



# Mississippi River Watershed Report Card



**ECOSYSTEMS** *Recreation*  
**WATER SUPPLY**  
*Economy* Transportation  
**Flood control & risk reduction**



# The Mississippi River Watershed IS America's Watershed

The fourth largest watershed in the world, the Mississippi River Watershed carries the waters from the Rocky Mountains in the west, the north woods of Minnesota and the Appalachian mountains in the east, down to the delta wetlands in Louisiana and the Gulf of Mexico. Thousands of

miles of rivers and streams, thousands of communities and millions of people make this watershed America's Watershed. America's history, America's environment, America's prosperity and America's future depend on the waters that flow through our heartland rivers.

## We are America's Watershed Initiative

America's Watershed Initiative is a collaboration working with hundreds of business, government, academic, and civic organizations to find solutions for the challenges of managing the Mississippi River and the more than 250 rivers that flow into it. Only by working together—coordinated, focused and for the long term—will we make meaningful progress to raise the grades for America's Watershed, for our future, and for our children's future.

## America's Watershed provides benefits for people and nature

America's Watershed is vast. It encompasses all or part of 31 U.S. States and two Canadian provinces. The rivers in America's Watershed provide drinking water for millions of people. Water flowing in these rivers is used to produce more than half of America's goods and services, including agricultural products worth more than \$50 billion annually, and much of America's energy production, including nearly 25% of our nation's hydropower. The transportation network in America's Watershed moves millions of tons of goods safely, reliably, and efficiently, generating billions in economic benefit. And the system's rivers and wetlands provide unique wildlife, habitat and recreational opportunities.

## Progress in the America's Watershed Initiative goals

The Report Card measured six broad goals for America's Watershed – Ecosystems, Flood Control & Risk Reduction, Transportation, Water Supply, Economy, and Recreation. The Report Card indicates how well we are currently meeting each one of these goals, using real data and relevant information that was identified by experts in these fields. Over time, as we adapt our management strategies for the Mississippi River Watershed, the Report Card can track our progress in achieving our objectives.





# Working together for the watershed

America's Watershed Initiative has worked with leaders, stakeholders, and experts from more than 400 businesses, organizations, agencies, and academic institutions to develop the Report Card.

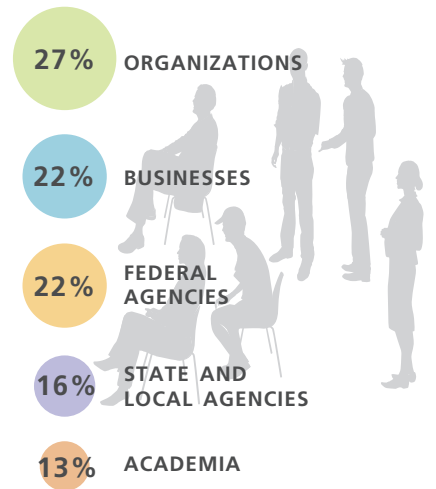
The goal for the Report Card is simple—provide decision-makers, watershed leaders, and the public with easy-to-understand information about the state of the watershed's health to aid them in developing a collaborative approach to managing America's Watershed.

From the start, the groups working together to support America's Watershed Initiative had three key goals for the Report Card project:

- Bring together key leaders, stakeholders, and experts representing all of the basins and sectors to develop a single and shared document to measure the current status of six broad goals for the watershed;
- Build a Report Card supported by data that will help us to identify successes, opportunities for improvement, and areas needing additional research;
- Use this tool to identify opportunities for collaboration and to build a shared vision for the watershed.

The Report Card team traveled to every basin and to Washington, D.C. for more than a dozen major workshops, meetings, and summits paired with webinars to bring together diverse experts with broad perspectives to develop the Report Card. While each workshop and meeting was different, the importance of the rivers and waters to every sector and in each basin was clear. Significant feedback was received after sharing the Preliminary Report Card Fall 2014 and from additional expert review teams formed to improve the preliminary results. This final Report Card is built upon this feedback and engagement.

In addition to the grades for the six goals and information about each of the basins, the project also includes additional reports, analysis, and background information about data sources and methodology shared on America's Watershed Initiative website in technical papers and other documents. ([AmericasWatershed.org/ReportCard](http://AmericasWatershed.org/ReportCard))



Sectors and organizations participated in Report Card basin workshops.



