't** ...Attempt to bulldoze or dig out the stream. Dredging a stream speeds up flood waters and increases erosion up and downstream of the site. Dredging also can severely damage bridges and roads.

...Remove all large rock and boulders from a stream. Gravel bars, rocks and boulders all help reduce flood power, keep a stream stable and provide valuable aquatic habitat.

...Place loose gravel and material on stream banks or build up artificial barriers, debris piles or levees. This will prevent the stream from spreading out on the floodplain and will increase water velocities and associated flooding downstream.

...Assume that any permit applies to flood response work in or near a stream. Call your State Agency or local Natural Resources Conservation Service to learn the rules for permits.

...Allow unqualified contractors to work on your land. You may be held responsible for any permit violations or damage caused to neighboring properties.



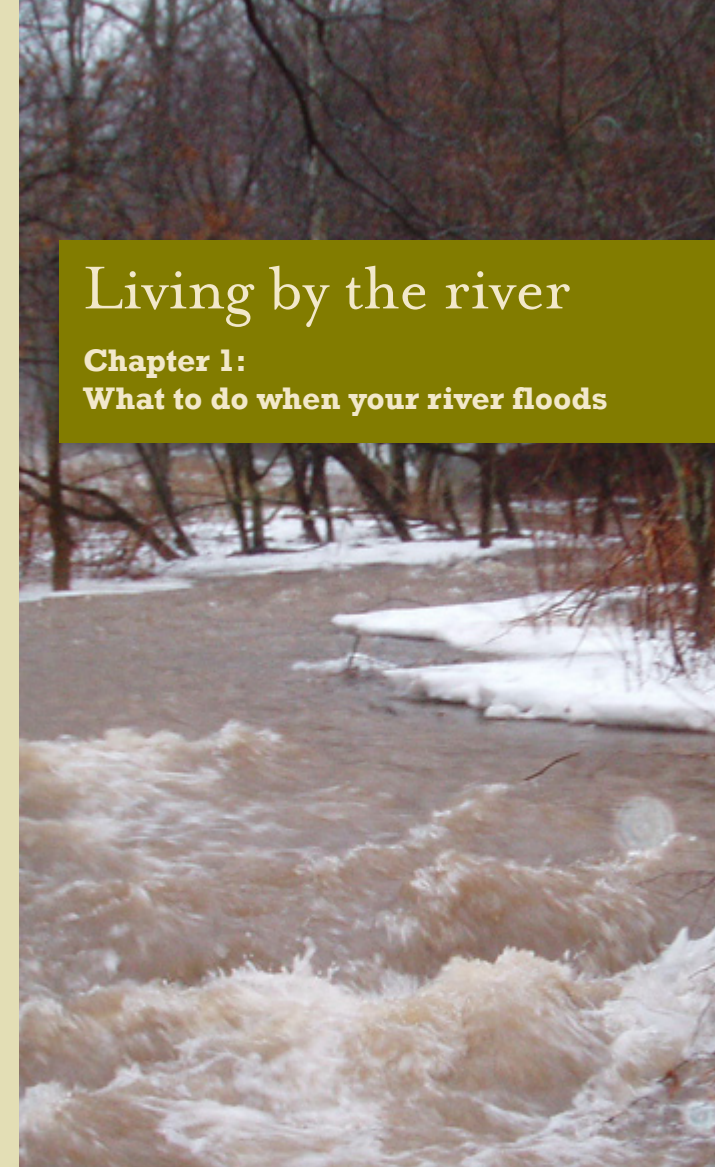
*Natural channel restoration is far more effective in mitigating flood damage than dredging and straightening. Natural restoration techniques reduce the power of floodwaters, while dredging and straightening can actually cause more severe long-term damage.*

**Trout Unlimited can help you find resources and solutions for flooding issues. Contact our national office or a local representative for more information.**

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## Living by the river

### Chapter 1: What to do when your river floods



# Stream basics



**F**loods are natural events that occur in response to heavy rains and snow melt. Under flood conditions, waters rise and often overflow stream banks and spill onto adjoining low-lying land.

Historically, streamside landowners have responded to floods by making straighter, deeper stream channels to carry the water downstream as fast as possible. But this approach actually can cause more damage in the long run, since it increases stream power and causes severe erosion and damage to nearby structures.

Rather than fighting against a stream, it is more practical to work with the natural landscape to avoid damages by reducing the speed and volume of flood waters.

This brochure outlines some key facts about streams and flooding; provides general advice for what to do and what not to do in the face of rising flood waters; and identifies who to contact with questions.

- **Streams use floodplains to slow and weaken flood waters:** A floodplain is the flat, low-lying land adjoining a stream. When a stream overruns its banks, the floodplain allows the high water to spread out and slow down.
- **Flood damages are related to stream power:** The deeper and faster water is, the more power it has to erode property and move material. Digging a channel deeper and straighter increases the power a stream has to cause damage.
- **Trees and shrubs stabilize stream banks and slow water down:** Roots provide structure and stability to stream banks and prevent erosion, under both normal and flood conditions.
- **Poorly designed bridges and water crossings cause extreme flood damage:** When a bridge or other water crossing narrows the stream channel, it may become blocked with storm debris, high water or gravel. This blockage can back up the fast-flowing water and cause significant structural damage to the bridge and other structures.

- **Many common flood responses actually intensify flooding:** Common responses to flooding include deepening and straightening the channel and building high piles of dirt, sand or rock along the stream. These piles prevent the stream from flowing onto the floodplain, where it can spread out, slow down and reduce its power.
- **Man-made problems last for generations:** Dangerous flooding will persist for years on a stream that has been straightened, dredged or otherwise disconnected from its floodplain.

