

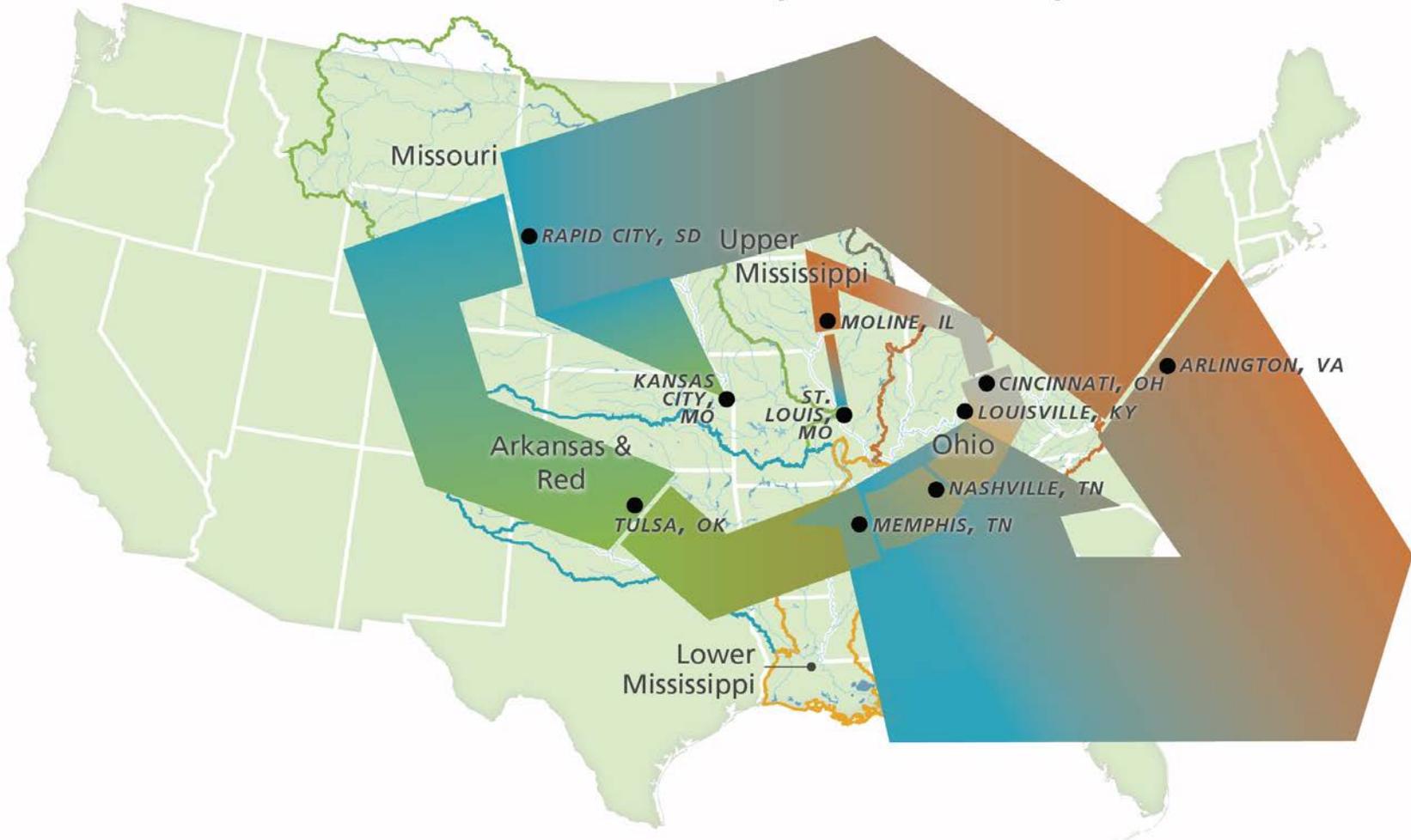


# A Journey through the Mississippi River Watershed

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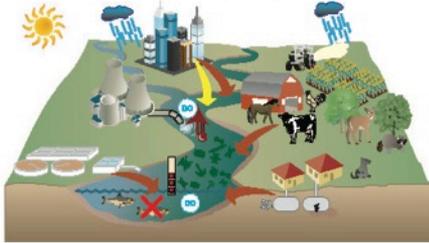
University of Maryland Center for Environmental Science  
Integration & Application Network

America's Watershed Initiative Summit  
Louisville, Kentucky  
October 1, 2014





# 1 Create a conceptual framework



Create a framework defining goals and major aspects of each goal that should be evaluated over time.

# 2 Choose indicators



Select indicators that convey meaningful information and can be reliably measured.

# 3 Define thresholds



Define status categories, reporting regions, and method of measuring threshold attainment.

# 4 Calculate scores

Source	Station	Region	Date	DO Value
DNR	CCC0008		4/29/09	9.00
DNR	CCC0008		4/29/09	9.50
DNR	CCC0008		4/29/09	9.70
DNR	CCC0008		5/28/09	8.90
DNR	CCC0008		5/28/09	9.00
DNR	CCC0008		5/28/09	9.00
DNR	CCC0008		5/28/09	9.00

Calculate indicator scores and combine into index grades.

# 5 Communicate results



Communicate results using visual elements, such as photos, maps, and conceptual diagrams.

Innovation for a better future



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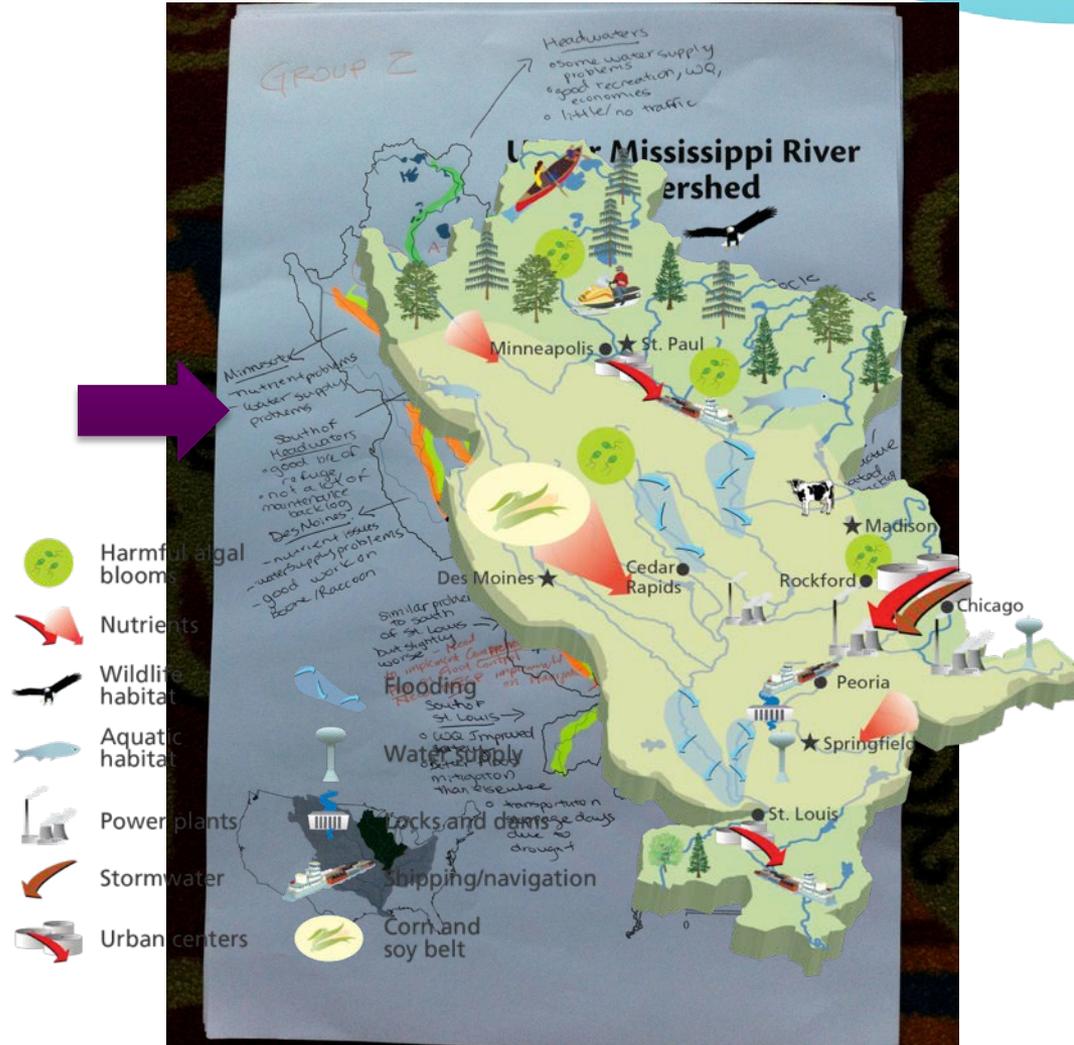
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Up







