

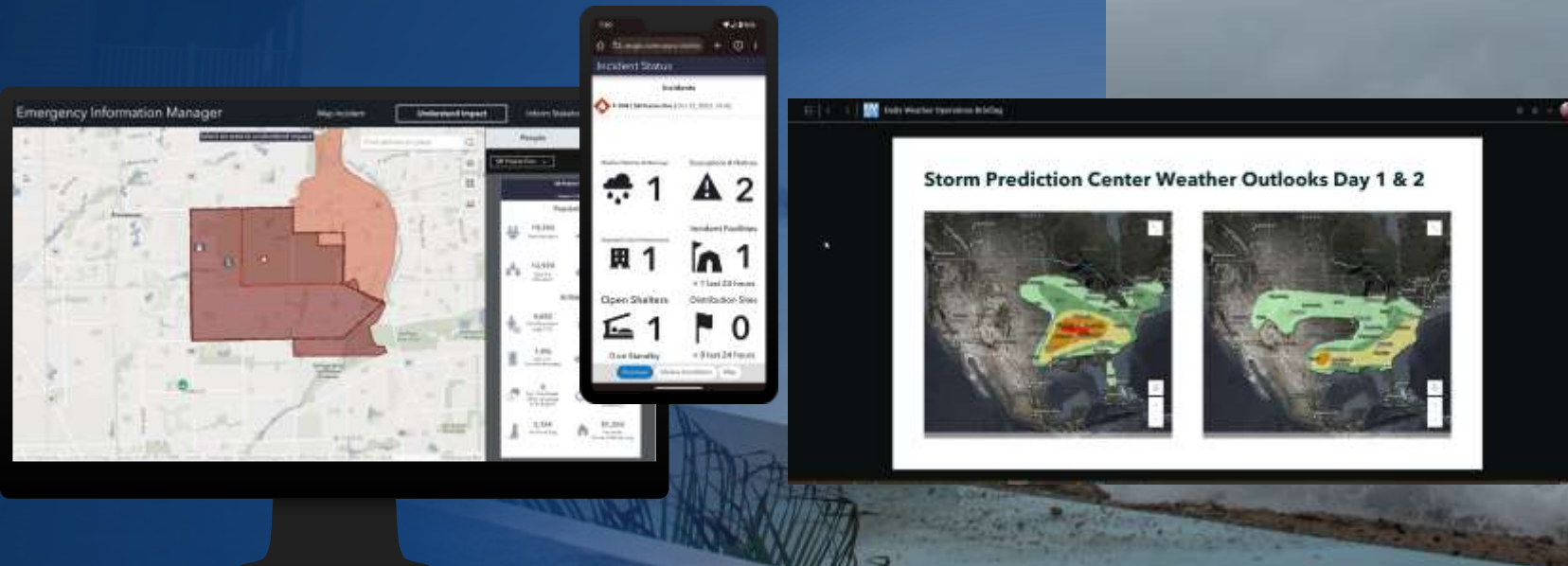
# ArcGIS Resources to Prepare for Hurricane Season

Jeff Baranyi



# Maintain Situational Awareness

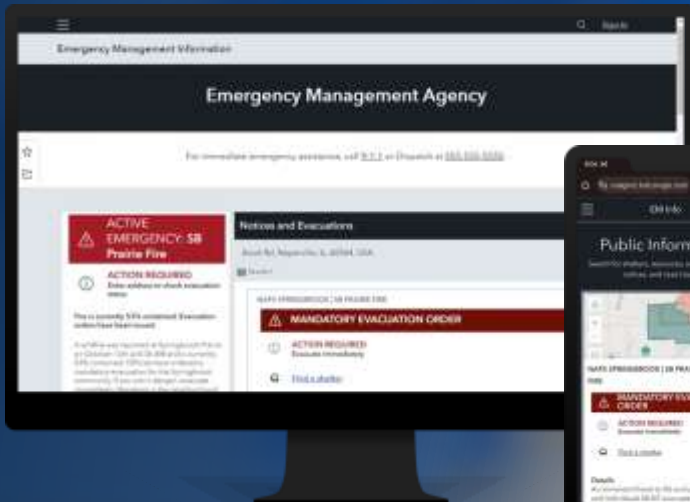
- Understand the potential impact from an incident
- Manage and deploy limited resources
- Monitor rapidly changing conditions
- Provide real-time dynamic, operational briefs





# Manage Information Sharing

- Communicate effectively with the public and media
- Share information and collaborate with partners





# Conduct Damage Assessments more Efficiently

- Streamline damage assessments
- Inform and engage the public
- Follow FEMA standards for Individual Assistance and Public Assistance
- Expedite Recovery Funding
- Return to normalcy faster





# Live Feeds

- Esri's Live Feed Catalog Blog - Putting the "Live" in Living Atlas of the World
- NOAA NWS Cloud GIS Services

Real-Time Visualization & Analytics

# Putting the "Live" in Live Atlas of the World

Real-Time Visualization & Analytics  
August 10, 2019

Updated July 2022: additional data added by MDSO internal desktop and web/app and "forecast" feed added using our "VMS"

Updated April 2022: New US4 Desktop/Map/Forecast Apps, New "Forecast" version of Report & Analytics, improved US4 Zoom Report

