



THE  
Water  
Research  
FOUNDATION



# EPA Tools and Guidance for Resiliency

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<https://water.epa.gov/waterqualitysurveillance>



***The Intelligent Water Network Summit  
Supporting Resiliency (Panel 3, 11:30)***

**February 13, 2018**

**Alexandria, VA**

## Program Design

- Risk types
  - Low probability, high consequences
  - High probability, variable consequences
- Initial focus on terrorism
  - Evolved to all-hazards
  - Natural disasters
  - Creating 'ready' utilities



## Key Drivers

- **CIPAC Water Sector Roadmap (2017)**
  - **Threats: Natural Disaster, Contamination, Infrastructure Degradation, Cyber Attack**
  - **Activities and workgroups**
- **PPD 21, HSPD-9**
  - **SRS/WLA**
- **Administration Priorities**
  - **Core Mission, Cooperative Federalism, Rule of Law**



# Drinking Water and Wastewater Resilience

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Not sure where to start?

[Download the Route to Resilience.](#)

## Assess



- [Conduct a risk assessment](#)
- [Learn financial and health impacts of a water disruption](#)
- [Creating Resilient Water Utilities](#)

## Plan



- [Develop emergency response plans](#)
- [Build hazard resilience](#)
- [Build relationships in your community](#)
- [Connect to a lab network](#)
- [Share resources during an emergency](#)

## Train



- [Access the All-Hazards Boot Camp](#)
- [Develop a training and exercise plan](#)
- [Develop and conduct tabletop exercises](#)
- [Find other training opportunities](#)

## Respond



- [Response On-The-Go Tool](#)
- [Print a checklist to help you respond](#)
- [Monitor severe weather](#)

## Recover



- [Find federal funding for your utility](#)
- [Access decontamination resources](#)
- [Get reimbursement tips](#)

### Learn About Water Resilience

- [Water resilience basics](#)
- [Protect your local water supply](#)
- [Technical support products and services](#)

[Join Our Email List](#)

# Risk Assessment and Reduction for Drinking Water and Wastewater Utilities

Drinking water and wastewater utilities face threats, from man-made and natural disasters to aging infrastructure. To prepare for the next emergency, you must understand your risks. Start by conducting a risk assessment to find out where your utility stands. Then use our other tools to identify impacts and adaptation strategies for your utility.

## Is Your Utility At Risk?



- [Conduct a risk assessment](#)

## Get Ready for Extreme Weather



- [Learn about Creating Resilient Water Utilities](#)

## How Emergencies Affect You



- [Find out about health and economic impacts](#)

## Manage Small System Assets



- [Manage your small system assets](#)

### Related Information

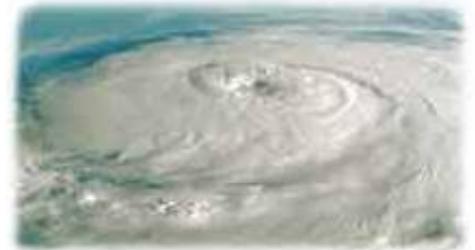
- [Water Resilience](#)

