

Like all crossing structures, low-water crossings involve compromises and tradeoffs among the following three competing and often conflicting objectives:

- To transport traffic safely on the road.
- To permit water, sediment, debris, and wildlife free passage in the stream and on the flood plain. (This objective involves maintaining wildlife populations and their habitats as well as protecting the structure from failure. Aquatic and many riparian habitats depend on periodic disturbance and replenishment from channel transport processes.)
- To limit lifetime structure costs (construction, maintenance, replacement).

Designing a crossing is an optimization challenge in which we try to achieve each objective as fully as possible. Road access needs and site characteristics (valley shape, channel size and shape, flows, etc.) largely control whether a structure designed for overtopping (i.e., a low-water crossing) will be appropriate and successful.

- Where periodic peak flows are much higher than normal flows.
- Where sediment and debris are major problems.
- Where a channel is shifting location.

This publication has outlined the considerations involved in locating low-water crossing structures, selecting the structure best suited to the site and road objectives, and designing it to both serve the road user safely and permit channel functions to operate as freely as possible.

Low-water crossings are no longer just an inexpensive way to get a backroad across a stream. They can be an effective way to maintain channel continuity and protect a stream from road failures. At a different site, or with a different design, they can also be barriers to wildlife passage, agents of habitat degradation, and safety hazards. The final result depends on how well the structure accommodates channel processes while providing safe traffic passage.