Updated June 2021: New Live Real-Time/Map and updated US4 Thought system

Updated January 2021: New Live Stream Dashboard is available

Updated May 2020: New US4 Website is available

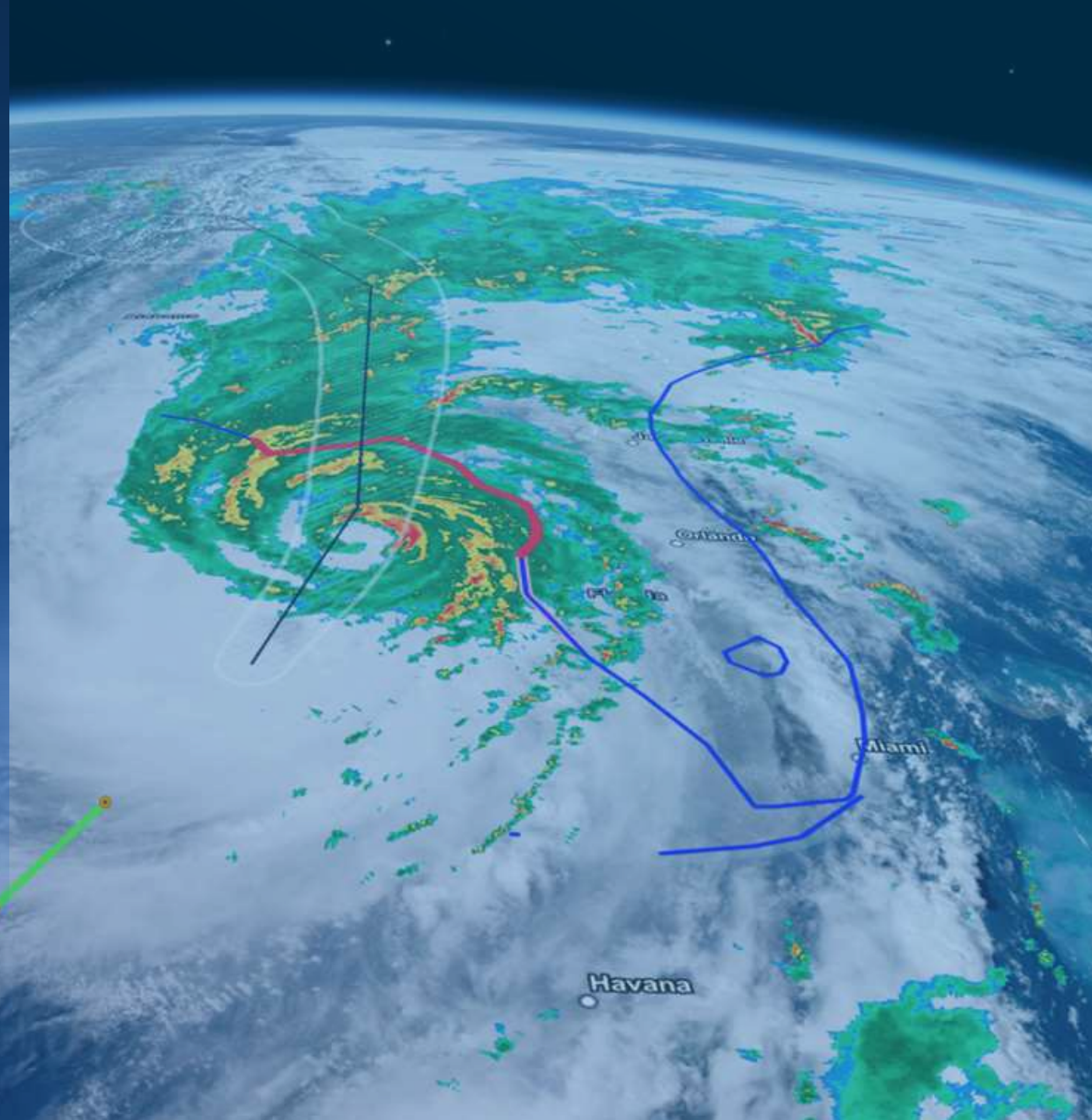
Updated April 2020: New information on 1985 internal elections, 2019/2020 Global Power Projects and network of GasNet/US4 Monitor

Updated July 2019: Many of the Weather and Climate Live Events into being have been updated with improved version of the map data that is being tracked. Daily or weekly information is available here. Updated system are indicated by an asterisk (\*) in the list.

US4  
US4  
US4  
US4  
US4



US4  
US4  
US4

[illegible]



# ArcGIS Supports Emergency Management Workflows





# ArcGIS Supports Emergency Management Workflows





# ArcGIS Supports Emergency Management Workflows





# Manage and communicate emergency information

## Emergency Management Operations Learn Lesson

- Deploy the solution
- Conducting an impact analysis right away
- Configuring the maps
- Loading data
- Configuring the apps
- Scenario



The screenshot shows the 'Documentation' page for the 'Manage and communicate emergency information' solution. The page has a dark header with 'Documentation' on the left and 'Sign in' and 'Tutorials' on the right. The main content area has a background image of emergency responders in orange gear. Below the header, there's a section titled 'Manage and communicate emergency information' with a subtitle 'Learn to deploy and configure the Emergency Management Operations solution'. It includes a 'Get started' button and a 'Sign in' button. Below this, there's a 'Requirements' section listing: 'Android OS (version 5.0 and higher)', 'Android OS (version 5.0 and higher)', 'Android OS (version 5.0 and higher)', and 'Internet access'. Then, there's an 'Outline' section with a table of contents:

Topic	Duration
Deploy the emergency management solution	10 minutes
Configure the maps	10 minutes
Load the data	10 minutes
Configure the apps	10 minutes
Use the apps	10 minutes

Below the table, there's a section titled 'Deploy the emergency management solution' with a subtitle 'The Emergency Management Operations solution helps agencies implement a data-driven approach that ensures that emergency managers are aware of rapidly changing conditions and can communicate disruptions to critical services and any evacuation routes to stakeholders in a community. The solution includes a dashboard for your command center, a focused app for existing data and understanding impact, an Android app for sharing information with the public, and an Android app for sharing information with the public. The solution is ready for you to load data and customize. Deploying the solution enables the entire system, ready for you to load data and customize.'

Then, there's a section titled 'Deploy the solution' with a subtitle 'For you will deploy the Emergency Management Operations solution to your Android OS organization.'

1. Sign in to your Android OS organization.

If you don't have an organizational account, see options for software access.

You will need a Developer type and a Publisher role.