Workshop participants identify resources and threats in the Mississippi River Watershed as they relate to the six goals. Image courtesy of A. Freyermuth.

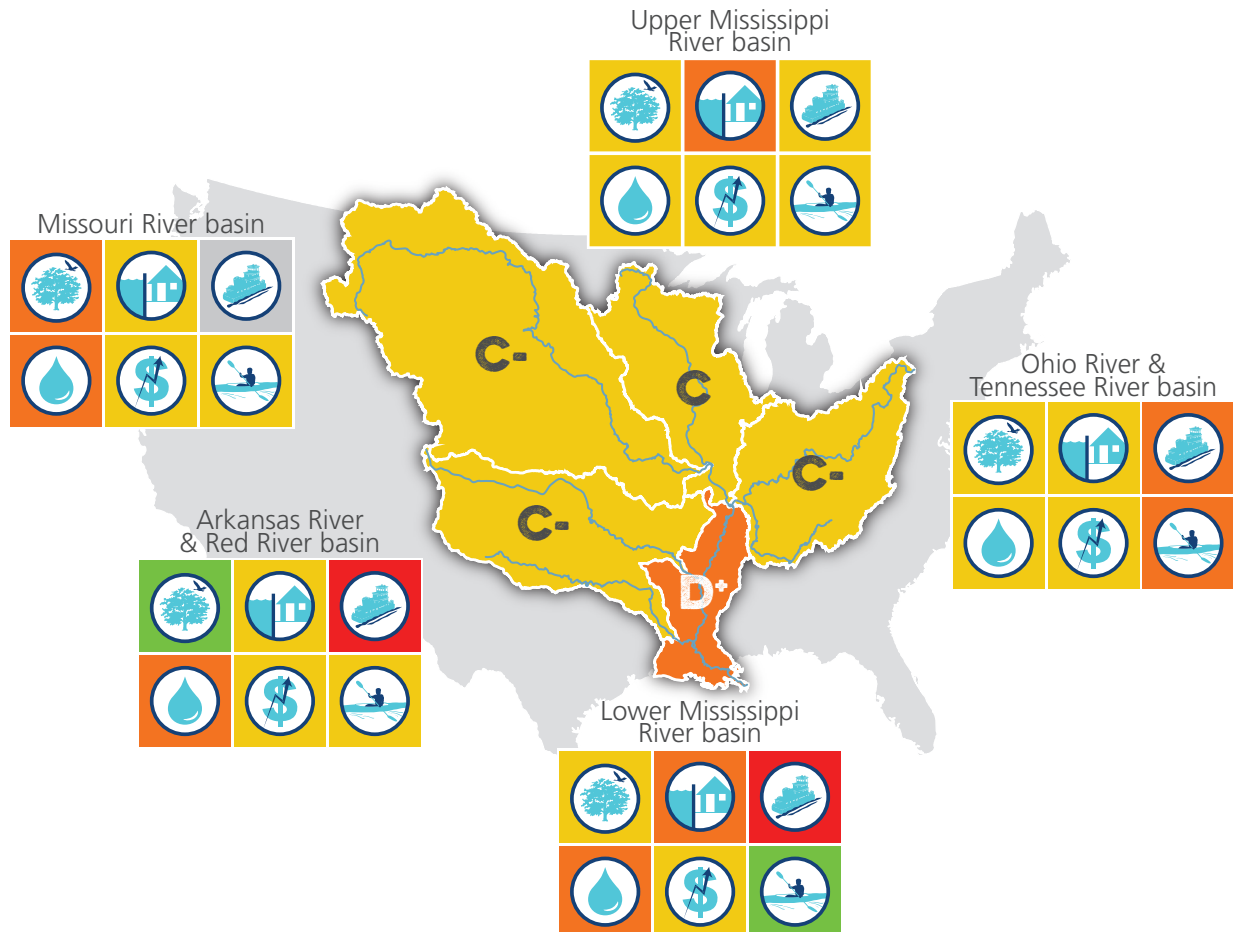
The Report Card is not a goal unto itself—it's a tool to bring together leaders from around the Mississippi River Watershed to develop a shared vision for the future and create awareness about the opportunities and challenges that face our states and nation. This shared vision will be used to identify and form partnerships to advance solutions to these critical water management challenges. Knowing what's important and how to measure it is the foundation to improve the watershed.

