

# MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 19-386A (project 451) | September 2019

## Assessing the Cost-Effectiveness of Wyoming's CMAQ Unpaved Road Dust Suppression Program, Year 1



### the **ISSUE**

For a number of years, Wyoming counties have used congestion mitigation and air quality improvement (CMAQ) funds to apply dust suppressants to their unpaved roads. This study will monitor dust suppressant application and fugitive dust emissions to provide a comprehensive assessment of the effectiveness of the dust suppression efforts.

### the **RESEARCH**

The study utilized field data and comprehensive analysis to examine the effectiveness of various dust suppressants. This included monitoring dust suppressant application, surfacing aggregate type, traffic, weather, roadway performance, and fugitive dust emissions to provide a comprehensive assessment of the effectiveness of the dust suppression efforts paid for with CMAQ funds. Because of the performance difference between unpaved roads in drier and wetter climates, the results from this study are most applicable to the interior western United States and other dry climates throughout the world. The methodologies developed during this study may be applied to assess the effectiveness of any dust control efforts, regardless of differences in precipitation.



A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

Colorado State University  
North Dakota State University  
South Dakota State University

University of Colorado Denver  
University of Denver  
University of Utah

Utah State University  
University of Wyoming



### Lead Investigator(s)

Khaled Ksaibati  
khaled@uwyo.edu

University of Wyoming

### Co-Investigator(s)

George Huntington  
University of Wyoming

### Research Assistant(s)

Christopher Chamberlin,  
GRA, MS

### Project Title

Assessing the Cost-Effectiveness of Wyoming's CMAQ Unpaved Road Dust Suppression Program, Year 1

### Sponsors | Partners

Wyoming Department of Transportation (WYDOT)

Wyoming Counties

Wyoming Association of County Engineers and Road Supervisors (WACERS)

USDOT, Research and Innovative Technology Administration

## the FINDINGS

The results of the study indicated that a three-hour data collection period should be used to obtain accurate results and to optimize the data collection time. It is also necessary to set a threshold value from which an average dust concentration can be calculated. The study found that dust suppression treatments are reducing dust concentrations on roads to nearly zero. This indicates that the CMAQ funds are being used effectively.

## the IMPACT

The study will provide basic information to effectively use dust suppressants and CMAQ funds. The knowledge from this research will help in selecting the most cost-effective use of dust suppressants and CMAQ funds for gravel roads. Also, the effective use of dust suppressants will lower dust emissions and maintenance cost for agencies using dust suppressants in addition to lower user costs. Finally, by reducing raveling, loose aggregate, dust and washboards, safety on unpaved road surfaces will be improved.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=963>

For more information or additional copies, visit the Web site at [www.mountain-plains.org](http://www.mountain-plains.org), call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



This publication was produced by the Mountain-Plains Consortium at North Dakota State University. The contents of this brief reflect the views of the authors, who are responsible for facts and the accuracy of the information presented herein. This document is disseminated under the program management of the USDOT, Office of Research and Innovative Technology Administration in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.



NDSU does not discriminate in its programs and activities on the basis of age, color, gender expression/identity, genetic information, marital status, national origin, participation in lawful off-campus activity, physical or mental disability, pregnancy, public assistance status, race, religion, sex, sexual orientation, spousal relationship to current employee, or veteran status, as applicable. Direct inquiries to Vice Provost, Title IX/ADA Coordinator, Old Main 201, 701-231-7708, [ndsuoaa@ndsu.edu](mailto:ndsuoaa@ndsu.edu).