

# Freight Railroads & Flooding

**Key Takeaway:** Freight railroads keep their networks resilient against climate hazards such as intensifying rainfalls, hurricanes and tropical storms. They plan for extreme water year-round, continually monitor conditions, perform preventative track maintenance, invest in detection high water technology and follow contingency plans to protect employees and freight.

Freight railroads operate 24/7 over more than 140,000 miles of track stretching from the great plains to low-lying coastlines, which makes their infrastructure and equipment vulnerable to extreme weather and natural disasters such as flooding.

According to the U.S. Department of Transportation (DOT), high waters from hurricanes, tropical storms, flash floods and persistent heavy rains are some of the most prominent weather-related concerns railroads face. Water can weaken rail bridges, wash away the ballast that stabilizes tracks and damage sophisticated railroad signaling systems and electronic trackside equipment — all of which threaten rail service. Although flash floods can happen within a matter of minutes, railroads proactively monitor and prepare their networks for potential water-related risks every day.

## **Railroads take all precautions necessary to protect their employees, infrastructure and customer shipments as a storm and potential flooding approach.**

Working closely with multiple partners — including the Federal Emergency Management Agency, the DOT and the Federal Railroad Administration — railroads monitor potential impacts and begin preparations. Shared information such as emergency declarations, regulatory waivers and response plans are aggregated into digital, real-time “Storm Information Dashboards.”

- **24/7 Monitoring:** Railroads monitor weather in real-time at their traffic control centers, where they receive information from in-house meteorologists, the National Weather Service and train operators.
- **Ongoing Maintenance:** Railroads perform maintenance throughout the year to ensure they clear all debris from ditches and culverts along rail corridors to help them drain properly during heavy water flow.
- **Detection Technology:** In some flooding-prone parts of the network, high-water detectors send notifications about track conditions to approaching trains, helping them determine whether to slow the train or perform an inspection before passing.

- **Set Procedures:** Each railroad maintains company-specific operating instructions on how to prepare for and respond to natural disasters, including flooding.
- **Employees:** Railroads communicate with employees throughout preparation and response, relocating them for safety and support, like staging resources or clearing ditches.
- **Customer Shipments:** To reduce the impact on customers' business, railroads will move shipments onto unaffected lines or leverage pre-determined re-routing agreements to move traffic onto another company's line.
- **Track & Equipment:** Before floods, railroads may relocate locomotives, elevate track infrastructure, and remove sensitive electronic equipment such as sensors, signals, and switches. Storing these items in dry areas allows for quick restoration of service.
- **Bridges:** Forceful water can move a bridge from its support beams or destabilize it by unearthing the supporting soil. Railroads may park rail cars full of heavy materials — like rocks and ballast — on a bridge before a flood to weigh it down.

### **Teams of skilled railroad employees — including civil engineers, dispatchers and maintenance personnel — work around the clock with local, state and federal officials to resume train operations.**

Railroads use inspections to prioritize cleanup and repairs, which involve clearing debris, repairing or laying new tracks, rebuilding bridges, engines, or railcars. Technologies like drones ensure safety during flooded rail yard or bridge inspections, while ground-penetrating radar assesses track conditions affected by water erosion. Because freight railroads are privately owned, they can allocate resources to critical maintenance projects and restore service in sometimes just a few hours, much faster than publicly-funded infrastructure recovery projects.

After Hurricane Katrina struck Louisiana in 2005, it only took Norfolk Southern an astounding 16 days to complete repairs to its Lake Pontchartrain Bridge. Using nine cranes on barges, the railroad lifted nearly five miles of track out of the water and put it safely back onto the bridge so service could continue.

It is not just their own infrastructure that railroads rebuild; they care deeply for the communities their trains travel through and will often bolster local relief efforts by delivering food and water, removing debris, transporting evacuees or donating to relief efforts.