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### Goal 3: Economy indicators

Drag answers into order of importance



Per capita income by sector, rural/urban

Economy

Unemployment by sector, urban vs rural

Poverty level

Employment by sector, rural v urban

Total tonnage transported

Private plant and equipment investment

Tourism (cruise ships, paddling)



EPA NRSA Indicators Data.xlsx

Search in Sheet

Home Layout Tables Charts SmartArt Formulas Data Review

Edit Font Alignment Number Format Cells Themes

Calibri (Body) 11

Number

Normal

Bad

Insert Delete Format Themes

A1 SITE\_ID

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	SITE_ID	Lat	Long	HUC8	Riparian_V	Riparian_1	Avg. Rip Veg Cover Score by sub basin	Riparian_Disturbance	Riparian_2	Avg Rip. Disturbance Score by Sub basin	Sub_Basin					
2	AR003	36.24468981000	-92.83583518000	11010003	Fair	0.5	0.6	Medium	0.5	0.6	Arkansas Red					
3	AR006	36.21829613000	-91.27018957000	11010010	Fair	0.5		Medium	0.5		Arkansas Red					
4	AR007	34.98609295000	-93.60350937000	11110204	Fair	0.5		Low	1.0		Arkansas Red					
5	AR016	35.67817479000	-93.74408949000	11110201	Good	1.0		Low	1.0		Arkansas Red					
6	AR019	34.92887774000	-93.36068491000	11110206	Fair	0.5		Low	1.0		Arkansas Red					
7	AR024	33.61703373000	-93.86000774000	11140109	Poor	0.0		Low	1.0		Arkansas Red					
8	AR025	36.23849513000	-91.90776752000	11010012	Poor	0.0		Medium	0.5		Arkansas Red					
9	AR027	35.34665560000	-91.32230048000	11010013	Poor	0.0		High	0.0		Arkansas Red					
10	AR031	35.31565061000	-92.39585489000	11110205	Poor	0.0		Low	1.0		Arkansas Red					
11	AR032	35.42766302000	-94.14453915000	11110201	Poor	0.0		Medium	0.5		Arkansas Red					
12	AR035	35.76862941000	-93.16598070000	11110202	Fair	0.5		Low	1.0		Arkansas Red					
13	AR036	33.56425478000	-94.38411286000	11140106	Poor	0.0		Medium	0.5		Arkansas Red					
14	AR037	36.10448686000	-91.08780527000	11010009	Poor	0.0		Low	1.0		Arkansas Red					
15	AR041	36.35957618000	-92.59069445000	11010003	Fair	0.5		High	0.0		Arkansas Red					
16	AR044	35.09489821000	-93.42273530000	11110204	Fair	0.5		Medium	0.5		Arkansas Red					
17	AR052	33.04553747000	-93.82874478000	11140201	Poor	0.0		Medium	0.5		Arkansas Red					
18	AR053	36.28442851000	-90.72571493000	11010007	Fair	0.5		High	0.0		Arkansas Red					
19	AR057	36.06326700000	-92.11116972000	11010004	Fair	0.5		Medium	0.5		Arkansas Red					
20	AR060	35.40391583000	-94.33819472000	11110104	Good	1.0		Medium	0.5		Arkansas Red					
21	AR069	36.11488649000	-91.96699076000	11010004	Poor	0.0		Medium	0.5		Arkansas Red					
22	AR070	35.51270346000	-91.61686914000	11010014	Poor	0.0		Medium	0.5		Arkansas Red					
23	AR073	36.42861166000	-93.14634877000	11010003	Good	1.0		Low	1.0		Arkansas Red					
24	AR080	35.68548535000	-93.52616962000	11110201	Good	1.0		Low	1.0		Arkansas Red					
25	AR099	35.71495398000	-92.88273831000	11110202	Good	1.0		Low	1.0		Arkansas Red					
26	AR111	35.27595613000	-92.19925139000	11110205	Fair	0.5		Medium	0.5		Arkansas Red					
27	AR116	33.24400584000	-94.00329572000	11140302	Poor	0.0		Medium	0.5		Arkansas Red					
28	AR124	35.06977126000	-94.18830486000	11110204	Fair	0.5		Medium	0.5		Arkansas Red					
29	AR133	35.88504238000	-91.38636981000	11010009	Poor	0.0		Low	1.0		Arkansas Red					
30	AR145	36.38502921000	-90.61339699000	11010007	Poor	0.0		Medium	0.5		Arkansas Red					
31	AR147	34.92202722000	-92.95315200000	11110206	Fair	0.5		Medium	0.5		Arkansas Red					
32	AR153	36.39792656000	-92.37061806000	11010006	Poor	0.0		Low	1.0		Arkansas Red					
33	AR177	36.42781717000	-94.11203306000	11070208	Fair	0.5		Medium	0.5		Arkansas Red					
34	AR179	35.44697536000	-92.11461438000	11110205	Poor	0.0		Medium	0.5		Arkansas Red					
35	AR188	34.99955646000	-94.10611378000	11110204	Poor	0.0		Medium	0.5		Arkansas Red					
36	AR192	34.25657775000	-94.21744301000	11140109	Fair	0.5		Low	1.0		Arkansas Red					
37	AR236	35.38950946000	-94.09154904000	11110201	Poor	0.0		High	0.0		Arkansas Red					
38	AR255	35.26102285000	-93.09442003000	11110203	Poor	0.0		High	0.0		Arkansas Red					

Sub basin Summary BenthicMMI FishMMI RiparianVeg TN TP +

Normal View Ready Sum = 0



### Report card workshop Upper Mississippi River Basin

America's Watershed Initiative is a collaboration of organizations, businesses, and agencies which bring a basin-wide perspective to the Upper Mississippi River Basin's greatest challenges. Developing a comprehensive watershed report card is an important component of the Initiative. It will summarize and communicate the status and trends in achieving objectives for six broad management goals. The report card results will encourage people and organizations to engage in issues affecting the watershed.

*Uniting people, land and water across 32 states*  
**America's WATERSHED Initiative**

The America's Watershed Initiative project began with a regional workshop for the Upper Mississippi River Sub-Basin in Moline, Illinois on September 11-12, 2013. At the workshop, stakeholders identified easily understood ways to measure status and trends for six broad goals. Similar workshops will be convened in each of the remaining basins and results will be integrated into a report card for the entire Mississippi River Basin.



Participants at the regional workshop identified Sub-Basin threats and indicators.

### Report card workshop Ohio River Basin

America's Watershed Initiative is a collaboration of organizations, businesses, and agencies which bring a basin-wide perspective to the Ohio River Basin's greatest challenges. Developing a comprehensive watershed report card is an important component of the Initiative. It will summarize and communicate the status and trends in achieving objectives for six broad management goals. The report card results will encourage people and organizations to engage in issues affecting the watershed.

