

# ASA TABLE TALKS:

## Understanding Local Stormwater Challenges & Opportunities

A facilitated discussion among representatives in Jefferson County to identify stormwater infrastructure challenges and collaboratively envision solutions

**MARCH 22, 2023 | 10:00 - 2:00**

Vestavia Hills Civic Center 1032 Montgomery Highway Vestavia Hills, AL 35216

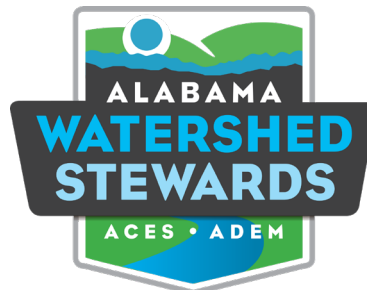


Alabama Stormwater  
Association

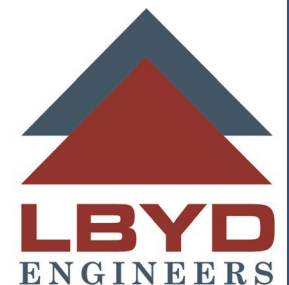


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Water Resources Center



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Alabama's  
Infrastructure  
Report Card  
*- Stormwater*



Barry Fagan  
**FAGAN**  
FAGAN CONSULTING LLC

**Livable** – being fit to live in, enjoyable.

Livability is defined by those who live, work, and play there.

**Sustainable** – the ability to be maintained and balanced.

Sustainability is measured by performance.

**Resilient** – the ability to withstand or recover quickly from difficult conditions.

Resilience doesn't necessarily reflect a return to the ways things were.

2021

# REPORT CARD FOR AMERICA'S INFRASTRUCTURE

[MAKING THE GRADE](#)

[INFRASTRUCTURE CATEGORIES](#)

[INFRASTRUCTURE BY STATE](#)

[SOLUTIONS](#)

[ECONOMICS](#)

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**ASCE**



## America's Infrastructure Scores a

# C-

# Infrastructure - the basic physical and organizational structures and facilities needed for the operation of a society

## National Infrastructure Categories



AVIATION



BRIDGES



BROADBAND



DAMS



DRINKING WATER



ENERGY



HAZARDOUS WASTE



INLAND WATERWAYS



LEVEES



PUBLIC PARKS



PORTS



RAIL



ROADS



SCHOOLS



SOLID WASTE



STORMWATER



TRANSIT



WASTEWATER

# 2021 Infrastructure Grades

 AVIATION  D+



 BRIDGES  C

 DAMS D

 DRINKING WATER  C-

 ENERGY  C-

 HAZARDOUS WASTE D+

 INLAND WATERWAYS  D+

 LEVEES D


 PARKS AND RECREATION D+


 PORTS  B-

 RAIL B

 ROADS D

 SCHOOLS D+

 SOLID WASTE C+

 STORM WATER D

 TRANSIT D-

 WASTEWATER D+

America's  
Cumulative  
Infrastructure  
Grade



**A** EXCEPTIONAL

**B** GOOD

**C** MEDIOCRE

**D** POOR

**F** FAILING





# ASCE

## ALABAMA SECTION



# 2022 REPORT CARD



# 2022 REPORT CARD

## ALABAMA STORMWATER TEAM



**Jimbo Carlson, PE**  
Chief - Stormwater Branch, ADEM

**Barry Fagan, PE/PLS, ENV SP, CPMSM, CPESC, CESSWI**  
Vice President – Environment & Infrastructure, Volkert; ASCE, Alabama Stormwater Association (ASA)

**Rosemary Ginn, PE**  
Assistant City Engineer, City of Mobile; APWA, ASA

**Byron Hinchey, PE, CFM**  
Senior Project Manager – Water Resources, S&ME; ASCE

**Scott Hofer, PE**  
Public Health Engineer, Jefferson County Department of Public Health/Stormwater Authority: ASA; SESWA

**Mike Perez, PhD, PE, CPESC**  
Assistant Professor, Auburn University; Alabama Erosion and Sediment Control Partnership; TRB, IECA