For more information on America's Watershed Initiative Report Card and the Report Card development process, visit [AmericasWatershed.org/ReportCard](http://AmericasWatershed.org/ReportCard)

# The Report Card was built in the five basins

The Report Card team worked with experts in a multi-year process to analyze data and provide grades for the six goals in each of the main basins that make up the Mississippi River Watershed—the Upper Mississippi River Basin, the Lower Mississippi River Basin, the Ohio River & Tennessee River Basin, the Arkansas River & Red River Basin, and the Missouri River Basin.

Data was analyzed and grades assigned for each basin and for the entire watershed. Not surprisingly, grades for several goals showed consistency throughout the watershed, and some showed significant variety reflecting the diversity of the watershed.



## The Report Card reveals challenges ahead

The Mississippi River Watershed Report Card conveys many inherent challenges in managing the watershed for the six broad goals of America's Watershed Initiative. Pressures on these goals will likely increase in coming decades, as demands for water increase, infrastructure ages, and our climate changes.

### The region faces interconnected challenges

Regional changes from economic growth, land development, and changes in weather will add pressure to already stressed infrastructure and natural resources. Clean water for habitat, water supplies, and recreation impacted by pollution will continue to be under pressure due to increased demands on the watershed from population growth, agriculture, transportation, and land development. Groundwater supplies already in decline by overuse will be further affected by increases in irrigation and more severe droughts. Locks and dams already in weakened condition from maintenance funding shortfalls will be stressed further by more

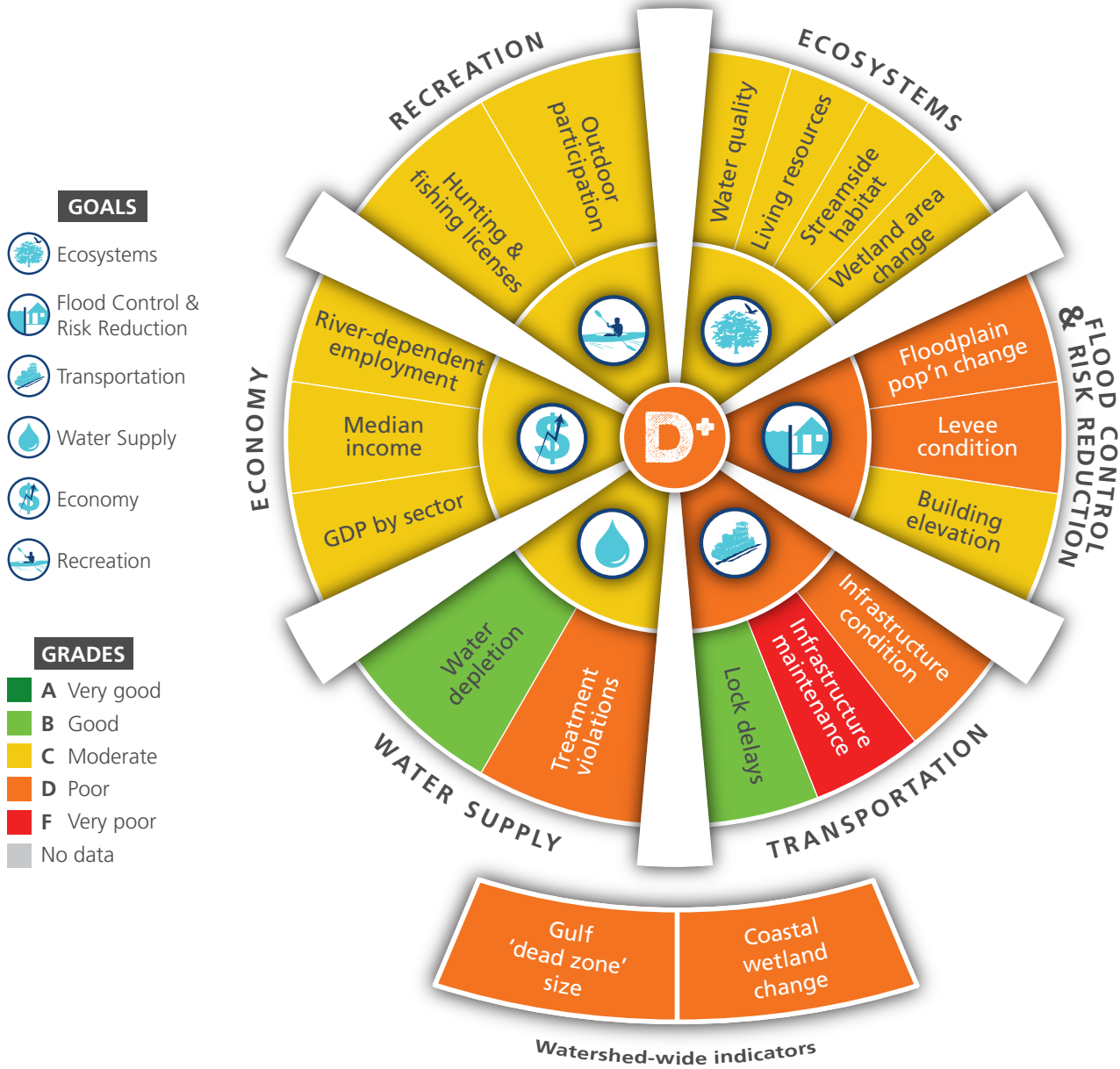
intense weather events, suggesting that failures could be more frequent and costly.