*Uniting people, land and water across 13 states*  
**America's WATERSHED Initiative**

The America's Watershed Initiative project continued with a regional workshop for the Ohio River Basin, held near Cincinnati, Ohio on December 12-13, 2013. At the workshop, stakeholders identified easily understood ways to measure status and trends for six broad goals. Similar workshops will be convened in each of the remaining basins and results will be integrated into a report card for the entire Mississippi River Basin.



Participants at the regional workshop identified health related to the six goals.

### Report card workshop Missouri River

America's Watershed Initiative is a collaboration of organizations, businesses, and agencies which bring a basin-wide perspective to the Missouri River Basin's greatest challenges. Developing a comprehensive watershed report card is an important component of the Initiative. It will summarize and communicate the status and trends in achieving objectives for six broad management goals. The report card results will encourage people and organizations to engage in issues affecting the watershed.

*Uniting people, land and water across 10 states*  
**America's WATERSHED Initiative**

The America's Watershed Initiative project continued with a regional workshop for the Missouri River Basin, held in Rapid City, South Dakota, on March 20-21, 2014. At the workshop, stakeholders identified easily understood ways to measure status and trends for six broad goals. Similar workshops will be convened in each of the remaining basins and results will be integrated into a report card for the entire Mississippi River Basin.



Participants at the regional workshop identified health related to the six goals.

### Report card workshop Lower Mississippi

America's Watershed Initiative is a collaboration of organizations, businesses, and agencies which bring a basin-wide perspective to the Lower Mississippi River Basin's greatest challenges. Developing a comprehensive watershed report card is an important component of the Initiative. It will summarize and communicate the status and trends in achieving objectives for six broad management goals. The report card results will encourage people and organizations to engage in issues affecting the watershed.

*Uniting people, land and water across 10 states*  
**America's WATERSHED Initiative**

The America's Watershed Initiative project continued with a regional workshop for the Lower Mississippi River Basin, held in Memphis, Tennessee, on March 20-21, 2014. At the workshop, stakeholders identified easily understood ways to measure status and trends for six broad goals. Similar workshops will be convened in each of the remaining basins and results will be integrated into a report card for the entire Mississippi River Basin.



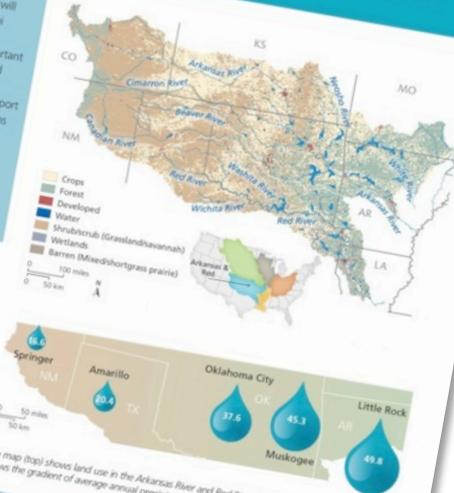
Participants at the regional workshop identified health related to the six goals.

### Report card workshop Arkansas River & Red River Basins

America's Watershed Initiative is a collaboration of organizations, businesses, and agencies which bring a basin-wide perspective to the Arkansas River and Red River Basins' greatest challenges. Developing a comprehensive watershed report card is an important component of the Initiative. It will summarize and communicate the status and trends in achieving objectives for six broad management goals. The report card results will encourage people and organizations to engage in issues affecting the watershed.

*Uniting people, land and water across 22 states*  
**America's WATERSHED Initiative**

The America's Watershed Initiative project continued with a regional workshop for the Arkansas River and Red River Basins, held in Tulsa, Oklahoma on May 14-15, 2014. At the workshop, stakeholders identified easily understood ways to measure status and trends for six broad goals. Similar workshops will be convened in each of the remaining basins and results will be integrated into a report card for the entire Mississippi River Basin.



The map (top) shows land use in the Arkansas River and Red River Basins. The graph (bottom) shows the gradient of average annual precipitation (in inches) across the basins from west to east.

Location	Average Annual Precipitation (inches)
Springer, NM	16.1
Amarillo, TX	20.4
Oklahoma City, OK	37.6
Muskogee, OK	45.3
Little Rock, AR	49.6



Bassmaster Classic fishing tournament on the Red River. Image courtesy of Shreveport-Bossier Sports Commission.



Cattle grazing in Oklahoma. Image courtesy of Oklahoma Cattlemen's Association.



Aerial view of the Port of Calhoun in Tulsa. Image courtesy of Tulsa Port of Calhoun.

America'sWatershed.org/reportcard

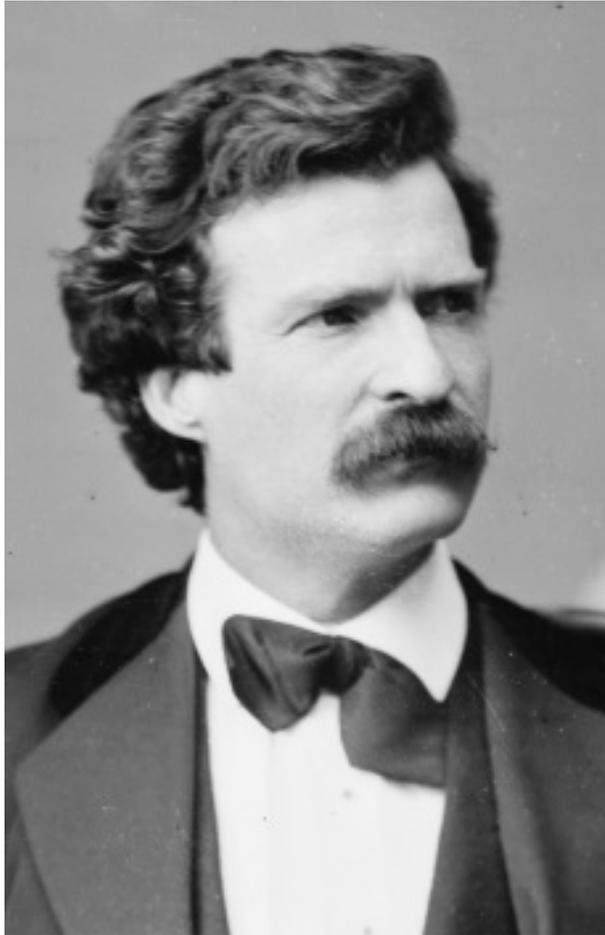


# America's Watershed Initiative Mississippi River Watershed Report Card



PRELIMINARY RESULTS





"There's only one way to be a pilot, and that is to get this entire river by heart. You have to know it just like A, B, C."