**Scott Rogers, PhD, PE, CPMSM**  
Environmental Coordination Engineer, Alabama Department of Transportation; ASA

# 2022 REPORT CARD

## KEY STORMWATER CONSIDERATIONS



CONDITION

CAPACITY

O&M

RESILIENCE

PUBLIC SAFETY

FUNDING

FUTURE NEED

INNOVATION

Physical built infrastructure

Physical natural infrastructure

Public vs Private

Asset awareness

Stormwater management

- ▼ Impacts to other infrastructure
- ▼ Post-Construction stormwater
- ▼ Construction stormwater

# 2022 REPORT CARD

## CONDITION



WHAT IS THE INFRASTRUCTURE'S EXISTING AND NEAR-FUTURE PHYSICAL CONDITION?



# Site-specific Targeted Monitoring Summary Results

Alabama (2006) ←

[Description of this table](#)

## Size of Water

Rivers and Streams (Miles)	Lakes, Reservoirs, and Ponds (Acres)	Bays and Estuaries (Square Miles)	Ocean and Near Coastal (Square Miles)
----------------------------	--------------------------------------	-----------------------------------	---------------------------------------

# Site-specific Targeted Monitoring Summary Results

Alabama (2016) ←

[Description of this table](#)

## Size of Water

Rivers and Streams (Miles)	Lakes, Reservoirs, and Ponds (Acres)	Bays and Estuaries (Square Miles)	Ocean and Near Coastal (Square Miles)
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Are we getting better?  
 Are we getting worse?  
 Do we even know?

202,089.0	147.3		
6,428.5	2.6		
229,630.2	429.5	201.0	
38,526.7	5.6		
191,103.6	423.9	201.0	
.0	.0	.0	
191,103.6	423.9	201.0	
431,719.3	576.7	201.0	
490,472.0	610.0	Unavailable	
18.2	88.0	94.5	Unavailable

Percent of Waters Assessed	12.3	35.3	82.9	Unavailable
----------------------------	------	------	------	-------------

Total Waters	77,242.0	77,242.0	77,242.0
Percent of Waters Assessed	18.2	88.0	94.5

Impaired in 2006:  
 27% of assessed rivers  
 47% of assessed lakes

Impaired in 2016:  
 23% of assessed rivers  
 53% of assessed lakes



# 2022 REPORT CARD

## CAPACITY

DOES THE INFRASTRUCTURE'S  
CAPACITY MEET CURRENT AND  
FUTURE DEMANDS?



# 2022 REPORT CARD

## CAPACITY



DOES THE INFRASTRUCTURE'S  
CAPACITY MEET CURRENT AND  
FUTURE DEMANDS?

### **Why Birmingham flash floods are part of a much bigger problem**

Updated: Mar. 22, 2022, 2:33 p.m. | Published: Mar. 22, 2022, 2:01 p.m.

“Blockage was not the main problem...  
All of our system was open and flowing... It’s just a very large magnitude event...  
The system was not designed for events as intense as that.” – Josh Yates

# 2022 REPORT CARD

## OPERATION & MAINTENANCE



WHAT IS THE OWNERS' ABILITY TO OPERATE AND MAINTAIN THE INFRASTRUCTURE PROPERLY?

IS THE INFRASTRUCTURE IN COMPLIANCE WITH GOVERNMENT REGULATIONS?

“...adequate long-term operation and maintenance of post-construction BMPs...”

“...properly operate and maintain all facilities and systems of treatment and control (and related appurtenances)...”

