Understanding Culverts: A Community Guide

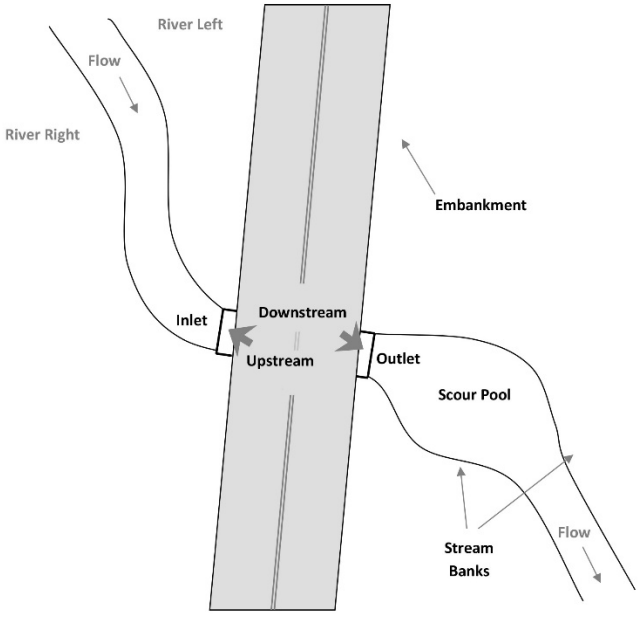
This document aims to educate residents about culverts and the role culverts have in conveying water, managing floods, and preserving habitat connection.

A culvert is a structure that allows water to flow under a road, a driveway, a railroad, or a trail. It is like a bridge, just smaller.

There are a total of almost 200 culverts and bridges in Ludlow. These structures are owned by the Town, the Massachusetts Department of Transportation (MassDOT), and by private landowners. This infrastructure well exceeds $100 million dollars in value.

The Importance of Culverts: Culverts play a vital role in allowing streams and rivers to flow under roadways, which keeps roads from flooding and allows them to be passable for people and vehicles. Properly functioning culverts contribute to the protection of our roads, properties, and natural surroundings.

This shows an image of a small 12" diameter culvert passing under a paved road.



This shows an aerial image of how a culvert works under a road with a stream.

View of culvert on the inside.

Culvert Maintenance Basics:

To ensure longevity and effectiveness, the Town undertakes proactive and reactive maintenance.

Regular Inspections: Periodic checks identify wear, blockages, or damage. These inspections help prioritize maintenance needs and prevent potential failures, ensuring that minor issues can be addressed swiftly to avoid escalation.

Clearing Debris and sediment: Debris, leaves, and sediment are cleared from culverts on a regular basis. This maintenance can prevent blockages that can lead to flooding, especially during heavy rainfalls or storm seasons. Keeping culverts clean also supports the natural flow of water, allowing fish and other creatures to travel through their habitat.

Installing ways to "deceive" Beavers. Beavers are a natural part of our ecosystem but their dams can lead to excessive clogging of culverts if they are built too close. There are ways to allow beavers to continue to build their dams, but let water pass through, so that culverts keep functioning.

Repairing/ replacing as needed: When issues are identified, repair or replacement of a culverts may be needed. Decisions on repairs or replacements depends on the current condition of the culvert and how it will impact the community if it fails. This ensures that the culvert infrastructure remains capable of handling water flows from heavy storm events.

What can you do to help the Town?

Community Awareness: Be aware of these needs. Culverts, like roads, water, and sewer, are important utilities that require a financial and staff time investment.

Dispose of Yard Waste Properly: It is crucial to avoid dumping yard waste such as leaves and grass clippings and sticks , into streams or culvert areas. When these materials accumulate, they can block the water flow through culverts, leading to potential flooding and water quality issues. Proper disposal ensures that culverts remain clear, allowing them to function as intended.

Avoid Polluting: Harmful substances such as oils and chemicals, and other pollutants can severely impact water quality if they enter culverts and stream systems. These substances can harm aquatic life, degrade habitat quality, and pose risks to public health. By preventing pollution from reaching storm drains and culverts—for instance, by properly disposing of chemicals and using environmentally friendly products for lawn and garden care, is very important in protecting the water quality and ecological health of the area.

How does a changing climate affect culverts?

Climate change poses significant challenges for culvert management. The changing weather patterns and increasing the frequency and intensity of extreme weather events, such as heavy rainfall, can result in higher volumes of water needing to be managed in a short amount of time. This stresses the capacity of existing culverts and can lead to streams overtopping roads, rendering them impassable. Additionally, this increased water can cause wear and tear, not just on the culverts themselves, but also on the surrounding land, roadways, and utility infrastructure due to erosion and sediment /debris build-up.

To keep our community safe and our environment stable, there's a growing need for culverts to be upgraded or replaced with designs that consider future climate scenarios. This includes evaluating culvert capacity, material durability under more extreme conditions, and the integration of nature-based solutions to enhance resilience.