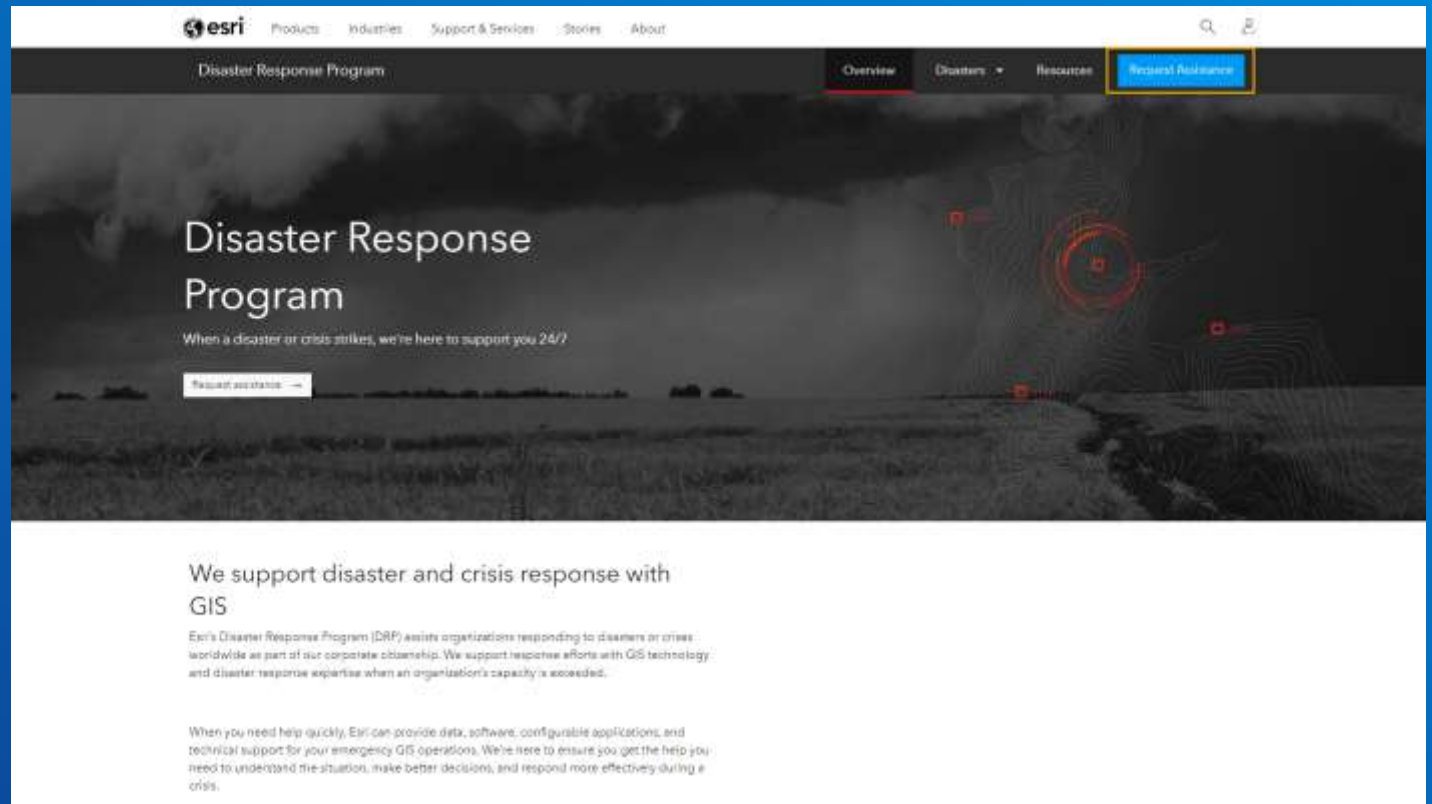
# Esri Disaster Response Program (DRP)

We support disaster and crisis response with GIS

- Software
- Workflow Assistance
- Geospatial Data
- Technical Support

Request Assistance:

[www.esri.com/disaster](http://www.esri.com/disaster)



...helping extend **capability** and **capacity**









# Hurricane Helene: September 26-27, 2024

- Maximum recorded rainfall: 31.3", Yancey County
  - Winds up to 100 mph
- 1400+ landslides estimated
- 11 evacuation orders issued
- 131 search and rescue teams involved
- 1,600+ survivors rescued
- 120,000+ structures damaged
- 4,800+ pallets of water delivered by NCNG
- ~900,000 without power



I-40, Pigeon River Gorge, Haywood County NC  
Credit: NC Department of Transportation





Emergency Management  
NC DEPARTMENT OF PUBLIC SAFETY

# Hurricane Helene: Flooding



Record flooding at 41 gauges in 18 separate counties







Emergency Management  
NC DEPARTMENT OF PUBLIC SAFETY

# Hurricane Helene: Transportation



6000+ miles of roads damaged  
1000+ bridges and culverts







# Damage Assessment Tools

- Survey123 forms
  - NCSAR
  - NAPSG/SARCOP
- Collected in field by first responders, search and rescue teams, swiftwater teams
- Collected images and locations, classified structure damage
  - Unaffected, Affected, Minor, Moderate, Major, Destroyed

Field Data Collection

**Quick Share:** Click arrow to left to open QR Code. ▶

**Survey instructions:** Click arrow to left to open. ▶

**Event Details:** ▼

**Event**  
This field will be auto-populated with the current event, and will be editable if your availability is for a different event