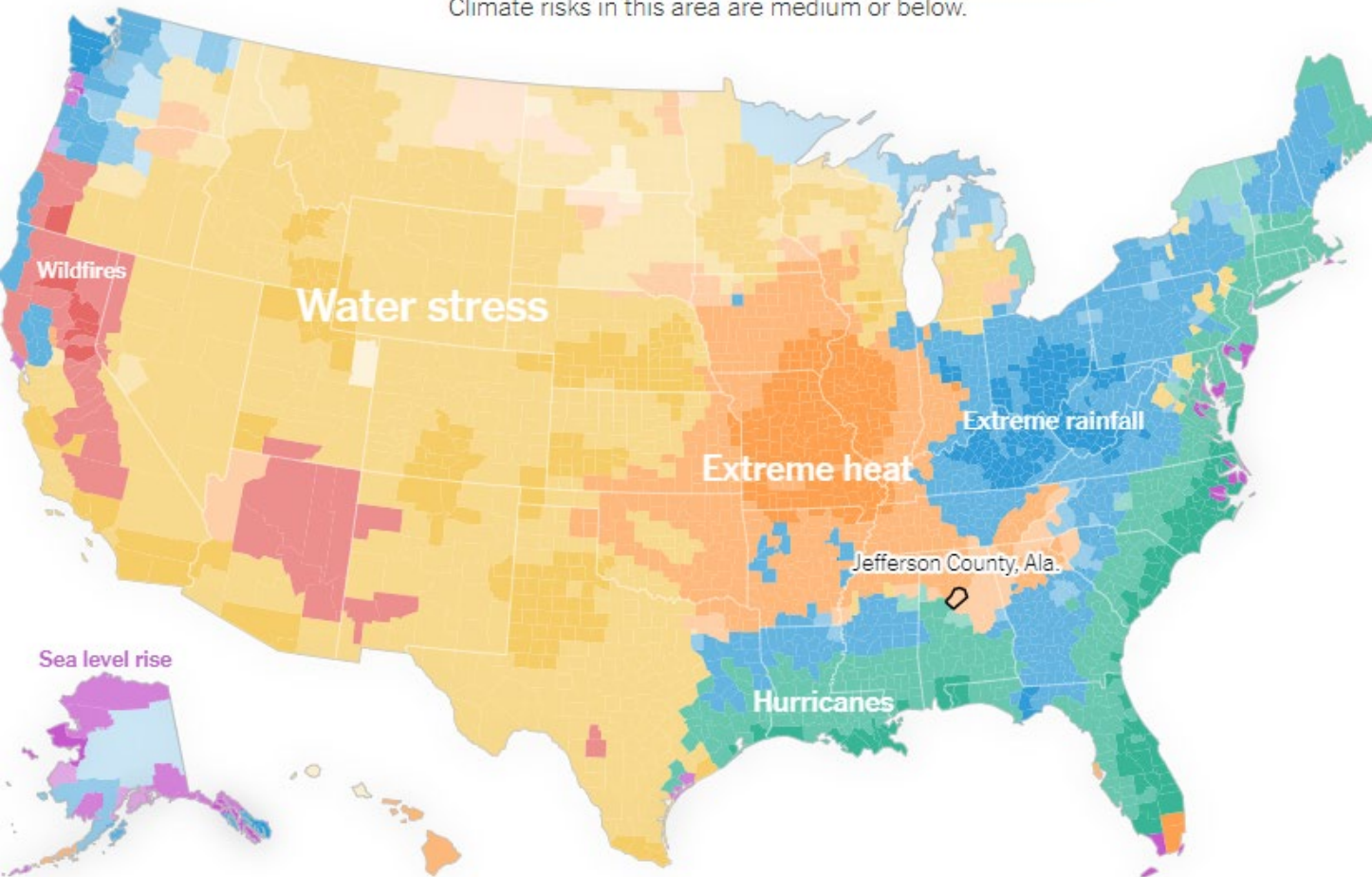
# 2022 REPORT CARD

## RESILIENCE & PUBLIC SAFETY

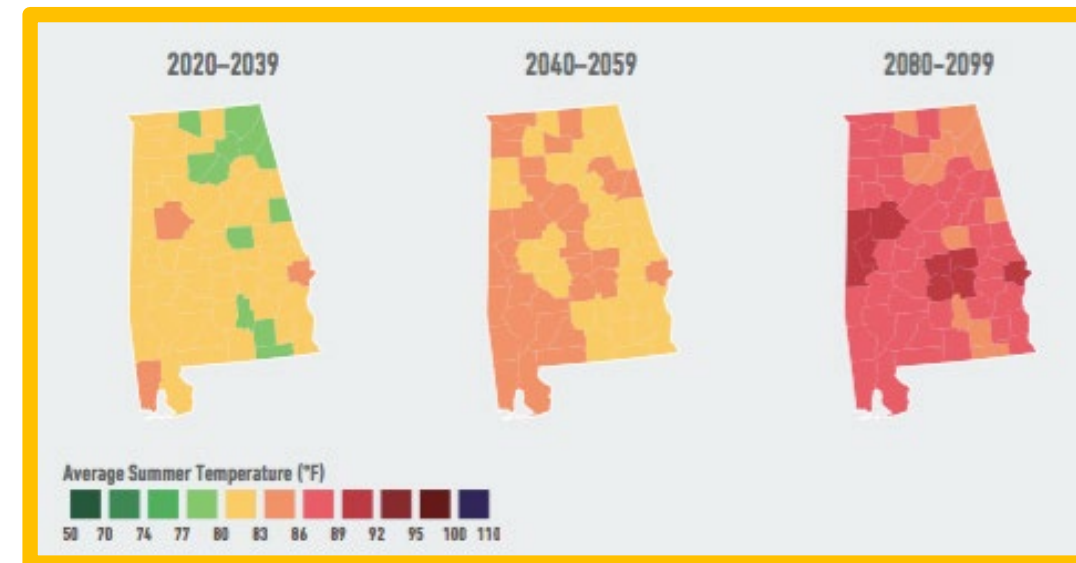


The greatest climate threat in Jefferson County, Ala. is **heat stress**.

Climate risks in this area are medium or below.



# HEAT





# 2022 REPORT CARD

## RESILIENCE & PUBLIC SAFETY



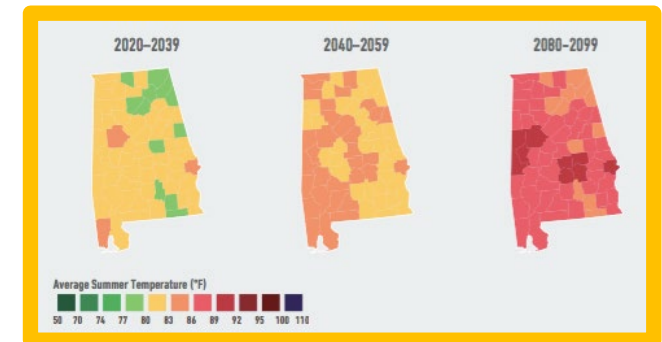
**Feb. 22, 2023**

- **Birmingham:** 82 degrees (record high)

**Feb. 23, 2023**

- **Muscle Shoals:** 86 degrees (previous record 83 in 2012)
- **Anniston:** 80 degrees (record 84 in 1996)
- **Birmingham:** 81 degrees (record 83 in 1996)
- **Huntsville:** 82 degrees (record 83 in 1996)
- **Mobile:** 78 degrees (record 82 in 2022)
- **Montgomery:** 85 degrees (tying 2019 record)
- **Tuscaloosa:** 83 degrees (record 84 in 1996)

# HEAT



“This heatwave has also continued into March, with records reported in Mobile, Montgomery, and Anniston.”

“...the Port City [Mobile] had already reported record highs on February 28 and again on March 1.”

# 2022 REPORT CARD RESILIENCE & PUBLIC SAFETY



 **Brandon Copic**   
@BrandonCopicWx · [Follow](#) 

SIGNIFICANT FLOODING on I-65 in Cullman, AL. Both sides of I-65 are CLOSED but not enough emergency vehicles to stop traffic on the Southbound side.  
[@NWSHuntsville](#) [@spann](#) [@RadarOmega](#) #ALwx



Watch on Twitter

## RAIN

### Birmingham shatters 122-year-old rainfall record on Wednesday

Published: Jun. 09, 2022, 8:13 a.m.