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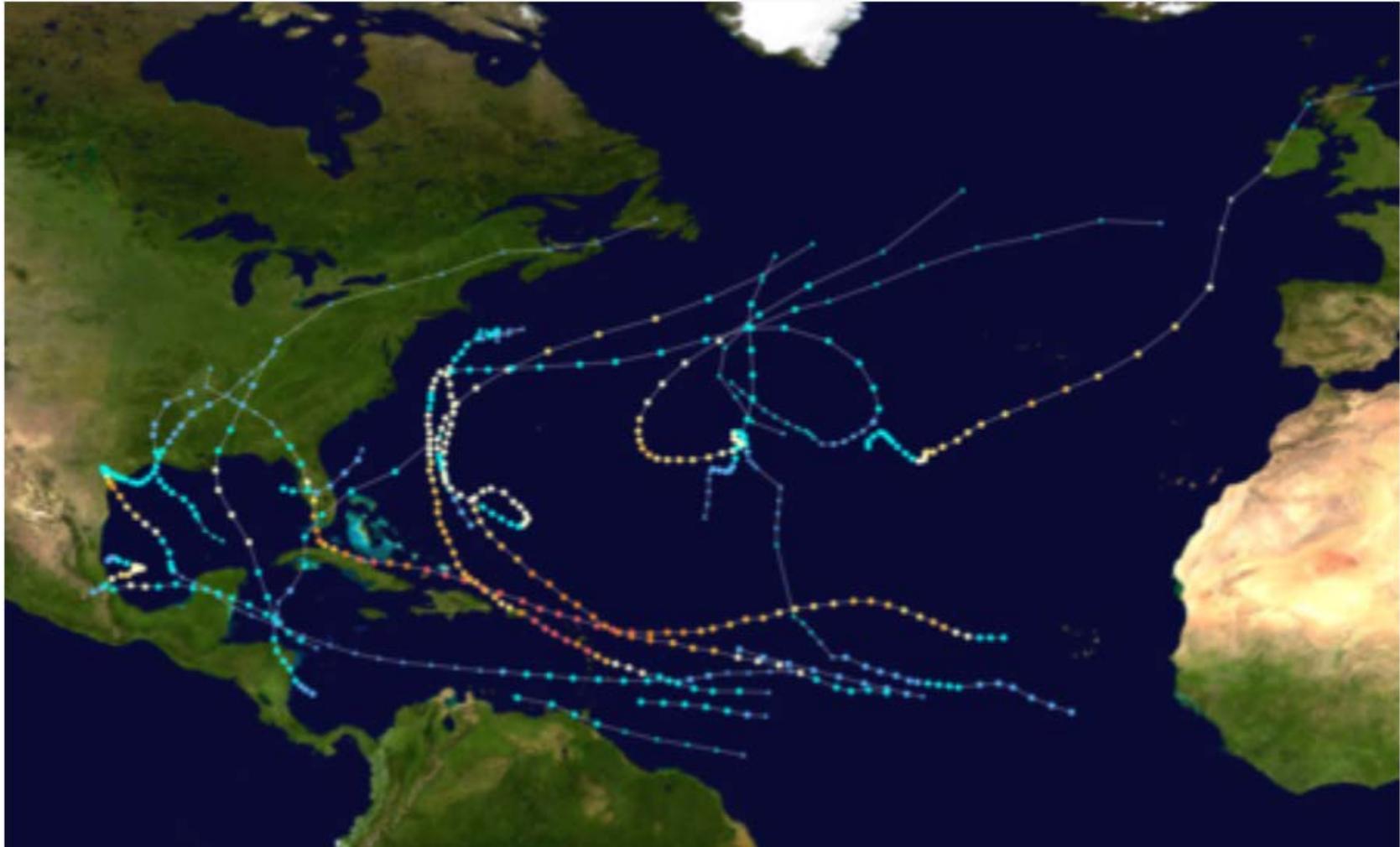
## The Fall RISE of 2017!

- **Hurricanes**
  - Harvey (5 landfalls, Cat 4, 3, TS)
  - Irma (VI, FL & Caribbean landfalls, Cat 5, 3)
  - Maria
- **Wildfires**
- **Cyber**
  - Bowman Dam
  - Kemuri Water Company
- **Other**