### Connected goals require coordinated management

The six goals identified by America's Watershed Initiative are as highly interconnected as the challenges facing the watershed. Decisions affecting one goal will impact the others, but we don't need to advance one goal at the expense of others. Management of the Mississippi River Watershed to meet its challenges requires a mindset of opportunity—a coordinated approach that integrates multiple stakeholder needs, instead of an approach that advocates for single objectives independently.



# Mississippi Watershed Results



## The Mississippi River Watershed can and must do better

The Mississippi River is the backbone of America. Our economy and the future of our country depend on sustaining a healthy, functioning watershed. Overall the Mississippi River Watershed earned a D+; a poor result. The grades reveal a number of challenges—the Transportation and Flood Control & Risk Reduction goal areas, and the watershed-wide indicators for Coastal Wetlands Loss and the Hypoxic “Dead Zone” in the Gulf of Mexico all received D scores.

The Report Card results demonstrate that we are underinvesting to meet the six goals for the Mississippi River Watershed. Our current trajectory is unsustainable and we must work together to dramatically raise the grade for most of the goals. Realistic, timely and innovative funding and collaborative actions must be pursued and implemented.

The Mississippi River Watershed has diminished as a healthy and sustaining water resource over the last several decades. To raise the grade, we need integrated management to reflect the relationships between the different goals and basins, and increased participation by partners and stakeholders working together on specific actions to improve the watershed.

The Mississippi River Watershed is a world-class asset to our nation, and we need to significantly improve information and management systems to make more informed and efficient decisions to improve its condition.

# Goals and indicators used in America's Watershed Initiative

America's Watershed Initiative (AWI) worked with a variety of river users and stakeholders to identify six broad goals for the Mississippi River Watershed.

## GOALS

## INDICATORS



### GOAL: Ecosystems

#### *Support and enhance healthy and productive ecosystems*

The Report Card measured ecosystem condition in rivers and streams, and the effectiveness of wetland restoration and protection. Analysis shows more variability than any other goal—some areas show positive changes while others have significant challenges. The industrialized

eastern portion of the watershed and the Lower Mississippi River show the greatest adverse impacts to living resources. Poor water quality is a result of high nutrient concentrations in agricultural and industrial parts of the watershed, and this is a contributing factor to the low oxygen, "dead zone" zone in the Gulf of Mexico.



### *Water quality*

Nutrient (nitrogen and phosphorus) levels in rivers and streams in the watershed.

### *Living resources*

Condition of aquatic animal communities living in the ecosystem.

### *Streamside habitat*

Condition of stream and river habitat in the ecosystem.

### *Wetland area change*

Percent change in wetland area in each basin.



### GOAL: Flood control and risk reduction

#### *Provide reliable flood control and risk reduction*

The Report Card measured trends in the number of people at risk, the condition of flood protection infrastructure, and community preparedness. The results are poor, especially because people continue to move into the floodplain. Risks from severe river floods are highest in the eastern portion of the watershed and along the

Lower Mississippi River, although intensive investment in flood control infrastructure avoided huge losses from the record flood in 2011.