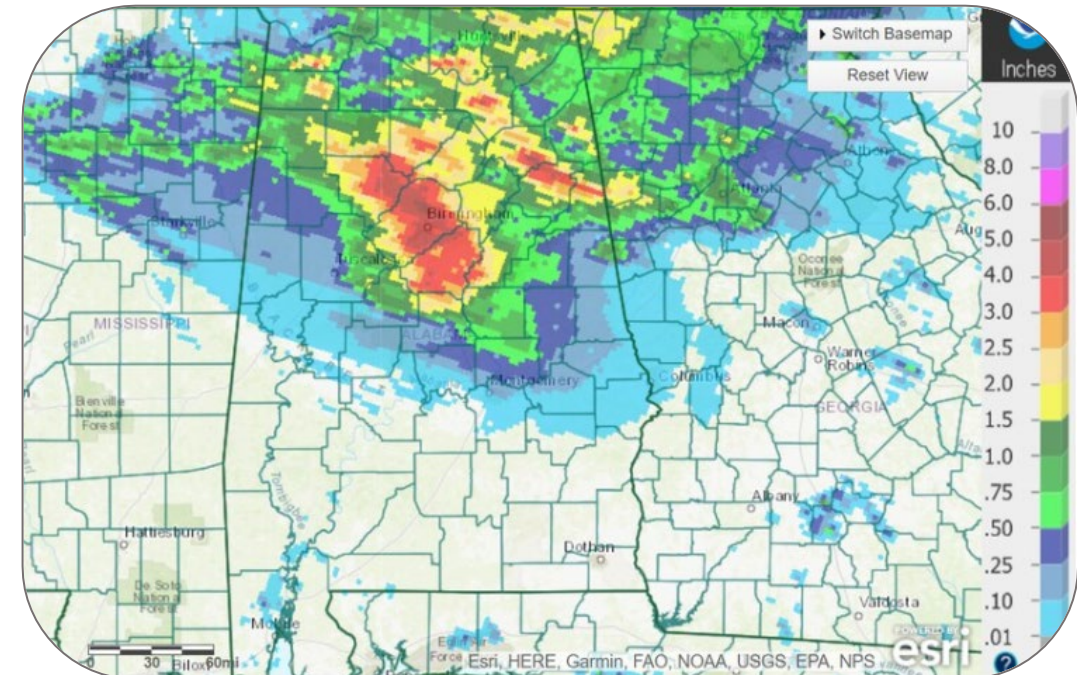
# 2022 REPORT CARD RESILIENCE & PUBLIC SAFETY



*What Climate Change Means for Alabama -*

Flooding is becoming more severe in the Southeast. Since 1958, the amount of precipitation during heavy rainstorms has increased by 27 percent in the Southeast, and the trend toward increasingly heavy rainstorms is likely to continue.

