

Evaluating Channel Cleanout and Channel Widening for Flood Risk Reduction

Channel Cleanout

Channel cleanout is the process of removing debris, sediment, and vegetation from a river or stream to help the water flow more easily.

As a flood risk reduction strategy:

- Most natural channels can typically handle smaller, more frequent storms (ex. 5- or 10-year floods) but do not have capacity to convey larger storms (ex. 25-, 50-, or 100-year).
- Regular channel cleanout is a good practice for maintaining the flow of water and preventing minor flow restrictions but these activities provide temporary benefits, as debris and sediment will continually accumulate.
- Debris sometimes gets caught at bridges and culverts, causing localized blockages. However, during major storms, the primary issue is not the debris but the sheer volume of water exceeding the channel's capacity.
- Channel cleanouts are considered an operation/maintenance activity, not an improvement, and therefore often ineligible for many state and federal grants.

Channel Widening

Channel widening refers to making a river or stream wider and/or deeper so it can carry more water. This involves digging out the sides of the channel to create more space for the water to flow.

As a flood risk reduction strategy:

- Widening a channel increases its capacity to carry water, potentially reducing the risk of water overtopping the channel banks during larger storms.
- Channel widening can improve capacity but may also increase the risk of flooding downstream.
- Channel widening/deepening may also increase downstream erosion.
- Widening a channel can have significant environmental impacts, including habitat disruption and changes to the natural landscape.
- Channel widening is often more costly and complex than cleanout, requiring extensive engineering, modifications to existing infrastructure like bridges and culverts, potential land acquisition, and possible relocation of utilities.



Why channel cleanouts are not an effective flood risk reduction strategy:

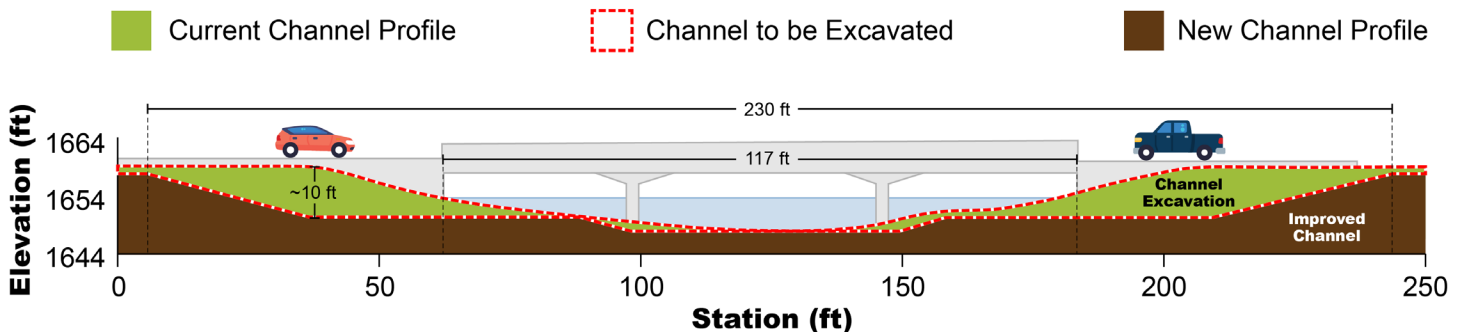
- **Short-Term Relief:** Cleanout offers short-term relief from minor blockages but does not address the fundamental issue of channel capacity.
- **Limited Impact on Major Floods:** During major flood events, the volume of water is so large that cleanout alone cannot prevent overtopping.
- **Ongoing Maintenance Costs:** Regular maintenance is required, leading to ongoing costs without substantial long-term flood risk reduction benefits.
- **Ineligible for Major Grants:** Since it is seen as routine maintenance, it often does not qualify for significant funding programs that focus on more impactful flood risk reduction measures.

A look at the North Fork Elkhorn River near Osmond, NE

Channel Widening & Bridge Replacement Alternative

- There are four bridges that span the North Fork Elkhorn River near Osmond: one Highway 20 and one railroad bridge to the east and one Highway 20 and one railroad bridge to the west.
- Each bridge acts as a constricting point and would have to be reconstructed for channel widening.
- In order to create a channel wide enough to pass the 100-year flood, the existing channel would need to be nearly doubled in size.
 - » The channel would need to be widened from approximately 117 feet to 230 feet.
 - » All highway and railroad ridges would need to be replaced to accommodate the wider channel.
 - » This new channel would need to be excavated from the area east of Osmond, around the south side of town and to the west.

A cross-section view of the east Highway 1 bridge



Channel Widening Is NOT a Practical Flood Risk Reduction Strategy for Osmond

- All highway and railroad bridges would need replaced to accommodate a channel widened enough to carry the 100-year flood. Bridge reconstruction is extremely costly (approximately \$20 million) and not covered by the WFPO program.
- The cost of channel widening without bridge replacement (approximately \$7 million) does not outweigh the anticipated benefits of a widened channel that would still have bridge constriction points.
- Even with channel widening alone, a levee or berm would still be necessary to protect the downtown area from flooding.