Daily Operations 2025

**Team Type\***

☐ USAR

☐ Swift Water

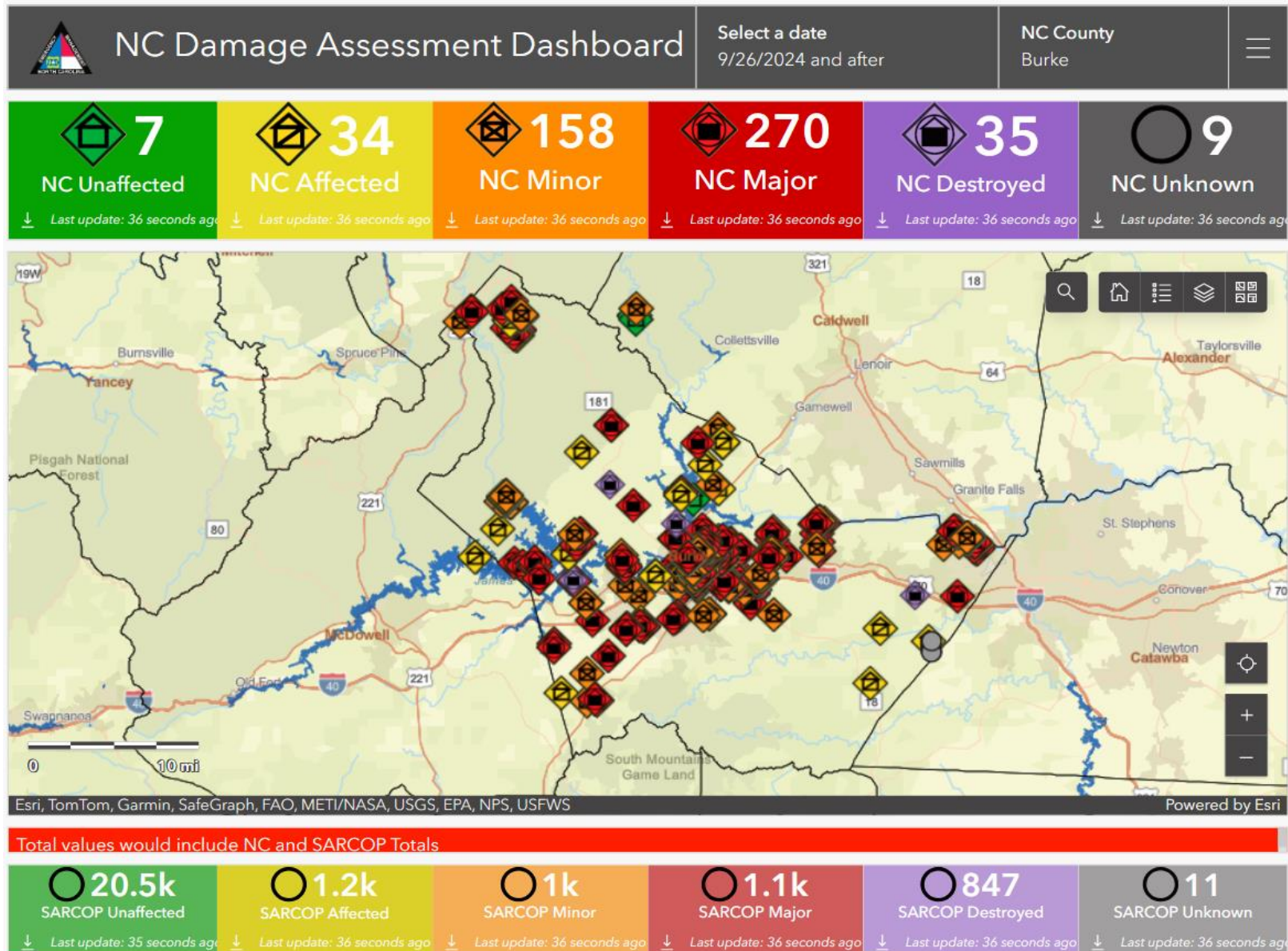
☐ Helicopter

☐ Other

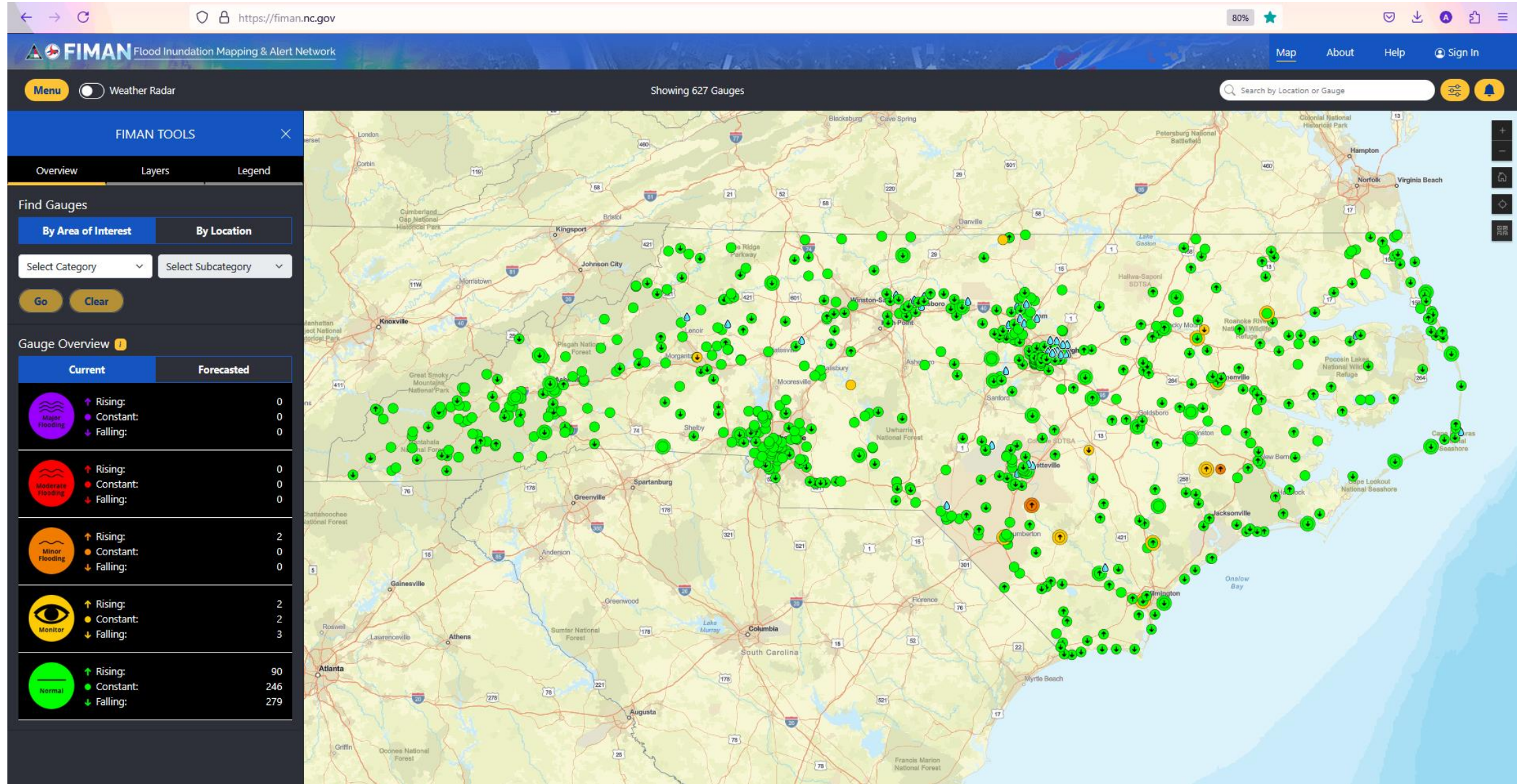
**Team Name\***  
Your Team Name should be your assigned **Task Force Identifier** I.E. **NC TF-6**, if a **Water Component** I.E. **NC TF-6 SWR** Or use your **State postal code and County name** I.E. **NC Henderson SWR** ★ **Set as Favorite** (using the top right hamburger button) to **pre-populate future forms**.

