



Green Lands Blue Waters

Perennial
Forage for
Infrastructure
Protection

Surface water runoff is a destructive force during heavy rainfall.

When roads, bridges, and culverts washed out across the Midwest, short-term emergency repairs cost taxpayers \$114 million in 2018-2019 alone.¹

Bridge repair or replacement cost²
\$68,000 - \$184,000

Road maintenance cost³
(resurface 1/2 mile)
\$8,000 - \$50,000

Culvert replacement cost⁴
\$5,200 - \$32,200

Investment in well-managed pasture and hay can slow water down and prevent costly damage.

Well-managed pasture and hay plants have well-developed root systems in the ground year-round.

These root systems soak up more water than annual roots. Less surface water runoff means less erosion, flooding and damage during heavy rainfall.



9 inches of rainfall absorbed by soil under well-managed pasture and hay crops.⁵

Annual plants have less dense, seasonal roots.



3 inches of rainfall absorbed by soil under corn and soybean crops⁵

Invest in Farmers

Farmers and landowners can create conditions that protect infrastructure.



Gene Schriefer

Erosion on a WI farm field after heavy rainfall

Richard Cates

Lowery Creek, WI, adjacent to pasture and hay farms

"As many small dairy farms have gone out of business, the land has lost well-managed forage land. Roads bordered by well-managed crop and pasture land seldom need ditching. Roads bordered by crop land that is poorly managed often need maintenance after every heavy rain event."

JACK HERRICKS
Jefferson Township Chairman, Monroe County, WI

Learn more about how productive, well-managed pasture and hay ground can protect infrastructure.

www.greenlandsbluwaters.org



Midwest Perennial Forage Working Group

¹ FHWA emergency highway repair allocations, 2018-2019. <https://www.fhwa.dot.gov/presroom/fhwa1918.cfm>

² Averages for IL, IA, MN, MO, WI; non-National Highway System bridges; 2017. <https://www.fhwa.dot.gov/bridge/nbi/sd2017.cfm>

³ Average Annual Cost for Road Maintenance. USDA Forest Service. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd528063.pdf

⁴ 2015 Maintenance Culvert Cost Data Analysis. MN DOT. <http://www.dot.state.mn.us/bridge/hydraulics/culvertcost/2015%20Drainage%20Maintenance%20Data%20Summary%20-%20Final%20Version.pdf>

⁵ Averages of measurements in June, August, and October/November. | L. Bharati, K.-H. Lee, T.M. Isenhart, and R.C. Schultz. 2002. Soil-water infiltration under crops, pasture, and established riparian buffer in Midwestern USA. *Agroforestry Systems* 56:249-257.