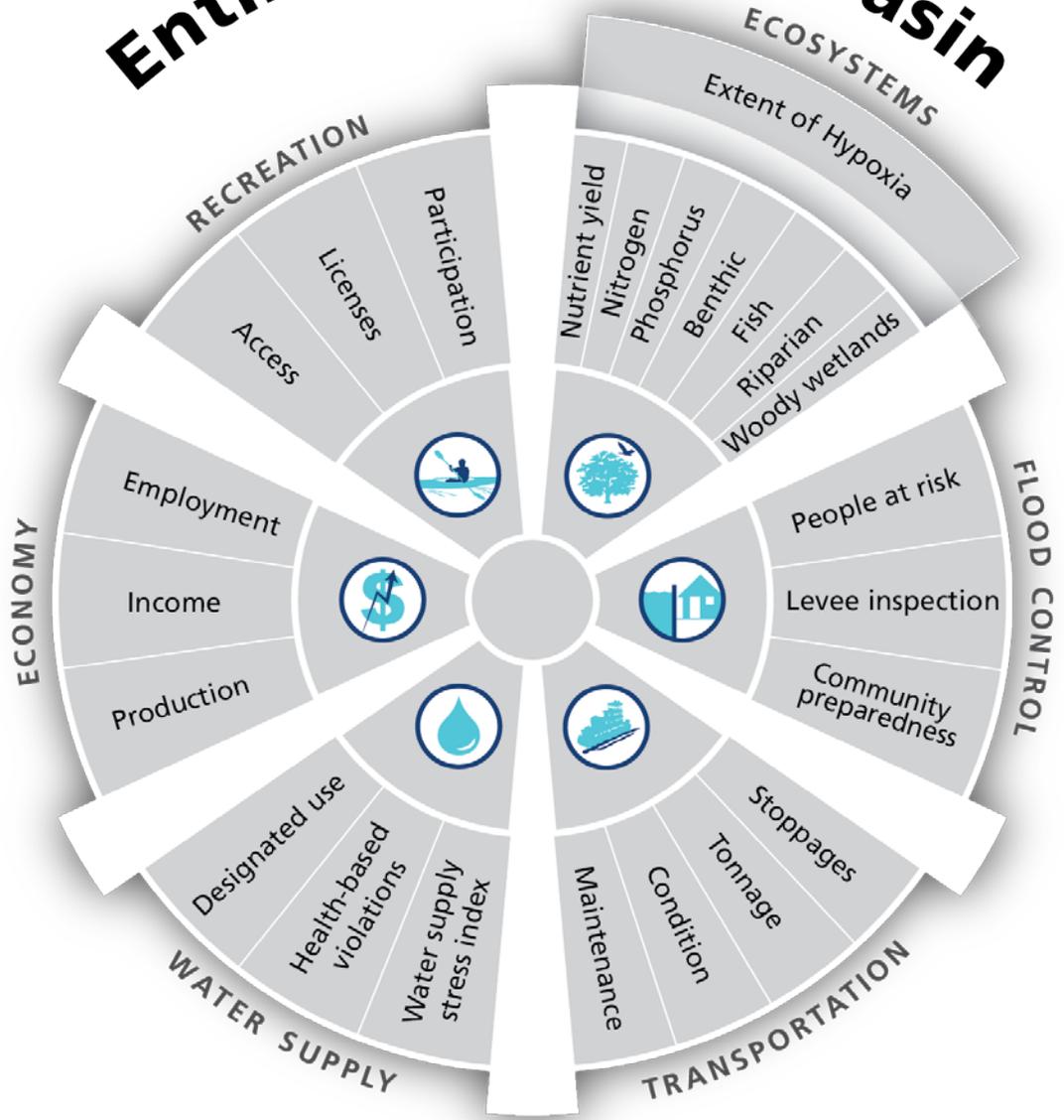


# The paddlewheel





# Entire Mississippi basin



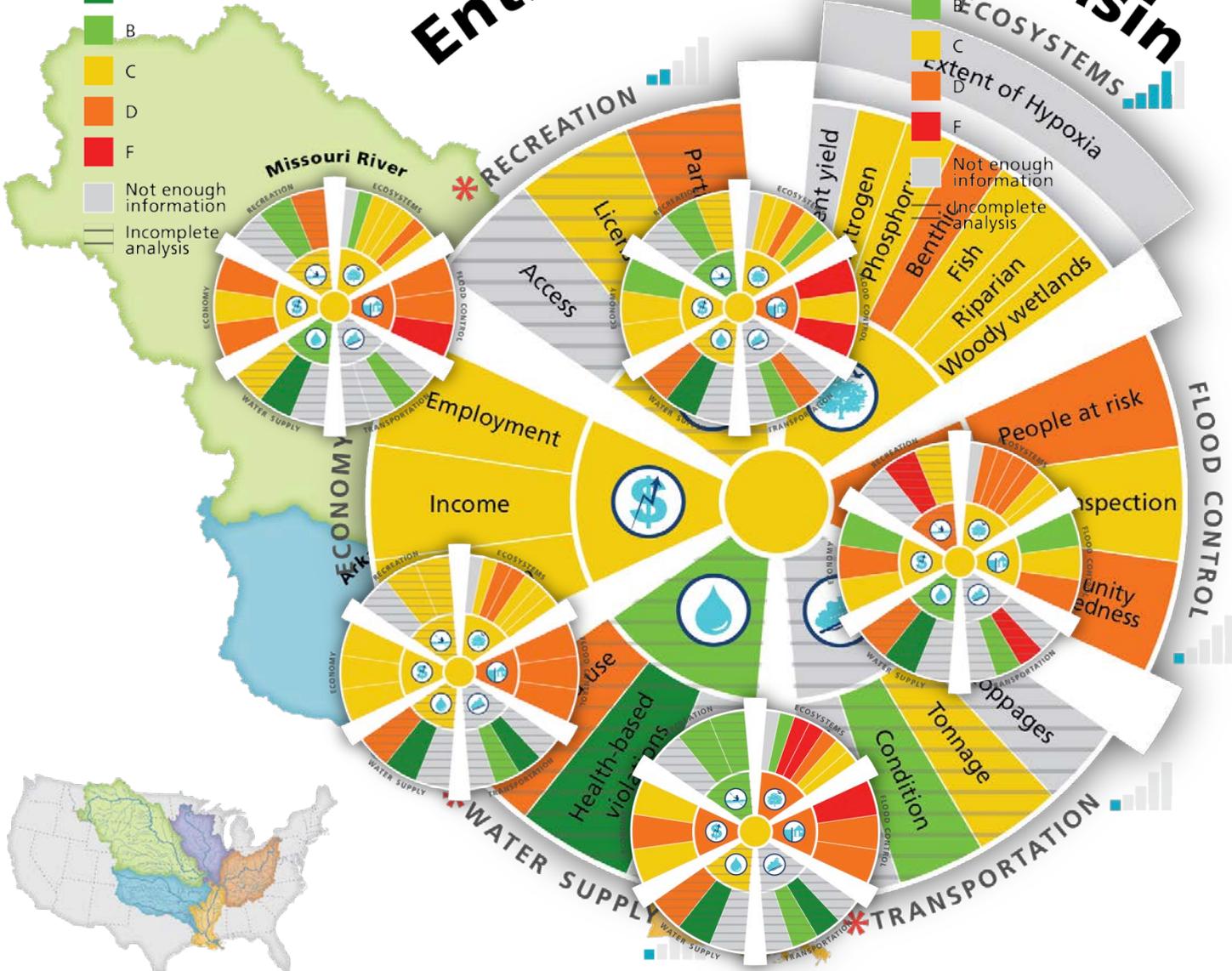
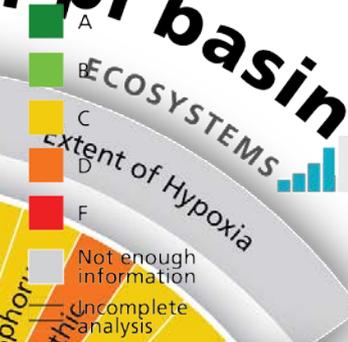