**Your Name**







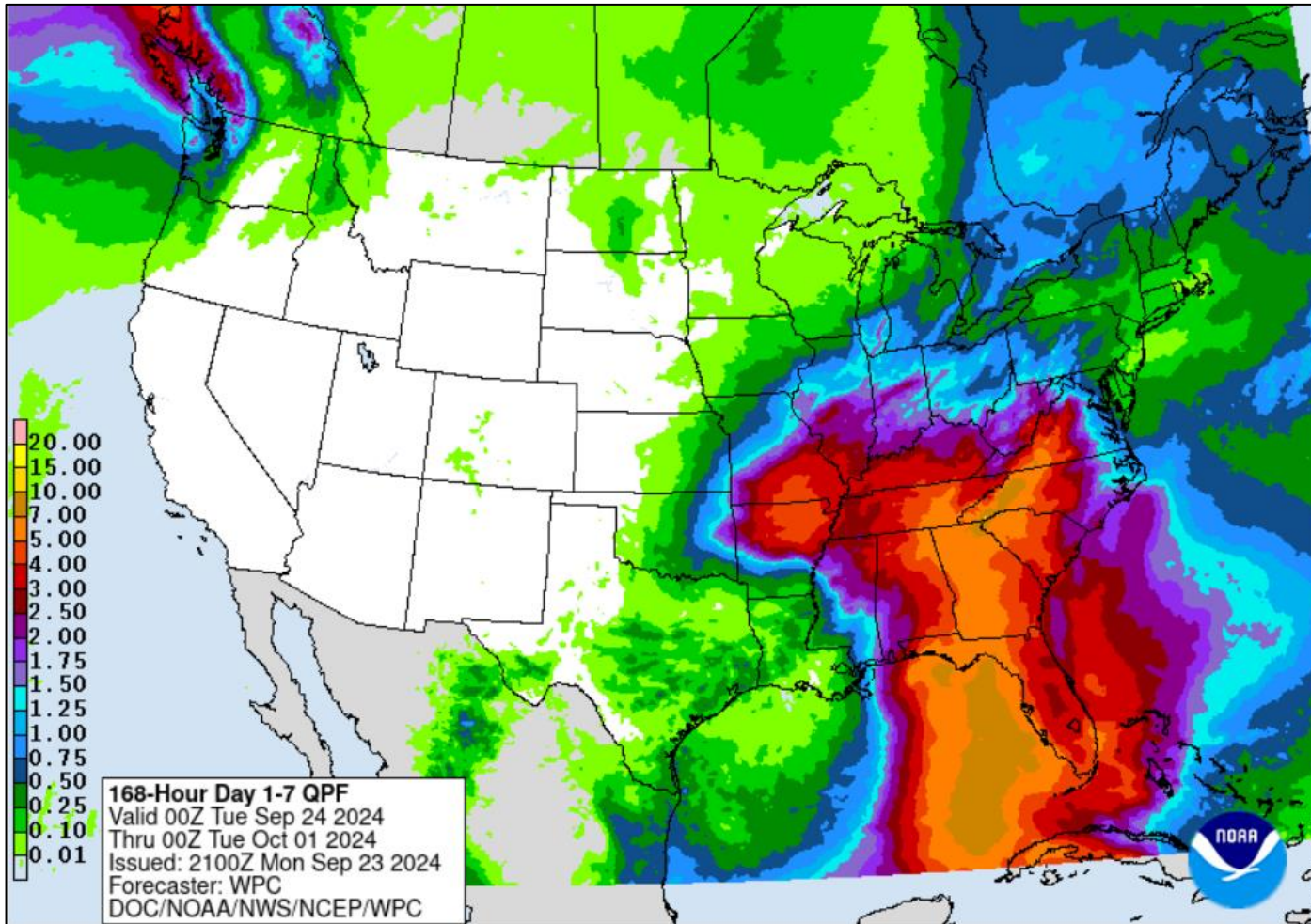






Emergency Management  
NC DEPARTMENT OF PUBLIC SAFETY

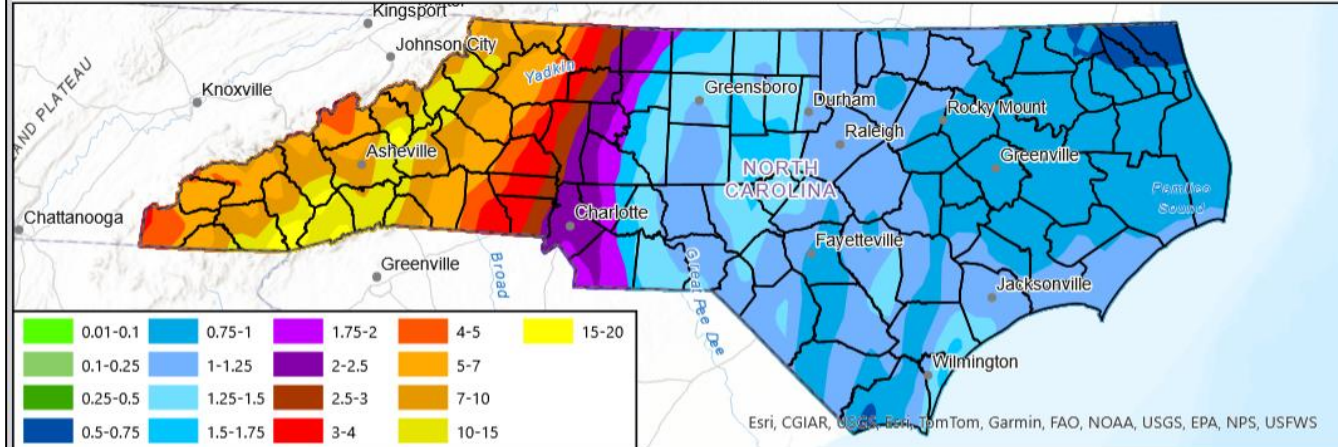
# Coordinating with Locals



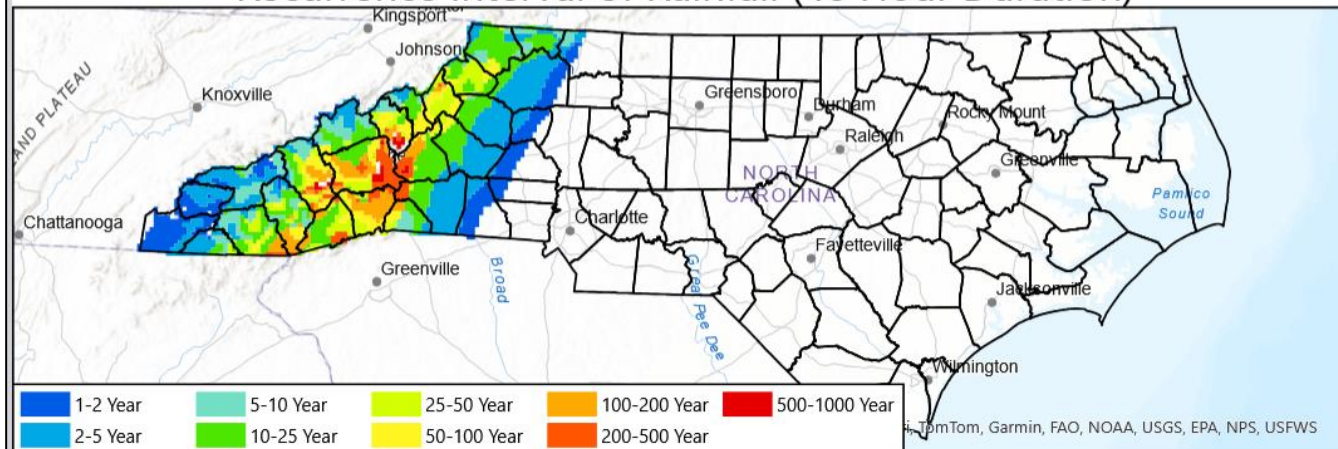




## Forecasted Rainfall (in.), Day 1-2 NOAA QPF 9/25/2024 20:00 -- 9/27/2024 20:00 EST



## Recurrence Interval of Rainfall (48 Hour Duration)



NOAA Data Issued: 9/25/2024  
Approx. 18:15 EST

0 25 50 100 Miles

NC Emergency Management GIS





