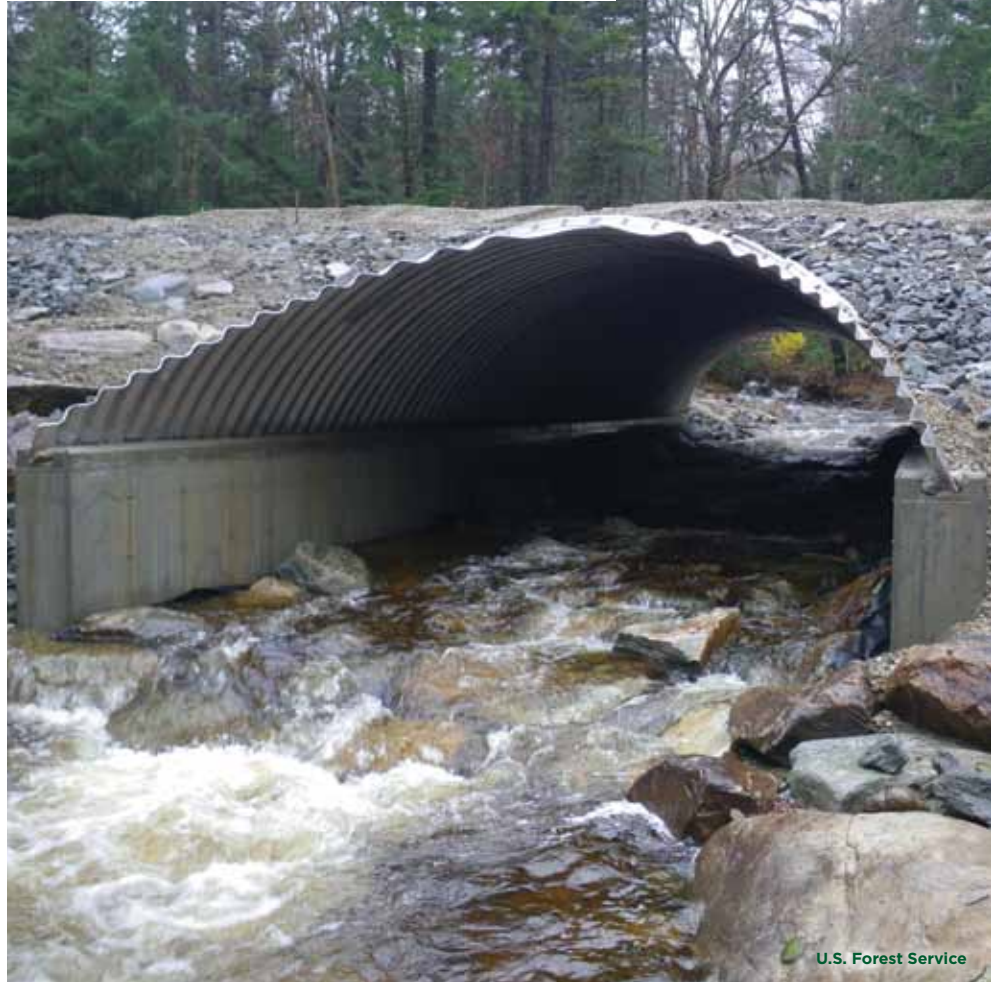


Transportation Policy



The future holds great challenges for the nation's water resources. Shifting weather patterns, more damaging floods, and rising water shortages will threaten communities, the economy, and the environment. This chapter is part of a larger report, ***Weathering Change: Policy Reforms That Save Money and Make Communities Safer***, which shows what the federal government must do to help the nation confront these looming challenges.

To see the entire report, visit www.AmericanRivers.org

Introduction:

The nation's extensive system of streets and highways is central to many facets of life in America, but it also has serious impacts on the health of nation's water resources. Millions of miles of roads have caused widespread water pollution, increased flooding, harmed wildlife, and destroyed forests and wetlands. These impacts make communities and the environment more vulnerable to the impacts of a changing climate. To this point, federal transportation policy has failed to seriously address the effects of streets and highways on the nation's water resources or consider how this infrastructure increases vulnerability to climate change. Congress has an opportunity to build a more sustainable federal transportation infrastructure with the next transportation bill. Roughly every six years, Congress passes comprehensive transportation legislation, which establishes infrastructure priorities for the coming years. The most recent transportation bill expired in 2009, and Congress has so far failed to enact new legislation. Congress must ensure that the next transportation authorization includes improved protections for water resources and builds resilience to the impacts of a more volatile climate.