# Entire Mississippi basin

## Scoring system



## Scoring system





# Flood control

Provide reliable flood control and risk reduction





# Transportation

Serve as the nation's most valuable transportation corridor



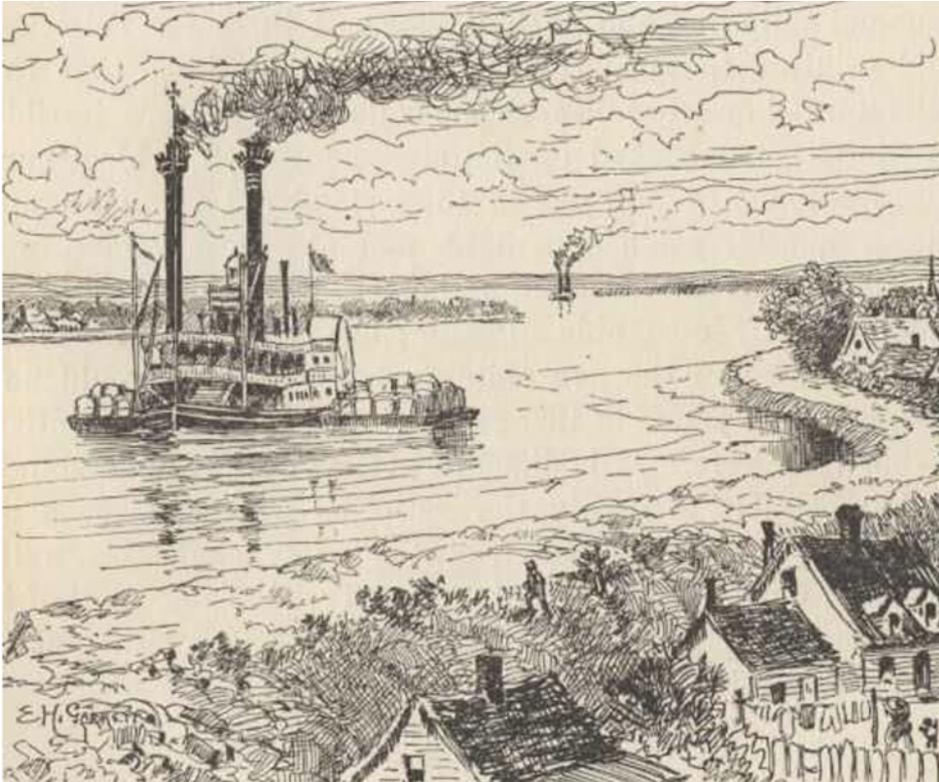
TRANSPORTATION



# Water supply

Maintain supply of abundant, clean water





"It is good for steam boating, and good to drink; but it is worthless for all other purposes, except baptizing."

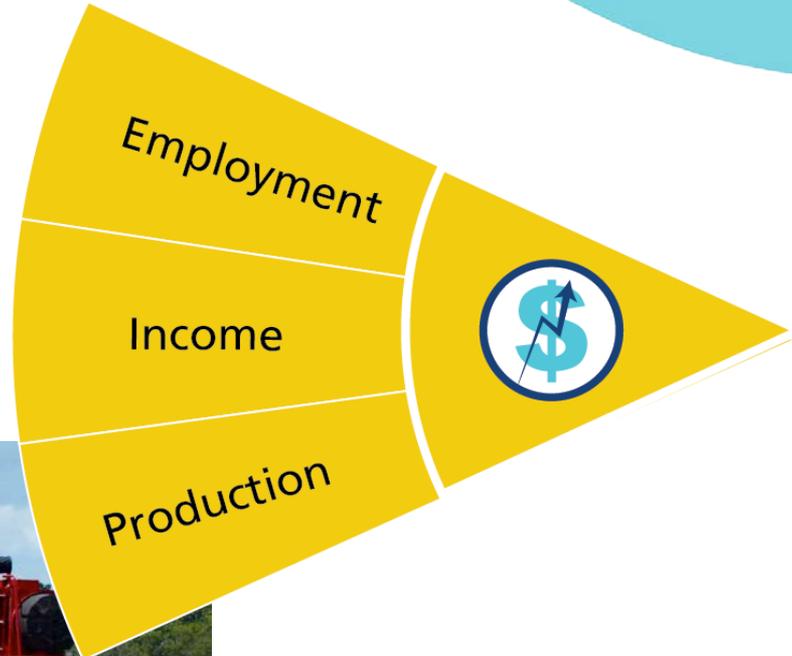


# Economy

Support local, state, and national economies



ECONOMY





# Recreation

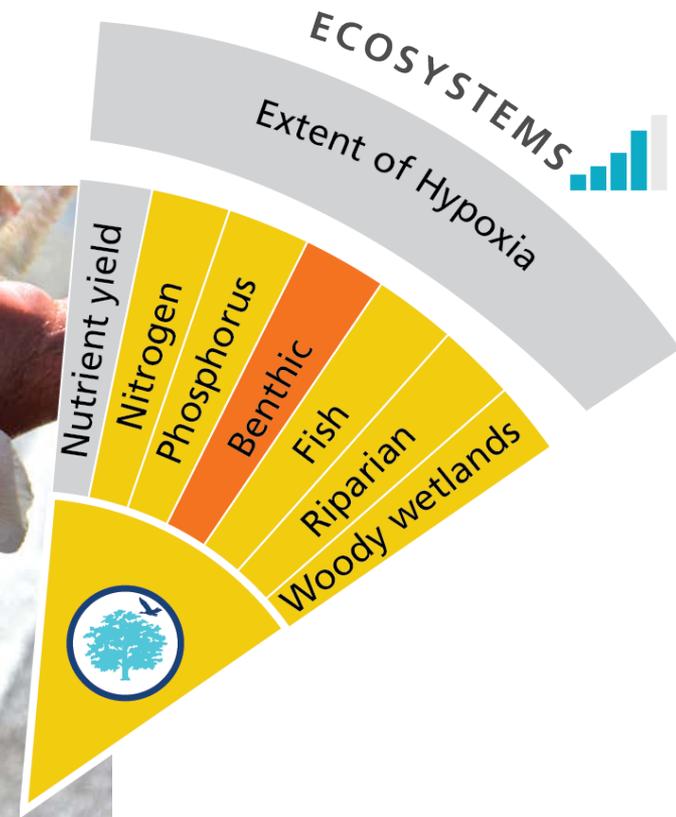
Provide world-class  
recreational opportunities