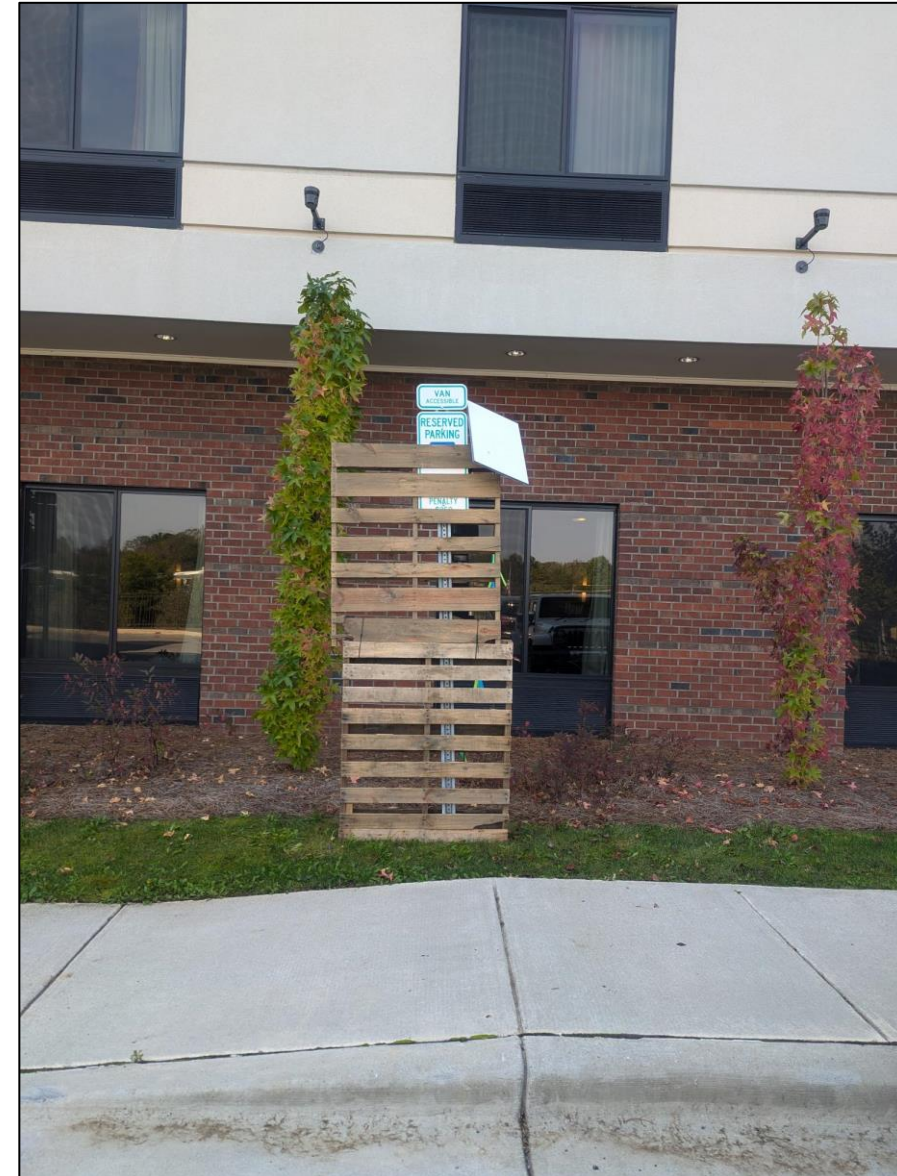






# Coordinating with Locals

- Coordinating calls
- Sharing data/resources
- Connecting and aiding county/regional staff
- Volunteers





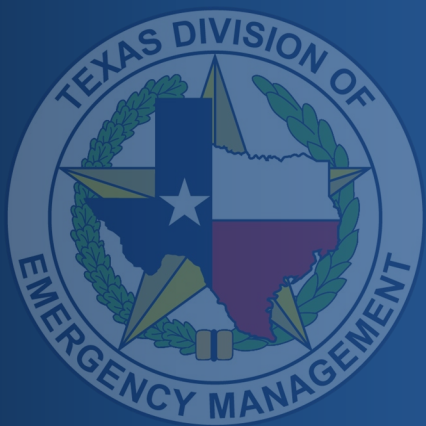


# Lessons Learned

- Helping different counties/agencies in different ways
- Deploying volunteers
- New tools and features







# Melissa Ruiz

Unit Chief, Geospatial & Data Analytics

Texas Division of Emergency Management

[Melissa.Ruiz@tdem.texas.gov](mailto:Melissa.Ruiz@tdem.texas.gov)