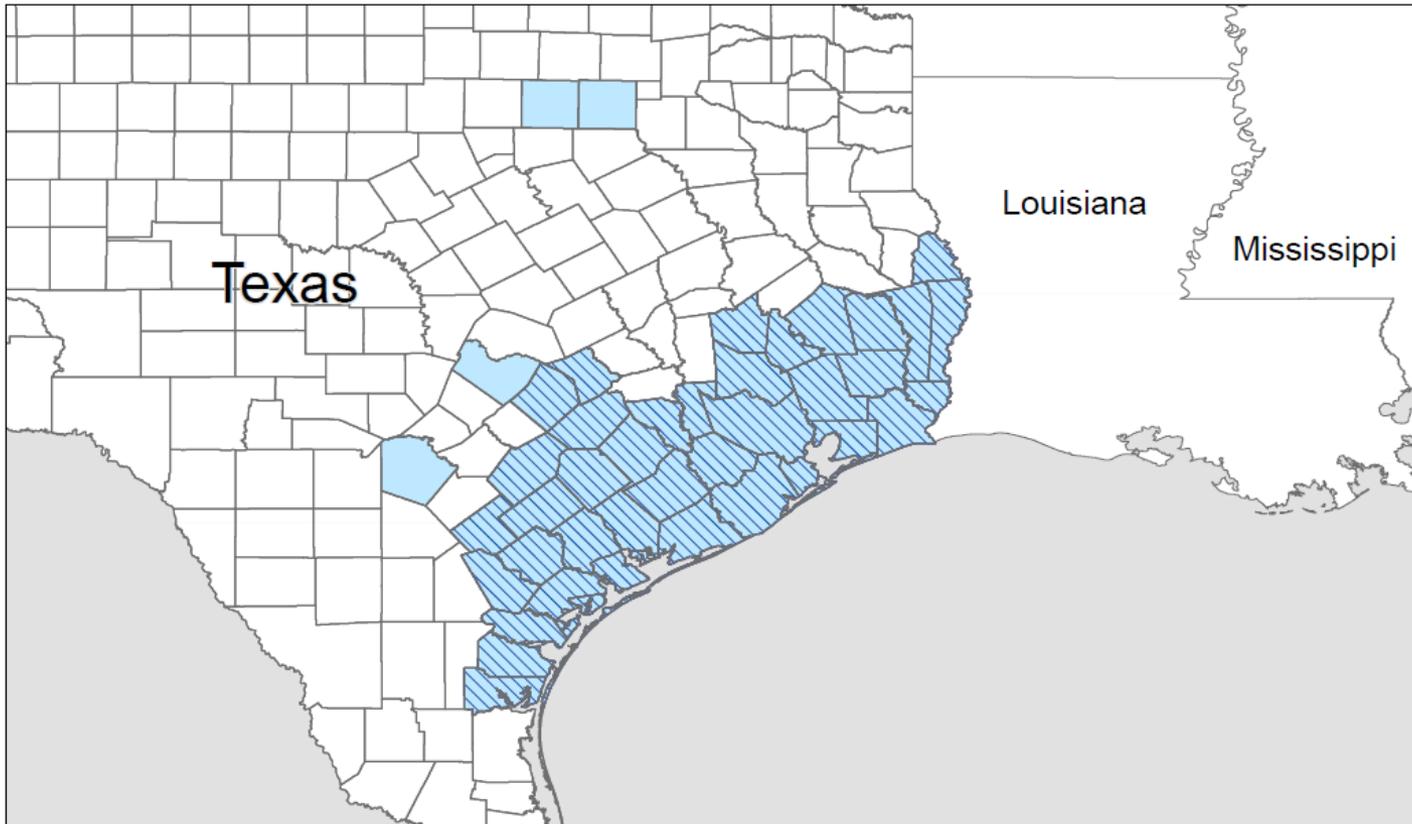


## 2017 Atlantic hurricane season





# Hurricane Harvey TX Counties w/ Declared Disaster 9/5/17



### Legend

#### Federally Declared Counties in Texas

- No Designation
- A \ B
- B

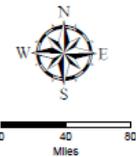
US EPA Region 6

