What Steps CAN HELP?

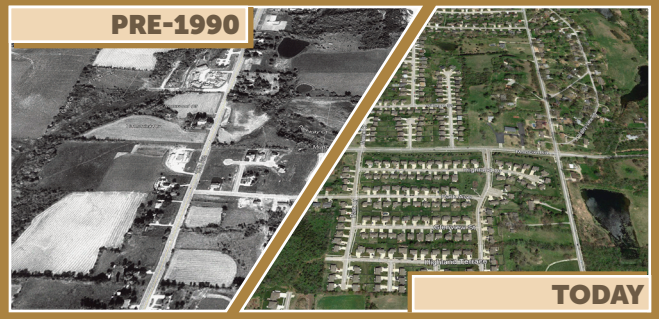
GOOD Rather than mowing to the water's edge, let the stream's natural vegetation grow wild. Thicker, taller vegetation can slow erosion by reducing both the amount and the speed of water running off into the stream. It helps protect bare soil from raindrop impact, slows the water flow, traps sediment, and even offers bird and wildlife habitat. On flat benches and gentle slopes, replacing sod with groundcovers like mulch and small stones can also help control erosion, conserve soil moisture and lower summer soil temperatures, and reduce mowing, edging and other lawn maintenance requirements.

BETTER Selectively remove non-native and other invasive plant species. Replant native vegetation to replace them. Native species have evolved deeper root systems that help naturally hold the streambank in place. Consider thinning back treelines from the streambed to open up the canopy and encourage healthier growth of lower-growing bushes and grasses. Create a mix of overlapping and complementary plantings.

BEST Although groundcover and plantings are generally the most cost-effective erosion control, for steep or severely undercut slopes, regrading, terracing, placing blocks or rock, or installing drain pipes may be necessary. Generally speaking, streambanks steep enough to require extra effort to climb (more than a 1-foot rise for every 3 feet of horizontal run) will likely require longterm engineering beyond plantings. Those solutions may require regrading to a gentler slope and protective plantings.

WHY?
is my Creek Changing?

The problem of stream erosion is not unique to Leavenworth. Across Kansas and the nation, small streams and rivers evolved to gradually drain only the overflow that vast areas of porous wild grasslands and forests didn't absorb. Today, those streams are being asked to handle abnormal runoff from rooftops, parking lots, streets and other hard surfaces that come with increasing urbanization.



A 1-inch rain across Leavenworth's 2,000-plus acres of impervious surfaces creates more than *54 million gallons* of rainwater with nowhere to go but into the small streams that drain the city. That increased volume means increased water speed within those streams. Increased water speed means more soil erosion, and more erosion means not just loss of property along the stream, but sediment and pollution downstream, as well.

Today, building designers and city planners take this runoff into account, but older homes and buildings may not be so carefully sited. If your property is losing yardage in large or small chunks during and immediately after storms, it's important to take action now, before the problem threatens structures and other valuable infrastructure.

Need more assistance?

Leavenworth Public Works
(913) 684-0375

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PUBLIC WORKS

Disappearing YARD by YARD?

How to slow or stop
gradual loss of soil to stream erosion

Residential yard and other land loss to stream erosion has become a common problem in the city. Here are steps you can take to protect your property.

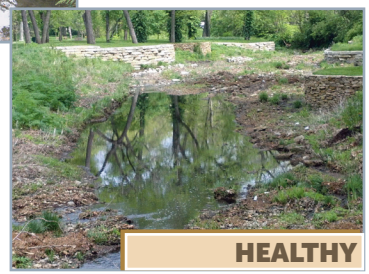
Do I Have a PROBLEM?

Soil erosion is a natural process in which rainfall detaches soil particles and carries them away (along with your lawn's nutrients and organic material). But when does a little erosion become a big problem?

- ❑ Heavy rains exposing more tree roots or stones?
- ❑ Small rills or gullies creeping up the banks?
- ❑ Silt building up in low areas?
- ❑ Rainfall splashing soil up on windows and walls?
- ❑ Stream channel widening or deepening?
- ❑ Holes appearing at the top of high stream banks?
- ❑ Banks growing too steep to mow safely?
- ❑ Whole sections of a bank sliding away or slumping?

What's the end goal of erosion control? Stream stability. Urban streams can be healthy and stable or unhealthy and unstable. How to tell the difference:

- ✗ Steep bank slopes
- ✗ High banks
- ✗ Exposed bare dirt
- ✗ Exposed tree roots
- ✗ Straight channel
- ✗ Murky water



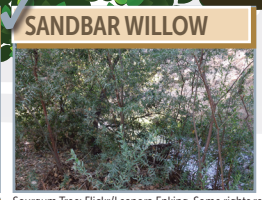
- ✓ Gentle bank slopes
- ✓ Little to no bare dirt
- ✓ Diverse native plants/trees
- ✓ Alternating pools and gentle rapids

What Should I REMOVE?

- ✗ Weak, thin, spindly trees
- ✗ Invasive plant species
- ✗ Non-native plant species
- ✗ Landscaping timbers below the high-water mark
- ✗ Grass and sod at the water line
- ✗ Trees/plants spaced too tightly to thrive

What Should I Keep and ENCOURAGE?

- ✓ Healthy native trees
- ✓ Native shrubs and grasses
- ✓ Groupings of plants and trees that compliment and shelter one another
- ✓ Gradual and low-sloping banks



Do I Need a PERMIT?

In most cases, no. Unless you're damming, diverting, deepening, filling, adding large rock and other material that could be washed away, or otherwise changing the flow of the stream, simple plant-based erosion controls likely won't need regulatory oversight. Specific questions about the need for a regulatory permitting can be answered or referred by personnel in the Leavenworth Public Works Department.

Why Pick a Native SPECIES?

Successful plant-based erosion controls require plants that are not only attractive, but hardy, deep-rooted, deer-resistant and vigorous. Better-adapted to the particular regional climate of northeast Kansas than typical nursery plants, most native plants fill that bill. Once established, they generally need less water and less maintenance.

For more information: GrowNative.org or PlantsOfMerit.org.

Why not Landscape TIMBERS?

Because they are prone to eventually washing away, landscape timbers are not recommended for retaining walls or bank protection. Washed away, floating timbers can contribute to brush and log jams than may plug culverts and drains and could threaten bridge structures. Better are interlocking stacked stones or riprap boulders.