**LinkedIn:**

<https://www.linkedin.com/in/melissaruizjurrens/>





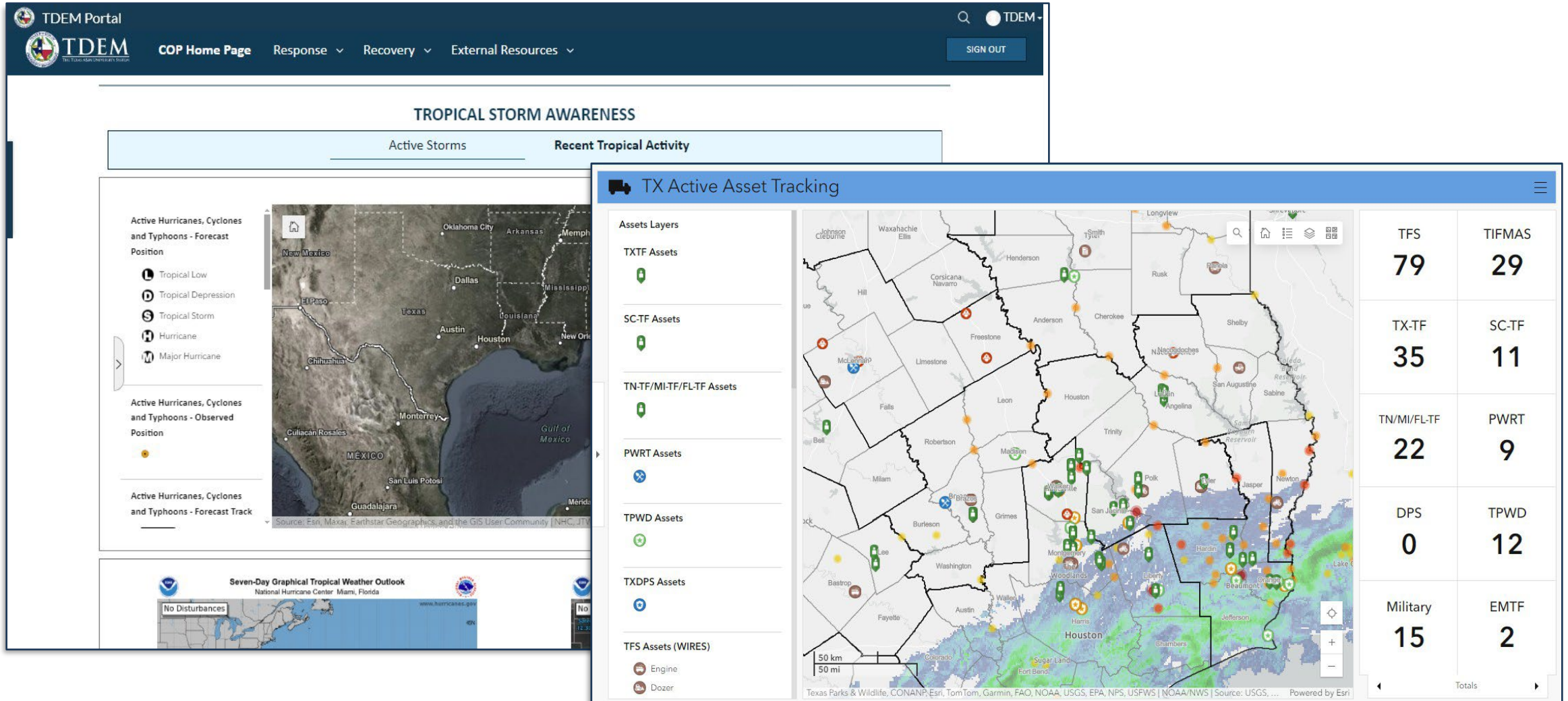
# Emergency Management GIS Data

- SOC EM Council Agencies and Stakeholders
- Data Connectors, APIs, and REST Services
- ArcGIS Online Feature Services
- Mobile Field GIS Data Collection





# Common Operating Picture (COP)





# Field Data Collection

## Quick Capture



1:22  
Chrome  
e85059 v8 Deployment Wi...

Team Name: TX-TF1

Read Me - Deployment

Tracklog - Click to Start / Stop

Recon	Hasty / Rapid
Primary	Secondary, low
Secondary, high	Targeted

Damage Assessment

Human Interactions

Assisted	Evacuated
Rescued	Shelter in place

Hazards

Animal hazard	Fire incident
HAZMAT Incident	Route blocked
Flood/water level	Other Hazard

Other/Support

Location Update	Searched
Targeted Search	Helicopter LZ
ICP/BoO	Casualty Point





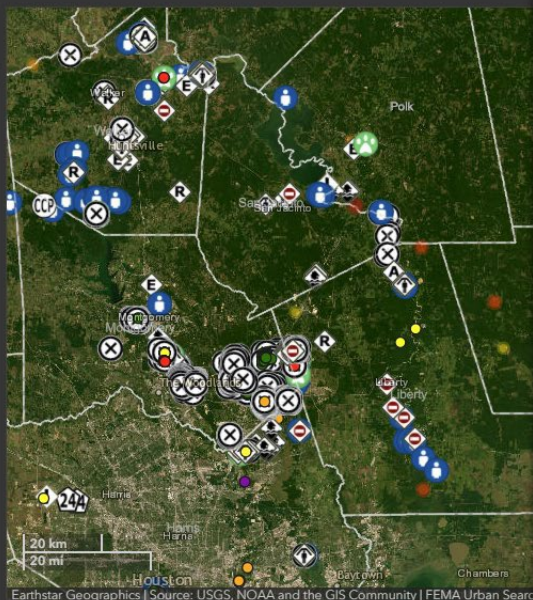


# TX-TF Search and Rescue

## TX SARCOP Dashboard

Search...

- Structure - Minor**  
TX-Harris Co FMO Reed1620  
Last Edited: 5/17/2024, 2:50 PM  
Roof damaged
- Structure - Affected**  
TX-Harris Co FMO Reed1620  
Last Edited: 5/17/2024, 2:48 PM
- Other Hazard**  
TX-Harris Co Sheriff SheriffEOC  
Last Edited: 5/17/2024, 2:48 PM  
Fallen trees due to high winds.
- Structure - Affected**  
TX-Harris Co FMO Reed1620  
Last Edited: 5/17/2024, 2:47 PM
- Structure - Minor**  
TX-Harris Co FMO Reed1620  
Last Edited: 5/17/2024, 2:47 PM  
Power lines falling over
- Structure - Minor**  
TX-Harris Co Sheriff SheriffEOC  
Last Edited: 5/17/2024, 2:43 PM  
Rooftop damage and side windows are shattered. 5214 Queens watchdog Court.