Poorly designed roads will increase water pollution and flood risk as storms grow more powerful.

I. Today's Policy

Federal transportation funding primarily supports roads and highways that degrade surrounding water resources, promote sprawl, and make people and wildlife more vulnerable to a changing climate.

Inadequate stormwater controls: There are over four million miles of roads and streets in the U.S.¹ These surfaces have far-reaching effects on water resources. Roads collect a wide range of pollutants including motor oil, heavy metals, tire and brake dust, tailpipe emissions, and salt. Rather than absorbing into the ground, rain and snowmelt run across these surfaces and wash pollutants into surrounding wetlands, streams, and lakes.² Stormwater runoff is the fastest growing source of water pollution in the U.S., and highways and roads are a major contributor to this problem. Polluted runoff lowers water quality and makes waterbodies unsafe for human use. Elevated pollution levels raise the cost of treating water in downstream communities that use the sources for public water supply, adding to the significant financial difficulties many municipalities are facing. Stormwater also has serious consequences for ecosystems and wildlife.³ Paved surfaces disrupt natural water flows, causing higher and more damaging peak flows and lower “base flows,” the natural groundwater seepage that

comprises a large portion of stream flow, especially during dry periods. These disruptions, combined with the pollutants listed above, can harm fish and wildlife populations and make it difficult for them to survive in affected waters.

Unfortunately, there are only minimal requirements that federally funded road projects reduce stormwater runoff. There are nearly a million miles of federal aid highways in the U.S.⁴ Currently, many of them are constructed with little or no consideration for the considerable impacts that they have on surrounding water resources or for how these shortcomings will interact with a more volatile and uncertain climate.

Poorly designed stream crossings: While roads and highways greatly increase human mobility, they can be a formidable barrier to fish and wildlife. Oftentimes they hinder migration and contribute to habitat fragmentation. Free flowing streams provide a natural travel corridor, which fish and wildlife use to find food, spawn, or seek refuge from hot or cold temperatures. Poorly designed stream crossings associated with roads make these migrations difficult. Many culverts are too shallow or are “perched”, meaning that one end rests

above the stream bed. Other culverts have excessive water velocity that prevents fish from swimming upstream. In all of these cases, improperly designed structures can block migration and keep fish and wildlife from moving to more favorable habitat.⁵ Undersized culverts can also present a risk to surrounding communities. Many are too small to accommodate heavy rain storms. As a result, they restrict the flow of the river during extreme events, which can cause erosion, flooding, and the collapse of the road and culvert.

Destruction of sensitive landscapes: For decades, federal transportation funding has primarily supported the construction of roads and highways. This choice of investment has had a large influence on how we have developed our communities and chosen where to live and work. In many cases it has led to the construction of low-density housing developments and demand for yet more roads to meet the rising number of cars. While often justified as a response to rising congestion, highways have in fact been a major cause of the migration to suburbia.⁶ This has led to an escalating cycle of new road construction and housing development that creates an unsustainable maintenance burden for future years. Highways and the sprawl that accompanies them have also been a leading contributor to the loss of forests, wetlands, and other natural systems that buffer communities from floods and droughts. The destruction of these natural protections has increased water pollution, runoff, and flooding and has necessitated costly investments in stormwater and flood control infrastructure. Beginning with the transportation bill of 1991, transportation funding began to shift to transit and other non-highway projects. This allows communities to fund transportation projects that encourage more compact and less destructive development patterns. However, the vast majority of federal

funding continues to support traditional highway projects. Even with environmental reviews and other protections in place, highway projects contribute to the loss of important landscapes and the benefits they provide.

II. Risks and Consequences

This short-sighted approach to transportation infrastructure has not served people or the environment well. It has proven hugely expensive both in terms of taxpayer dollars and the loss of natural capital. Poorly planned transportation infrastructure poses an even greater threat in a changing climate. Increasingly powerful storms will wash greater amounts of runoff from roads and highways, resulting in higher flood risk and water pollution levels. Already under stress from stormwater runoff and other sources of pollution, many streams and the species that depend on them have limited ability to cope with these additional stresses. In addition, undersized culverts will be at greater risk of failure in a more volatile climate, which will result in downstream flooding, the collapse of roadways, costly emergency repairs, and the loss of productivity due to disruptions of traffic flows. They will also make it more difficult for wildlife to move to cooler habitat or adjust to other changes. Finally, the continued loss of wetlands and forests to sprawl will undermine the natural systems that would otherwise provide a buffer against greater floods and droughts.