#### FEMA - Texas Counties with Federal Disaster Declarations

Hurricane Harvey Response



7002314

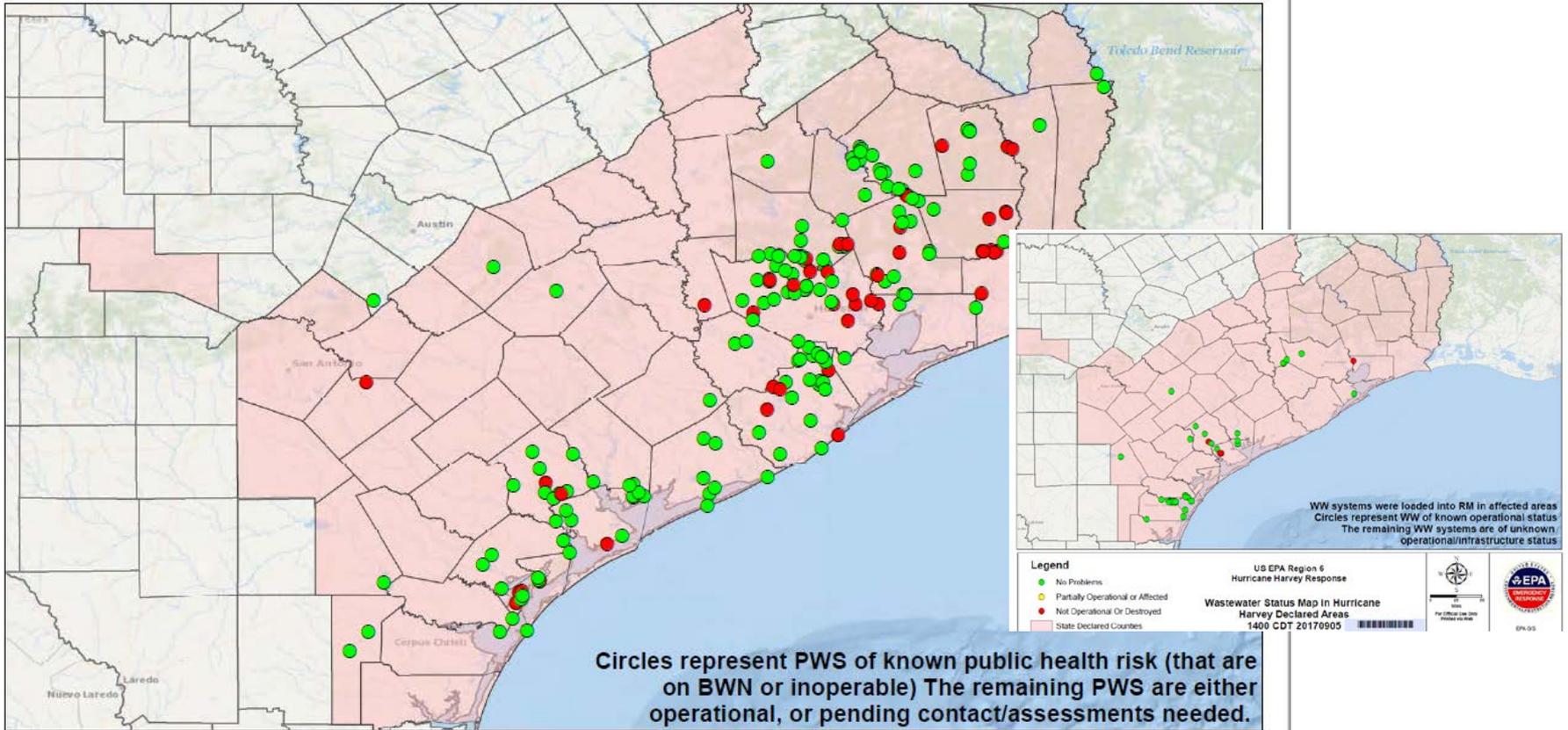


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EPA GIS  
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# Hurricane Harvey Drinking Water Status 9/5/17