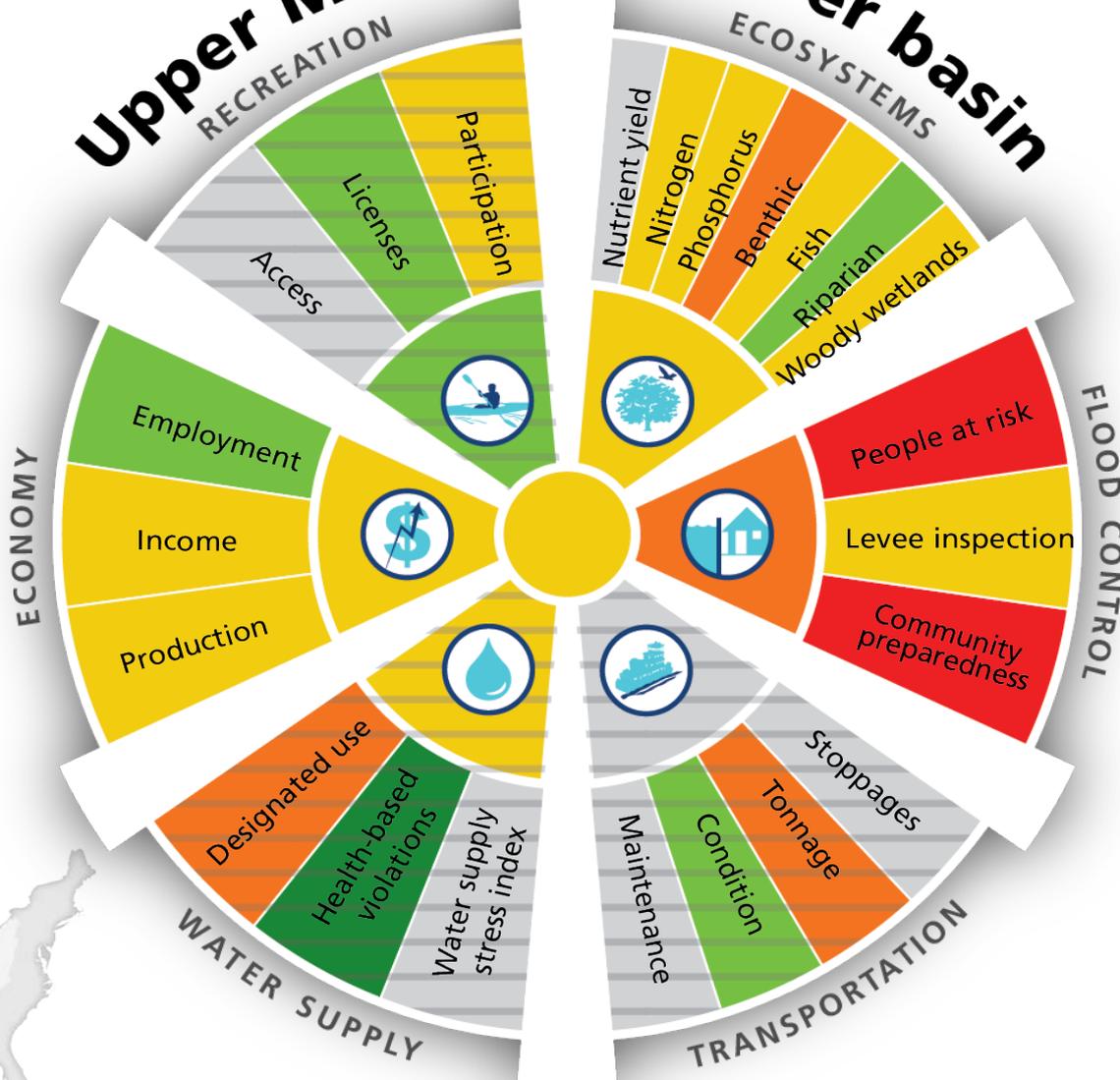


# Ecosystems

Support and enhance healthy and productive ecosystems



# Upper Mississippi River basin

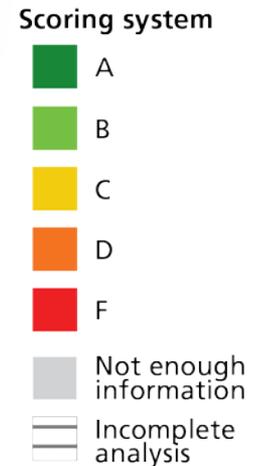


Scoring system

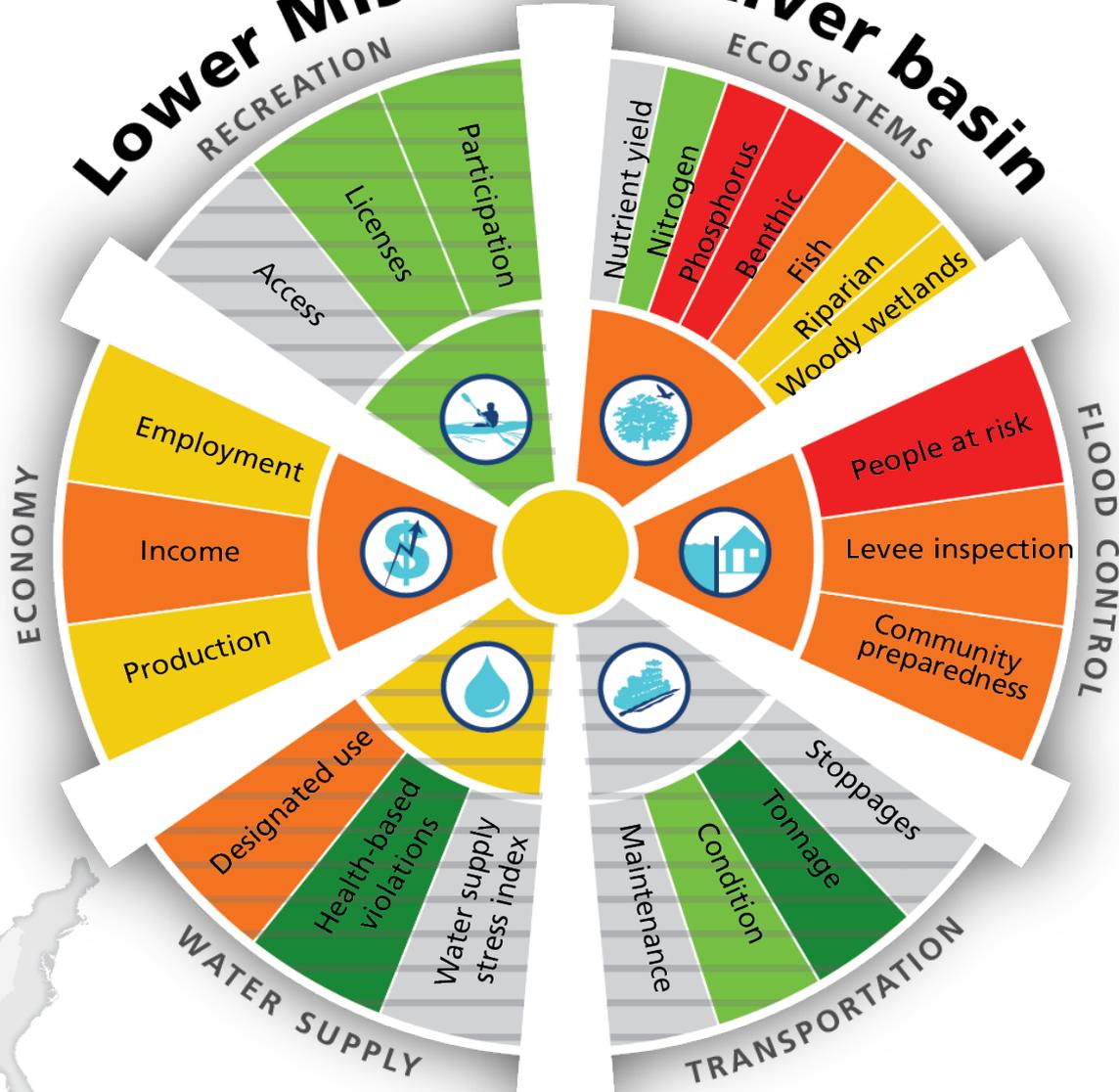
- A
- B
- C
- D
- F
- Not enough information
- Incomplete analysis