### *Floodplain population change*

Change in number of people living in areas most at risk for flooding compared to the change in number of people living in a basin.

### *Levee condition*

Status of levees inspected by the U.S. Army Corps of Engineers.

### *Building elevation*

Community adoption of requirements to elevate structures above mapped flood levels.



### GOAL: Transportation

#### *Serve as the nation's most valuable river transportation corridor*

The Report Card evaluated transportation system performance, the condition of locks and dams, and the funding for maintenance for the inland navigation system. Locks and dams are in poor condition across the Mississippi River basin, and a lack of funding for

infrastructure maintenance means that multiple failures may be imminent. River transportation currently functions with some delays, but as these systems continue to deteriorate, catastrophic failures resulting in severe economic, public safety, and water security problems can be expected to occur.



### *Infrastructure condition*

Condition of critical infrastructure at locks and dams.

### *Infrastructure maintenance*

Adequacy of maintenance funding for navigation infrastructure on a pass/fail basis.

### *Lock delays*

Amount of time in 2013 that locks in a basin were unavailable compared to the best-performing year between 2000 and 2012.



JAY HARROD



U.S. ARMY CORPS OF ENGINEERS



ROBERT J. HURT



BYRON JORJORIAN



# Americas Watershed Initiative Report Card

The goals are the key foundation for the Report Card. Indicators were identified for each goal using feedback from stakeholders at the basin workshops.

## GOALS

## INDICATORS



### GOAL: Water supply

#### *Maintain supply of abundant, clean water*

The Report Card assessed the safety of municipal water supplies and available quantity and quality of surface water across the watershed. As expected, scores show that less water is available in the west, which receives significantly less rainfall than the eastern portion of the watershed. Even where water

is abundant, however, municipal water supply systems are not performing well. A disappointing finding is that key information is lacking on the status of groundwater resources and the suitability of surface waters for designated uses.



### *Treatment violations*

Percent of the population served by community water systems that did not report any violations in 2013.

### *Water depletion*

Water use compared to the total amount of water naturally available from precipitation and stream flow (minus losses from natural evaporation).



### GOAL: Economy

#### *Support local, state, and national economies*

The Report Card graded watershed basins against the rest of the nation using statistics on per capita income, employment, and productivity in river-related sectors of the economy. Results reflect general economic conditions nationwide and differ only slightly between basins. Additional data is required to better analyze

the economy directly tied to watershed and river management. The Mississippi River basin exports water in various ways (through crops and products) that tend to support economic development elsewhere to a greater extent than within the basin. As water stress increases, greater pressures will be placed on this resource, with potentially harmful economic effects.



### *GDP by sector*

Gross domestic product (GDP) for river-dependent industries in each state for 2013 compared to the national average.

### *Median income*

2013 per capita income by state compared to the national average.

### *River-dependent employment*

Number of people employed in river-dependent sectors in each state in 2013 compared to the national average.



### GOAL: Recreation

#### *Provide world-class recreational opportunities*

The Report Card graded the number of people participating in various outdoor recreational activities. The rivers and streams of the Mississippi River basin provide many opportunities for recreation, with positive economic impacts. However, participation in most areas is at or below the recent past. Much more needs to be

done to support current and emerging recreational opportunities through effective management of natural resources. Additional information is also needed to evaluate some recreational uses.



### *Hunting and fishing licenses*

Recent sales of licenses, tags, stamps, and permits for hunting and fishing compared to the 10-year historical range.

### *Outdoor participation*

Recent hunting, fishing, and birding activity and national park visitation compared to the 20-year historical range.



### Watershed-wide indicators

The Report Card also included indicators that are relevant to review at the scale of the whole watershed, including wetland area change in the Mississippi River delta and the annual area of low oxygen water (a.k.a., the hypoxic zone or "dead zone") that forms in the northern Gulf of Mexico south of the River's mouth.

### *Coastal wetlands change*

Coastal wetlands have been lost every year since measures began in 1932. The rate of wetland loss is declining, but with land subsidence and sea level rise accelerating, much more effort will be needed to reverse wetland loss.

### *Gulf "dead zone" size*

For the last five years, the size of the hypoxic zone has not decreased towards the Hypoxia Task Force target. Reducing the size of the hypoxic zone will require reduction of nutrients from multiple sources throughout the watershed.