# RAIN



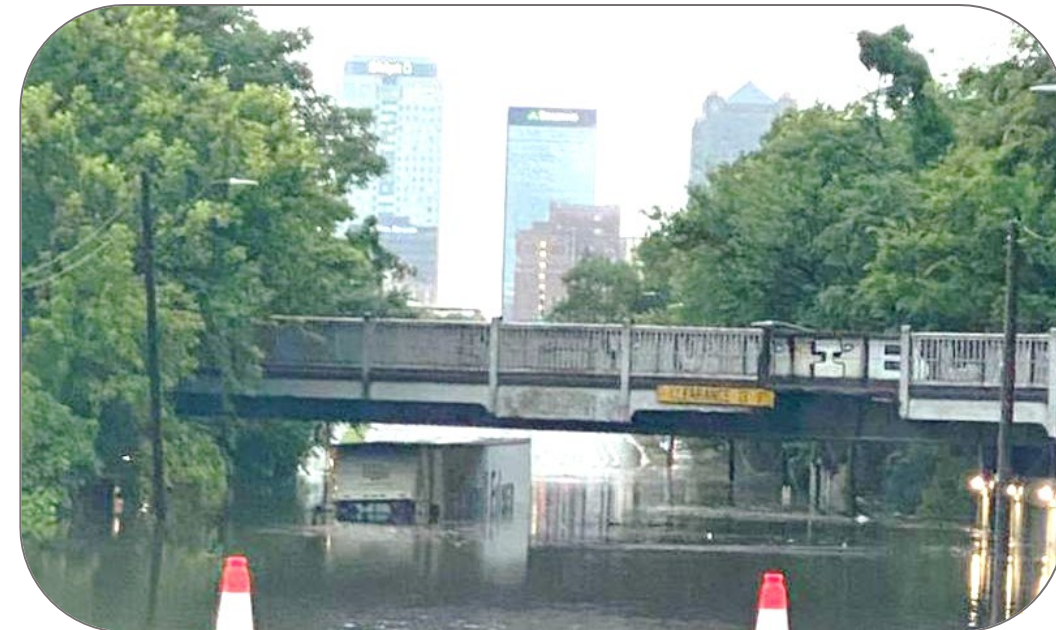
# 2022 REPORT CARD

## RESILIENCE & PUBLIC SAFETY



WHAT IS THE INFRASTRUCTURE SYSTEM'S CAPABILITY TO PREVENT OR PROTECT AGAINST SIGNIFICANT MULTI-HAZARD THREATS AND INCIDENTS? HOW ABLE IS IT TO QUICKLY RECOVER AND RECONSTITUTE CRITICAL SERVICES WITH MINIMUM CONSEQUENCES FOR PUBLIC SAFETY AND HEALTH, THE ECONOMY, AND NATIONAL SECURITY?

TO WHAT EXTENT IS THE PUBLIC'S SAFETY JEOPARDIZED BY THE CONDITION OF THE INFRASTRUCTURE AND WHAT COULD BE THE CONSEQUENCES OF FAILURE?



# 2022 REPORT CARD

## RESILIENCE & PUBLIC SAFETY



### NEWS

**At least 8 water rescues conducted in Birmingham as Five Points, UAB campus flood due to heavy rain**

by: [Lee Hedgepeth](#)

Posted: Mar 16, 2022 / 03:13 PM CDT

Updated: Mar 16, 2022 / 10:25 PM CDT



Birmingham Fire and Rescue responded to 20 water-related calls during the first hours of the flooding, with eight incidents that required people to be rescued from cars. - March 16, 2022, CBS 42

# 2022 REPORT CARD

## RESILIENCE & PUBLIC SAFETY



### Why Birmingham flash floods are part of a much bigger problem

Updated: Mar. 22, 2022, 2:33 p.m. | Published: Mar. 22, 2022, 2:01 p.m.

“Blockage was not the main problem...

All of our system was open and flowing... It’s just a very large magnitude event...

The system was not designed for events as intense as that.” – Josh Yates

“Our infrastructure is old... It’s going to require significant investment.”

- Mayor Randall Woodfin

# 2022 REPORT CARD

## FUNDING & FUTURE NEEDED



WHAT IS THE CURRENT LEVEL OF FUNDING FROM ALL LEVELS OF GOVERNMENT FOR THE INFRASTRUCTURE CATEGORY AS COMPARED TO THE ESTIMATED FUNDING NEED?

WHAT IS THE COST TO IMPROVE THE INFRASTRUCTURE? WILL FUTURE FUNDING PROSPECTS ADDRESS THE NEED?

**“Alabama is dead last in funding.”**

- Lance LeFleur, ADEM Director

# 2022 REPORT CARD

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"The street paving in total is minimum tag of 50 million dollars and you can imagine that our storm water infrastructure is millions more,"

- Mayor Randall Woodfin, Birmingham



# 2022 REPORT CARD

## FUNDING & FUTURE NEEDED



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WHAT IS THE COST TO IMPROVE THE INFRASTRUCTURE? WILL FUTURE FUNDING PROSPECTS ADDRESS THE NEED?

They're looking at areas with known flooding problems. Bell said it's going to cost the city around \$400,000 to \$500,000 for a deeper analysis of four to five different spots.