III. Preparing for the Future

Federal transportation policy needs to fundamentally shift away from the damaging practices of the past to protect the natural resources that support the economy, wildlife, and community health.

Improve stormwater management: In any future transportation bill, Congress should require all federally funded road projects to incorporate more effective stormwater controls. Congress should enact new standards for stormwater control requiring new construction or major rehabilitation projects to maintain or restore the hydrology that existed beforehand. Projects should first attempt to minimize damages to the surrounding landscape and preserve natural features such as trees wherever possible. They should treat runoff on-site with green infrastructure techniques such as stream buffers, swales, and infiltration trenches. Congress has already required large federal buildings that are being newly constructed or renovated to maintain



the same volume of runoff as before development.⁷ Communities around the country are also starting to incorporate this approach by building “green streets” as part of local projects. Proposed legislation such as the Safe Treatment of Polluted Stormwater Runoff Act provides a strong model for the type of stormwater controls that are needed to reduce the negative impacts of new and existing roads.⁸

There have been some promising steps in the right direction at the Department of Transportation recently. Projects funded with TIGER Grants, which were included in the 2009 economic stimulus package, had to meet a number of criteria, including requirements for livability and sustainability. A number of these projects included green infrastructure techniques and focused on treating stormwater on site. The Department of Transportation is proposing to continue these grants in future years and maintain the emphasis on environmental benefits and sustainability. While a positive first step, this is a small subset of transportation funding, and all federal funds should incorporate sound stormwater management.

Improve stream crossings: Congress should require that all federally funded road and highway projects incorporate more advanced culverts and stream crossings to facilitate migration for fish and wildlife. Stream crossings should mimic natural stream conditions, both in terms of the streambed and water flow. They should be at least 1.2 times the “bankfull” width, or the width of the stream channel at the point that water begins to overflow onto a floodplain. The goal should be to allow unrestricted movement of fish and wildlife along a stream corridor and to reduce the risk of failure. With climate change predicted to bring higher flows during certain times of year, these larger culverts will be better prepared to handle storm events that might otherwise impact roads and public safety. During low flows, which will also become more common in a changing climate, these culverts will also be better at maintaining a natural channel and continuing to allow fish passage. Greater mobility for fish and wildlife will help them respond to rising temperatures and other changing conditions.

Protect sensitive landscapes: In the next transportation bill, Congress must shift federal transporta-

tion funding away from projects that encourage sprawl and undermine the natural resources that provide critical protection from climate change. A greater portion of the funding needs to be directed to transit and other projects that encourage compact development and do not subsidize damaging developments. There should also be stronger protections of critical landscapes for all projects. New construction should not be sited in highly vulnerable coastal areas or floodplains, both to ensure that new infrastructure functions under changing conditions and to protect surrounding communities. Environmental protections should be strengthened in the planning process and during reviews under the National Environmental Protection Act.

IV. Benefits of Being Prepared

For decades, the American public has shouldered the high cost of roads and highways that undermine natural landscapes and create a financial burden for the future. The result has been a decline in fish and wildlife populations, poor water quality, and the destruction of forests and wetlands. By embracing a sustainable approach to transportation infrastructure that prioritizes protection of natural resources, we will avoid the escalating costs of this short-sighted approach and be better prepared for the challenges that a changing climate will bring. ■

FOOTNOTES

- ¹ Federal Highway Administration. *Highway Statistics 2008* (FHWA, October 2009).
- ² National Research Council. *Urban Stormwater Management in the United States* (The National Academies Press, 2008).
- ³ *Ibid.*
- ⁴ FHWA, 2009, *Op cit.*
- ⁵ Baker, C.O. and Votapka, F.E. *Fish Passage through Culverts* (USDA, Forest Service Technology and Development Center, 1990).
- ⁶ Heavner, B. *Paving the Way: How Highway Construction Has Contributed to Sprawl in Maryland* (MaryPIRG Foundation, 2000).
- ⁷ Energy Independence and Security Act of 2007. 42 USC §17094 (2007).
- ⁸ Safe Treatment of Polluted Stormwater Runoff Act of 2010, S. 3602, 111th Congress (2010).