The National Academies of Sciences • Engineering • Medicine

The National Academy of Sciences was established in 1863 by an Act of Congress, signed by President Lincoln, as a private, nongovernmental institution to advise the nation on issues related to science and technology. Members are elected by their peers for outstanding contributions to research. Dr. Marcia McNutt is president.

The National Academy of Engineering was established in 1964 under the charter of the National Academy of Sciences to bring the practices of engineering to advising the nation. Members are elected by their peers for extraordinary contributions to engineering. Dr. John L. Anderson is president.

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The three Academies work together as the National Academies of Sciences, Engineering, and Medicine to provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The National Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine.

Learn more about the National Academies of Sciences, Engineering, and Medicine at www.nationalacademies.org.

The Transportation Research Board is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to provide leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. The Board’s varied activities annually engage about 8,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state departments of transportation, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

Learn more about the Transportation Research Board at www.TRB.org.

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* Membership as of July 2020.
Stormwater
Scott Taylor and Wendy Terlizzi
In the coming years, how humans use and reuse water will change dramatically—both because of a changing climate and because of new technologies. This special issue of TR News is dedicated to water and the role of state departments of transportation (DOTs) in the stewardship of this precious resource.

History of Regulation of Stormwater Runoff from Transportation
Brian K. Currier
A national effort to manage water quality did not coalesce until the passage of the Clean Water Act in 1972. The author traces the history of regulating pollutant discharges into U.S. waters, from the National Pollutant Discharge Elimination System (NPDES) to total maximum daily load (TMDL) management and beyond, along with their implications for state transportation agencies.

Integrating Stormwater Infrastructure into State Department of Transportation Processes
Scott Rogers, Adrienne Boer, and Scott Crafton
For many state DOTs, it can be tricky to integrate stormwater infrastructure concerns into already-complex processes. In this article, the authors examine the experiences of three agencies—Alabama DOT, Texas DOT, and Virginia DOT—that have successfully navigated these issues.

Connecting Stormwater and the State Department of Transportation Mission
Scott Taylor and Wendy Terlizzi
Most state DOT mission statements cover safety, mobility, and fiscal responsibility to taxpayers; some also mention the environment and environmental stewardship. To effectively implement a stormwater program, the state DOT must establish a connection to its mission, both to facilitate the short-term initiation of the program and to ensure the agency’s long-term cost, sustainability, and performance.

Transportation Perspective on Virginia’s Nonpoint Source Nutrient Credit Program
Chris Swanson and Clark O’Bannon
This article explores the Chesapeake Bay Watershed Nutrient Credit Exchange Program, which allows Virginia DOT and other regulated entities in the Bay watershed to use nutrient trading to meet required reductions of point and nonpoint source nutrients.

From the Ground Up: Building a TMDL Implementation Program for MS4 Permit Compliance
Tracey Harmon
Virginia DOT’s municipal separate stormwater sewer system permit contains specific conditions for the total maximum daily load of pollutants headed to the Chesapeake Bay. With a service area within four river basins, the TMDL permit requires the agency to determine its load and required reductions in pollutants for each basin, as well as an action plan of best management practices (BMPs) to achieve this goal.

Infiltration of Highway Stormwater: Protecting Groundwater and Infrastructure
Eric Strecker, Tracey Janus, and Aaron Poresky
States’ NPDES permits and other sustainability initiatives often encourage the use of infiltration BMPs in the highway environment. This article summarizes new tools developed via the National Cooperative Highway Research Program (NCHRP) that can help evaluate infiltration BMPs for highway infrastructure projects.

Innovation Through Embracing Uncertainty
Becky Humphreys, Roger Kilgore, Michael Perez, and Wesley Donald

More than 4,000 linear feet of concrete once lined Underwood Creek in Wauwatosa, Wisconsin. But, when the gray infrastructure failed to control flooding, the Milwaukee Metropolitan Sewerage District naturalized the creek using vegetation and bioengineering. Today, flood risk is reduced, biodiversity—including enhanced aquatic habitat—is improved, and Underwood Creek is reconnected to its flood plain. (Photo: Milwaukee Metropolitan Sewerage District)
38 Five Pillars of Construction
Stormwater Management
Barry Fagan

When a transportation agency undertakes a major project, it should consider environmental responsibilities that, if not realized, can lead to costly delays in project delivery and can affect the fulminance of the agency’s mission. Keeping this in mind, Alabama DOT reimaged its approach to stormwater management using the concept of “five pillars”—an approach that is explained in this article.

42 What Is Green Infrastructure?
Barry Fagan

44 Keeping the Water Clean: How Transportation Agencies Manage Roadway Stormwater Runoff
Anna Lantin

State DOTs have several challenges when implementing stormwater BMPs and TMDL plans: right-of-way availability, site constraints, geotechnical requirements, safety, cost, and whether the state DOT actually has any control of the source of the pollutant. The author sheds light on highway runoff contributions and on identifying the sources of pollutants, helping stormwater practitioners integrate a combination of strategies into cost-effective TMDL management plans.

TRB COVID-19 Resources

Agencies and organizations can use TRB publications and online resources for useful and timely information to help address issues related to the novel coronavirus pandemic. To read about TRB’s current research and activities, and for a list of relevant publications, visit www.nationalacademies.org/trb/blog/transportation-in-the-face-of-communicable-disease.

Coming Next Issue

The September–October 2020 issue of TR News, “Embracing the Future,” celebrates TRB’s centennial with articles forecasting the future of transportation. Authors present outlooks that are multimodal, creative, diverse, inclusive, and thought-provoking, offering a pause point for transportation researchers, policy makers, and practitioners as they contemplate new directions for transportation.

48 RESEARCH PAYS OFF
State Water Quality Requirements Addressed Via an Innovative Pavement
Michael Barrett

Also in This Issue:

50 Profiles
Brian K. Currier, California State University, Sacramento, and Mark W. Horner, Florida State University

52 Transportation Influencers
Nicholas Kehoe

52 Members on the Move

53 TRB Highlights
E-Bike Pitch Wins Annual Transportation Contest, by Ginger Goodin

55 Bookshelf

TR NEWS

features articles on innovative and timely research and development activities in all modes of transportation. Brief news items of interest to the transportation community are also included, along with profiles of transportation professionals, meeting announcements, summaries of new publications, and news of Transportation Research Board activities.

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