- Denise Bell, Director of Birmingham's Capital Projects

# 2022 REPORT CARD

## FUNDING & FUTURE NEEDED



### User Fees

- The Alabama Legislature has limited the monthly fee for residential properties to \$0.83.
  - 14% of the National median of \$5.87
  - 20% of the regional median \$4.22
- Of the 69 MS4 communities in the State, only 25 have implemented a stormwater user fee.
- 18 of those 25 charge only half of that allowed by law.
- User fees in Alabama are roughly \$7/capita/year.
- User fees in Georgia are about \$46/capita/year.

# 2022 REPORT CARD

## INNOVATION



WHAT NEW AND INNOVATIVE TECHNIQUES, MATERIALS, TECHNOLOGIES, AND DELIVERY METHODS ARE BEING IMPLEMENTED TO IMPROVE THE INFRASTRUCTURE?

- Physics-based calibrated watershed modeling
- Automated real-time rainfall monitoring, data collection, and notification
- Intelligent stormwater detention and discharge control

# 2022 REPORT CARD

## INNOVATION



- Low Impact Development and Green Infrastructure



- Hybrid infrastructure delivery approach (traditional and nature-based)

# 2022 REPORT CARD

## INNOVATION



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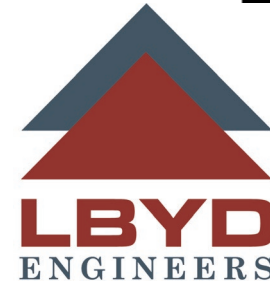
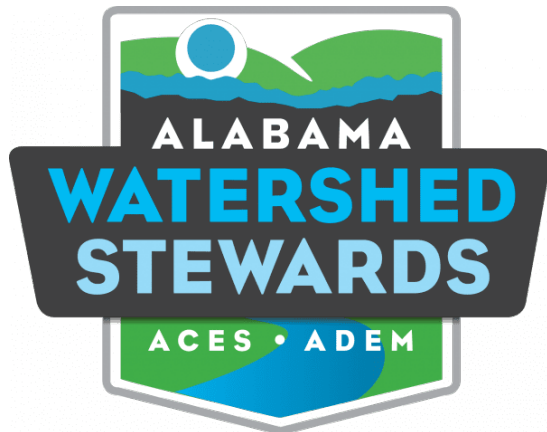
ALABAMA  
SOIL & WATER  
CONSERVATION  
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ENGINEERING  
SOLUTIONS  
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SOIL  
AND WATER  
CONSERVATION  
SOCIETY



# 2022 REPORT CARD

## THE GRADE



### C Mediocre: requires attention

The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.

### D Poor: at risk

The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.

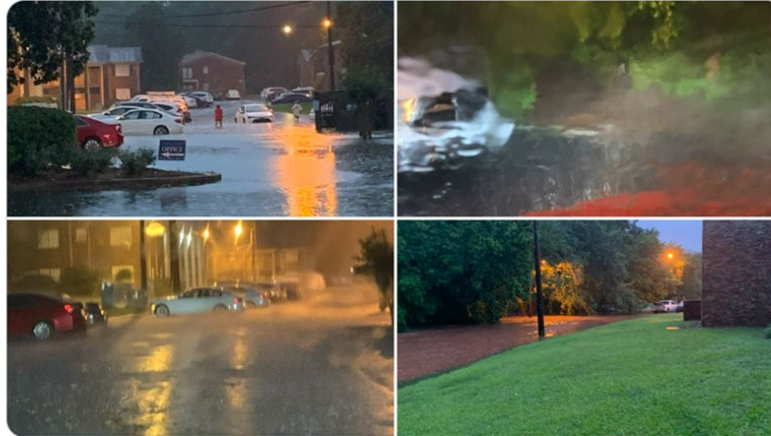




Homewood Fire Dept  
@HomewoodALFire



Homewood has several places in the city that is flooded and trees down. Please stay off the roadways. #alwx



6:08 AM · Jun 8, 2022



So, what are we  
going to do?