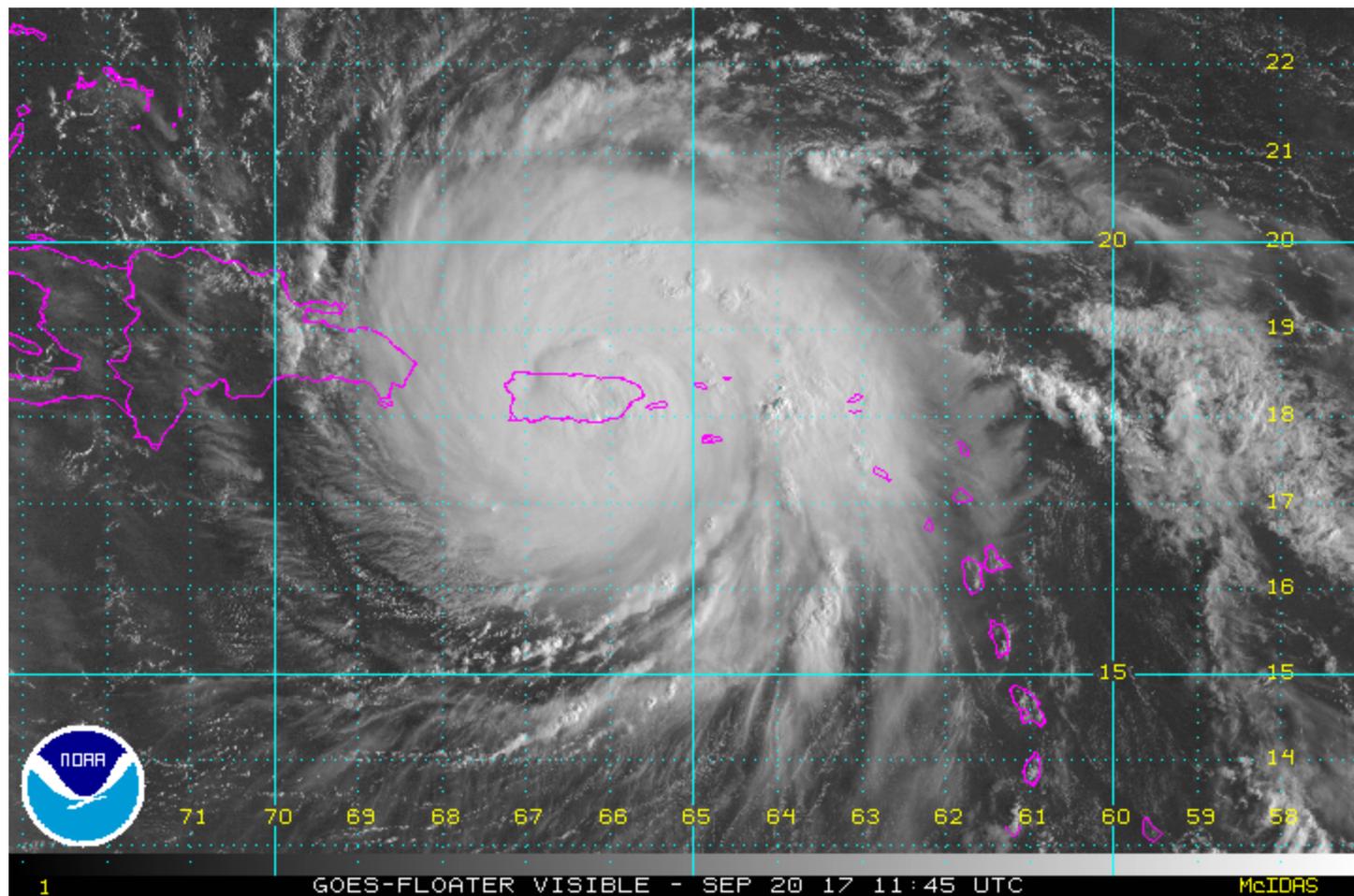
<b>Legend</b>		<b>US EPA Region 6 Hurricane Harvey Response</b>		
<ul style="list-style-type: none"> <li>● Water Outage</li> <li>● Boiled Water Notice</li> <li>■ State Declared Counties</li> </ul>	7002334	<b>Drinking Water Status Map in Hurricane Harvey Affected Areas</b> 1400 CDT 20170905	For Official Use Only Printed via Web	EPA GIS Printed: 1:33:36 PM 9/5/2017

## Hurricane Irma

- **Duration: August 30 – Sept 12**
- **Peak: 185 mph for 37 consecutive hours**
- **Only tropical storm to have winds that strong for so long.**
- **Strongest land falling cyclone in the Atlantic**
- **First time the US has had 2 landfalls of Cat 4 hurricanes in the same season**
- **Hit Cuba as Cat 5**

