

While the World Gains a Trillion Trees, the U.S. May Lose Nearly a Million Miles of Streams

By Kevin Coulton, Cliff Dahm, Peter Goodwin, Jay R. Lund, and David Wegner

In the February 2020 State of the Union speech, President Trump announced that the United States will join the One Trillion Trees Initiative, an ambitious effort to plant new trees all around the world. This is a useful effort to increase the storage of carbon to offset greenhouse gas emissions. However, the federal leadership has rolled back nearly 100 environmental regulations that had provided federal protection to air, water, animals...and trees.

And on June 22, 2020, yet another roll back occurred.

On this date, the scope of waters regulated federally under the Clean Water Act (CWA) were changed, and one change in this Final Rule was to redefine Waters of the United States (WOTUS) to exclude “ephemeral features that flow only in direct response to precipitation.” It does not rain all of the time, so many streams are “ephemeral” and do not flow all the time, particularly in upper parts of our watersheds and in the more arid western U.S. However, these streams are where the life of a river begins and are evident from their channels, which have been formed over time by waters of the United States.

The new Final Rule definition of WOTUS will eliminate federal protection of such ephemeral streams for the first time since the CWA’s establishment in 1977.

If trees are the “lungs of the Earth,” as Congressman Kevin McCarthy believes, then rivers, creeks, and streams are the Earth’s “circulatory system” conveying water—our most precious resource—across the landscape everywhere on our planet.

Roughly half of the streams across the nation are ephemeral, about 800,000 miles. These precipitation-dependent streams may only flow after a rain storm or snow melt, but they are headwaters that feed larger streams and recharge groundwater aquifers for downstream human and ecosystem uses. They are critical for moderating how quickly water flows downstream, transports nutrients, captures pollutants, and supports watershed ecosystems and human uses locally and downstream. They directly support the CWA’s overall objective “to restore and maintain the chemical, physical, and biological integrity of the nation’s waters.”

Eliminating CWA protections for ephemeral streams may lead to the modification or elimination of these streams and cause greater volumes of runoff to flow downstream at faster rates, resulting in higher floods and flood damage in more populated areas downstream. Numerous examples exist, including the repetitive flooding in Ellicott City, Maryland, caused partly by increased development and hardening of the landscape in the watershed.

Congress legislated the CWA over 40 years ago in response to the science showing the importance of our water bodies to our nation’s health, safety, and economy. While no such sweeping law is perfect, the CWA has provided a numerical-based and transparent scientific approach consistent across the U.S. and helped resolve local and state-to-state transboundary issues. This approach has been replicated by other countries including Spain and Australia. Shifting authority for ephemeral stream protection from the federal to state government will cause a patchwork of differing regulations.

In states with strong laws, there will be little change, but loss of federal protection will bring a huge disparity among states, with downstream states suffering the most. The WOTUS rule change may also pit those industries and special interest groups with extensive resources against local governments. In these cases, federal scientists will not be allowed to contribute expertise.

(Continued on page 13)

Changes to WOTUS may also impact other components of our river systems. For example, alluvial fans are landforms characterized by a fan-shaped pattern of ephemeral channels that are dry most of the time, but are formed by the transport and deposition of sediment from periodic flooding. These are dynamic and flood-prone parts of the landscape where inappropriate development can place communities and ecosystems at risk. Over 80% of streams in Arizona are ephemeral and critically important to the ecosystem, but they will not be protected under the new rule.

A federal agency has published a report on the value of headwater streams and transmitted their report to the president. The report notes that the conservation and restoration of headwater streams can reduce downstream flood crests and sustain flow throughout months of low rainfall on the larger tributaries below the headwaters. The report also advocates for the federal government to give attention to these "little waters."

This report "Little Waters: A Study of Headwater Streams" was sent to...*President Franklin D. Roosevelt in 1935.*

Why are we not learning our lessons?

We are heartened by the global initiative to plant a trillion trees to improve the "respiration" of the globe and the quality of life. However, we are concerned (along with numerous professional associations, such as the American Society of Civil Engineers, Association of State Floodplain Managers, and Society for Freshwater Science, to name a few) that this Final Rule will open the door to inappropriate land uses and abuses that will place communities and ecosystems at risk by harming ephemeral streams, the "capillaries" of the waters of the United States.



Ephemeral stream in Oregon. © 2020 Kevin Coulton

Kevin Coulton, P.E., CFM is an Ecohydraulic Engineer in Portland, Oregon. Kevin is an ASFPM member and corresponding author and can be reached at kevin.coulton@gmail.com or 971-322-8043.

Cliff Dahm, Ph.D. is an Emeritus Professor at the University of New Mexico in Albuquerque, New Mexico.

Peter Goodwin, Ph.D., P.E. is the President of the University of Maryland Center for Environmental Science in Cambridge, Maryland.

Jay R. Lund, Ph.D. is the Director of the Center for Watershed Sciences and Distinguished Professor of Civil and Environmental Engineering at the University of California in Davis, California.

David Wegner is a Board Member of the National Academy of Sciences, Water Science and Technology Board and a Senior Strategist for Science at Woolpert Engineering in Tucson, Arizona.