# Ohio River and Tennessee River basin



# Lower Mississippi River basin



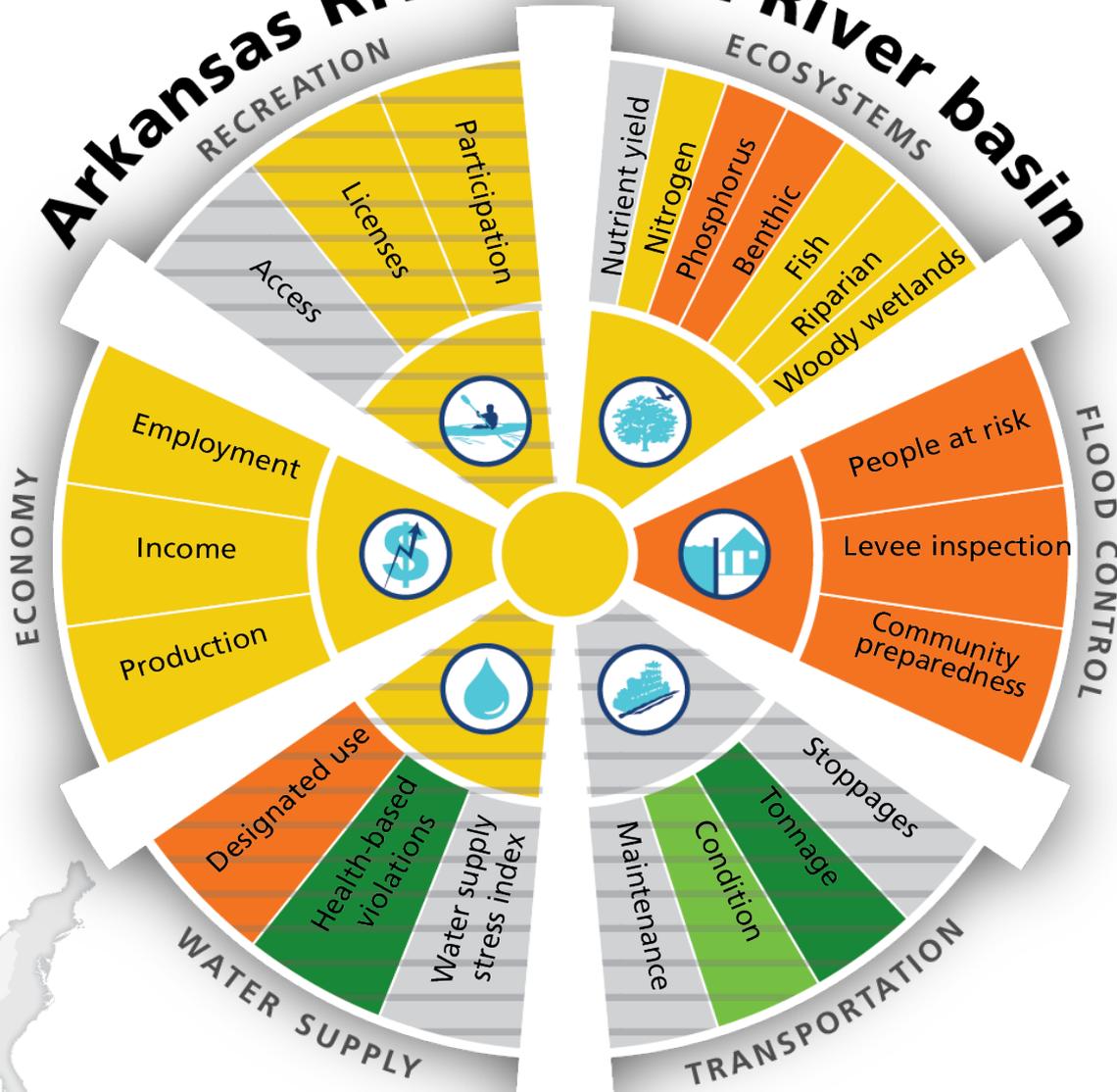
Scoring system

- A
- B
- C
- D
- F
- Not enough information
- Incomplete analysis





# Arkansas River & Red River basin



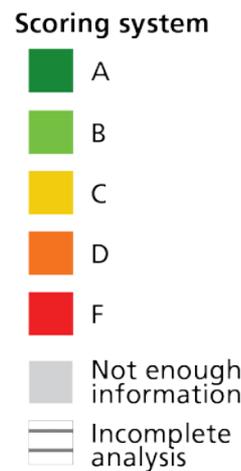
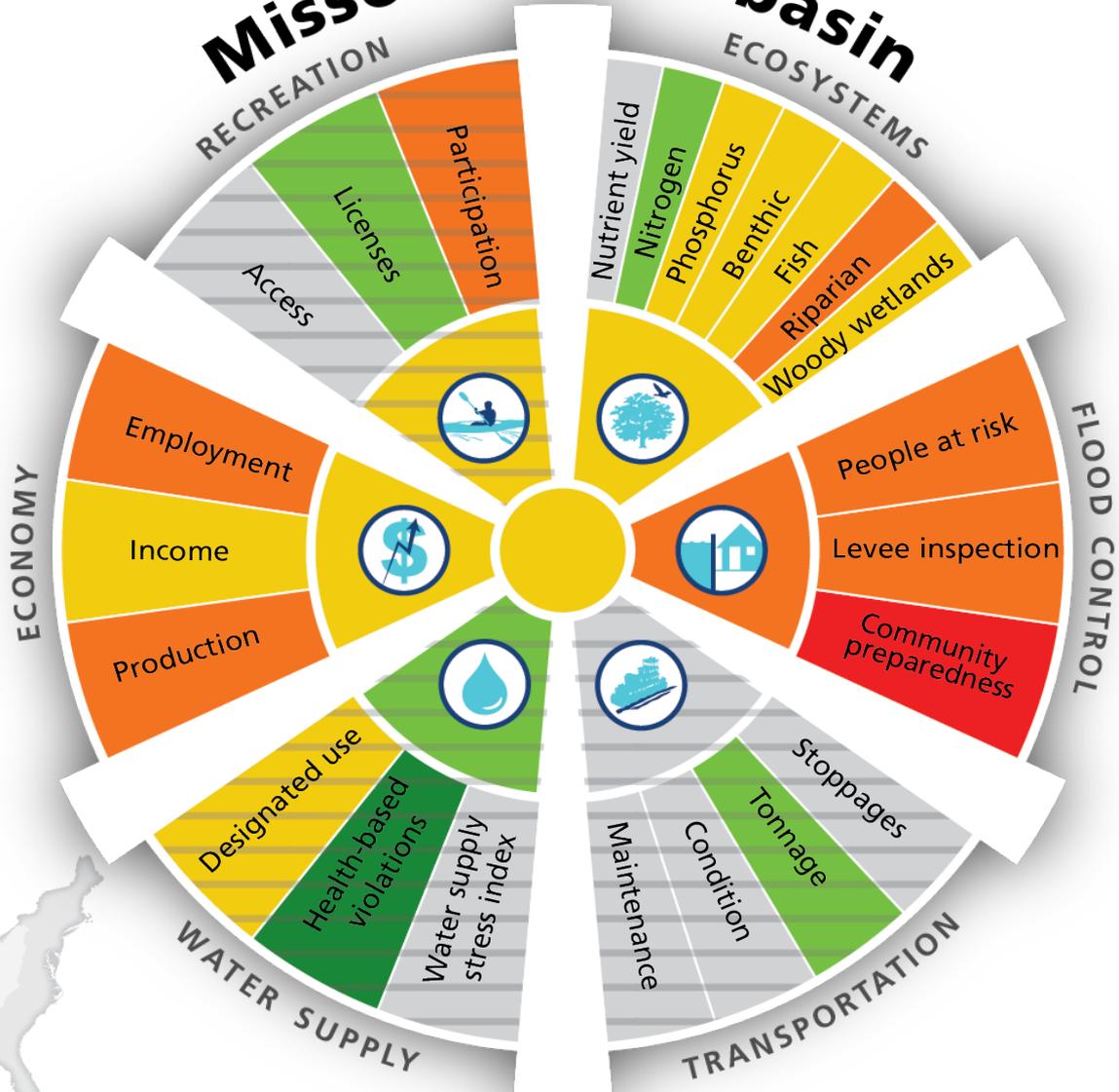
Scoring system