## We must work together to scale up solutions for improving water quality and quantity, safety, and the health of America's Watershed so that we advance in the 21st century

- Advocate for \$1 billion annually in new public and private investment to ensure that America's Watershed continues to drive our national economy, and protect the livelihoods and environments of future generations.
- Encourage greater collaboration and improved information to better manage an increasingly complex system for multiple benefits. We support a more transparent, integrated approach for decision-making, where stakeholders are engaged at a watershed scale in setting goals based on best available information.
- Recognize and support local leaders who develop and implement solutions and invite their continuing participation as partners. The longer we wait to invest in raising the grade, the more it will cost us and future generations.

## America's Watershed Initiative is committed to Raise the Grade in America's Watershed

### Spread the word

We are communicating the results of the Report Card widely with business, political, and media leaders in all basins throughout the watershed. The Report Card is a tool to communicate the status of six broad goals for our nation's most important watershed. The results reveal that our current trajectory is unsustainable. We will use the Report Card to continue our efforts to build a shared voice to improve the future of the Mississippi River Watershed. We will release additional reports based on the data in the Report Card, and we will seek partners to continue the analysis in the Report Card in greater detail in the basins and for specific goals.

*Help spread the word!*

### Grow the collaboration

We will recruit additional partners to strengthen the collaboration to raise the grades for the Mississippi River Watershed. We will seek leaders from all the basins and goal areas to ensure that the collaboration is strong and diverse. We want to grow America's Watershed Initiative to include voices committed to finding collaborative solutions to watershed challenges.

*Join us!*

*Attendees at the America's Watershed Initiative Summit in Louisville, Kentucky, in 2014. Image courtesy of J. Harrod.*

### Focus on action

We will develop and work to advance a coordinated and shared action agenda to raise the grade in the Mississippi River Watershed. We will work together to achieve a collective impact from strategic investments in the watershed, and we'll work together to improve decision-making and leverage the great efforts undertaken by many groups in the watershed.

*Together we will raise the grade!*



Developing a comprehensive watershed Report Card is an important component of America's Watershed Initiative. It will help the public and policy-makers get information about the status and trends in achieving objectives for six broad management goals. Results from the Report Card will help develop a roadmap for collaborative actions to improve the 31-state Mississippi River Watershed and encourage people and organizations to engage in issues affecting the watershed.



### Support

The Report Card for the Mississippi River Watershed has been developed with the foundational financial support for America's Watershed Initiative from the Caterpillar Foundation, The McKnight Foundation, Ingram Barge Company, and The Nature Conservancy. We also want to thank the many other financial supporters of the AWI 2014 Summit where the PRELIMINARY report card was released for feedback.

### AWI Steering Committee

Dru Buntin, Upper Mississippi River Basin Association  
Nancy DeLong, DuPont Pioneer  
Sean Duffy Sr., Big River Coalition  
Stephen Gambrell, U.S. Army Corps of Engineers  
Teri Goodmann, City of Dubuque, Iowa  
Sue Lowry, State of Wyoming, Upper Missouri Basin  
Steve Mathies, PhD, Lower Mississippi River Basin  
Daniel Mecklenborg, Ingram Barge Company  
Rob Rash, Mississippi Valley Flood Control Association  
Michael Reuter, The Nature Conservancy  
Rainy Shorey, PhD, Caterpillar, Inc.  
Charles Somerville, PhD, Ohio River Basin Alliance  
Max Starbuck, National Corn Growers Association

Harald (Jordy) Jordahl, Director  
America's Watershed Initiative  
hjordahl@tnc.org

### Photo credits (front cover)

Ecosystems: Byron Jorjorian; Flood Control & Risk Reduction: U.S. Army Corps of Engineers; Transportation: The Nature Conservancy; Water Supply: USDA NRCS; Economy: U.S. Army Corps of Engineers; Recreation: Karine Aigner.

### Report Card team

Charles Somerville (Ohio River Basin Alliance), Rainy Shorey (Caterpillar, Inc.), Bill Dennison, Jane Thomas, Caroline Donovan, Jane Hawkey, Heath Kelsey, Bill Nuttle, Brianne Walsh (University of Maryland Center for Environmental Science), Jonathan Higgins (The Nature Conservancy), Harald (Jordy) Jordahl (America's Watershed Initiative).



*Innovation for a better future*