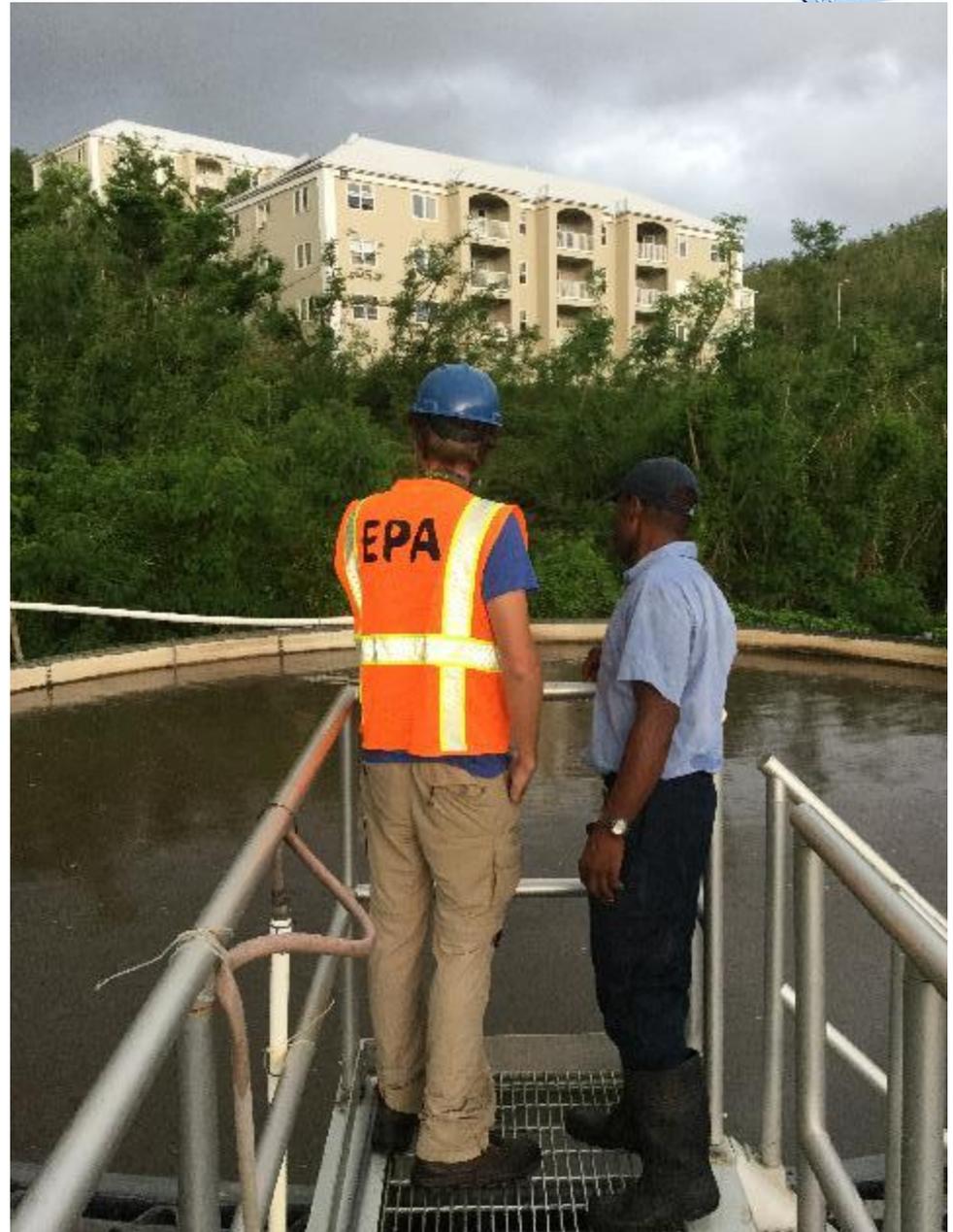


# Hurricane Maria





## Hurricane Maria, USVI WWTP settling tank





## Hurricane Maria, non-PRASA drinking water system, PR





# California Wildfires



## Key Takeaways

- **We can't fight Mother Nature, but we can plan and prepare**
  - Know and understand response authorities and frameworks
  - Work w/ states and WARNs
  - Don't underestimate the resolve and goodness of people
- **Technology will continue to evolve**
  - Have to stay a step ahead and guard against bad actors
- **Risk assessment and other tools are available**
  - The Federal and state governments are resources to help empower water sector stakeholders



# For More Information

## Water Quality Surveillance and Response System Website

<https://water.epa.gov/waterqualitysurveillance>

### Learn

- [Surveillance and Response System \(SRS\) basics](#)
- [SRS components](#)
- [SRS case studies](#)

### Assess

- [Design an SRS](#)

### Implement

- [Access guidance and tools](#)
- [Develop and conduct exercises](#)

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