- A
- B
- C
- D
- F
- Not enough information
- Incomplete analysis



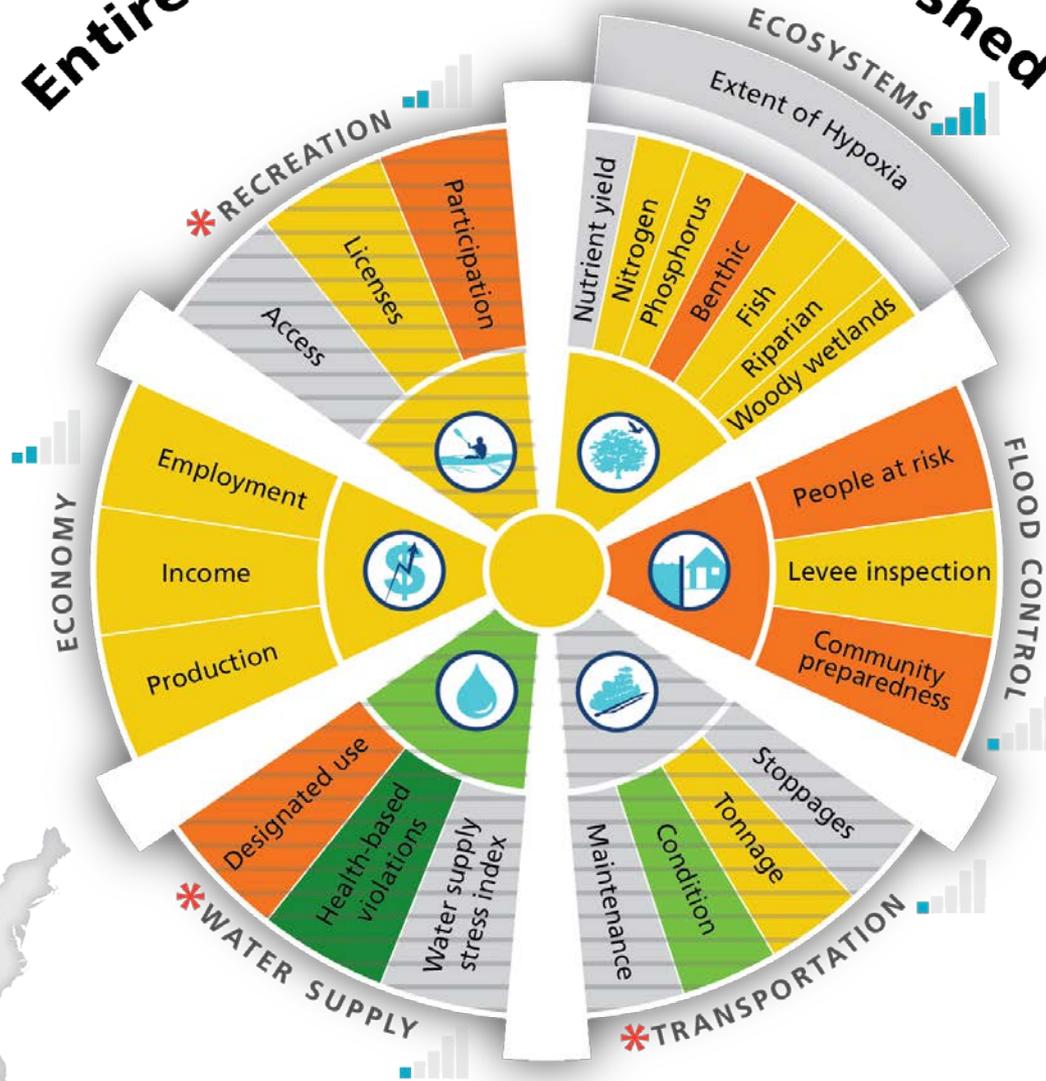


# Missouri River basin

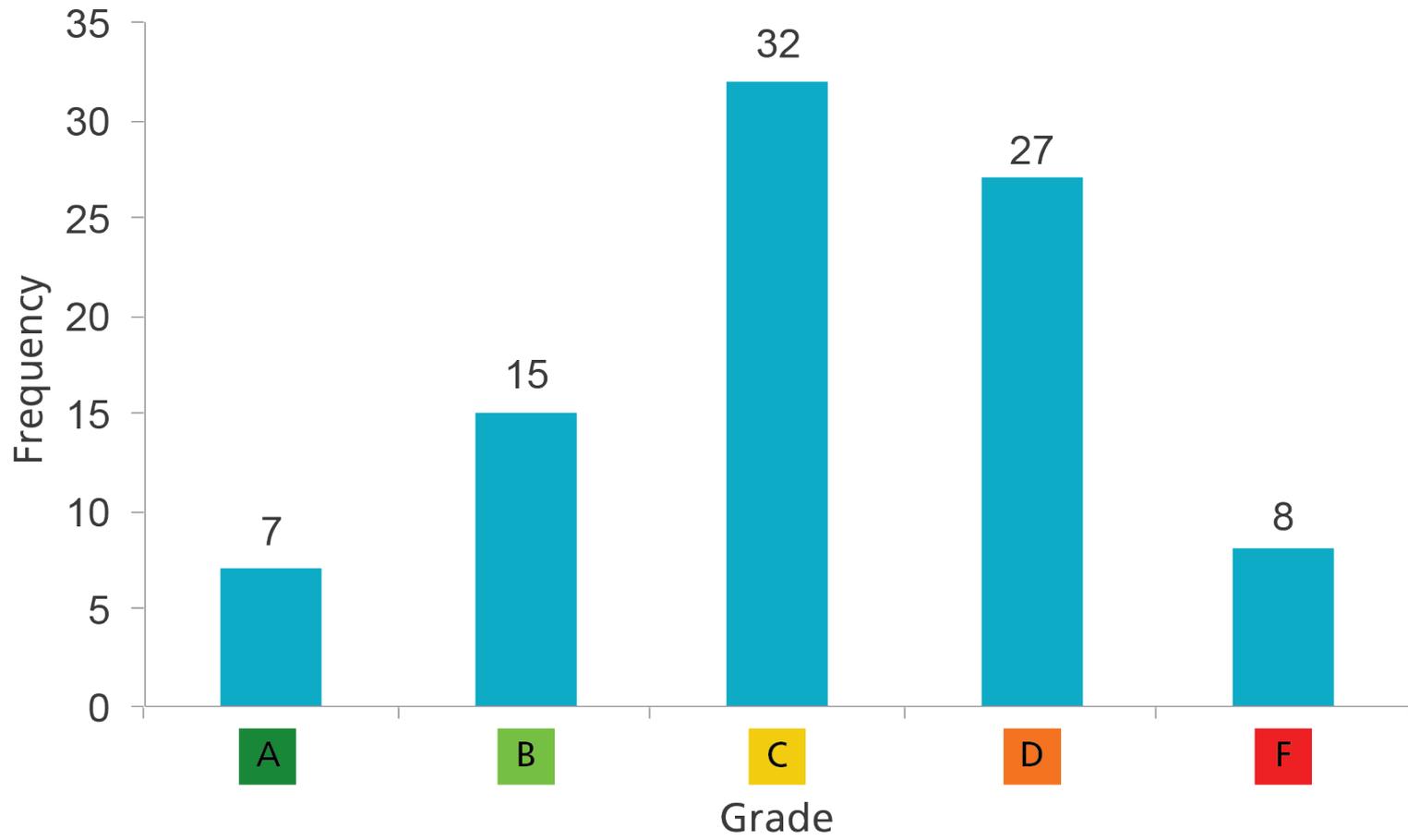


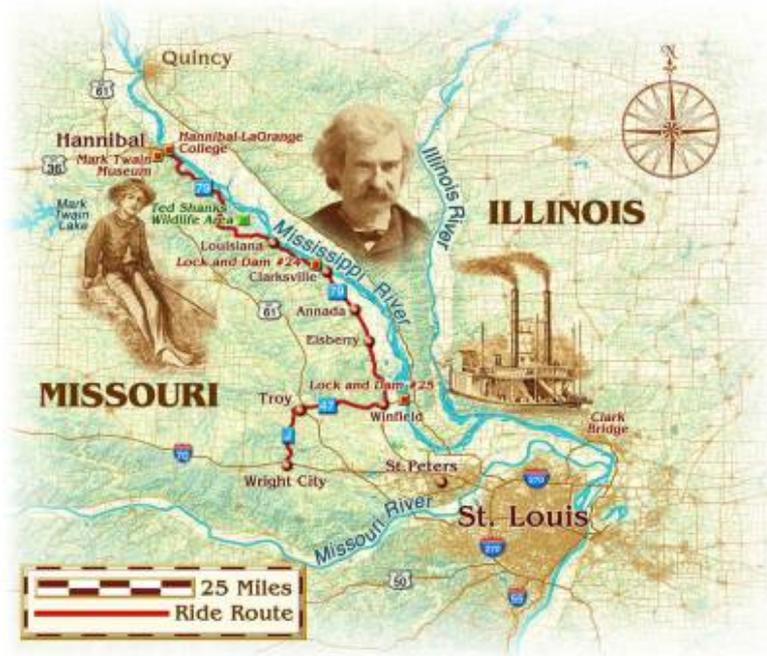


# Entire Mississippi River watershed



# Grade distribution





"The Mississippi is well worth reading about. It is not a commonplace river, but on the contrary is in all ways remarkable."