- Structure - Affected**  
TX-Harris Co FMO Reed1620  
Last Edited: 5/17/2024, 2:42 PM  
Debris
- Structure - Minor**  
TX-Harris Co Sheriff SheriffEOC  
Last Edited: 5/17/2024, 2:40 PM  
Rooftop damage and backyard, fencing blown down. 19106 wild cave



Rescued

29

Assisted

20

Evacuated

45



SARCOP



Strategic Dashboard

Deployment - 821c32

Instructions Battlecard Intel Manager Tactical Strategic More

Job-Aid

## Team Status

Plans Team Managers update this via Survey123, as outlined in the IAP/OAP.  
To register a new team fill out a new survey.

Search...

**SC-TF1 (EMAC)**  
Swiftwater/Flood Search and Rescue Team (Type 1)

**Status:** Activated  
**Personnel:** 15  
**Situation:** South Carolina Task Force 1 deployed as a Type 1 Boat Team to Texas. SC-TF1 Boat 1 & 2 currently operating in flash flood conditions in the Riverside area of Huntsville. Boat 3 & 4 are staged at the BoO in Conroe TX

May 16, 2024 at 7:03 PM  
400 Conroe Park West Dr, Conroe, Texas, 77303  
[Update Status](#)

**TN-TF2 TN-TF2(State)**  
Swiftwater/Flood Search and Rescue Team (Type 1)

**Status:** Activated  
Last update: 1 minute ago

Teams



Waypoints

3,464  
+ 126 Today

Total waypoints across all categories.

Last update: 6 seconds ago

Confirmed Interactions

249  
+ 24 Today

Count of confirmed persons encountered.  
(!) Does NOT include unconfirmed detections.  
Last update: 6 seconds ago

Damage Obs

1.5k  
+ 49 Today

Total damage observations across all categories.

Last update: 6 seconds ago

Damage Obs Progress





# Post-Disaster Imagery



FEMA



**PDA Field Team Awareness**

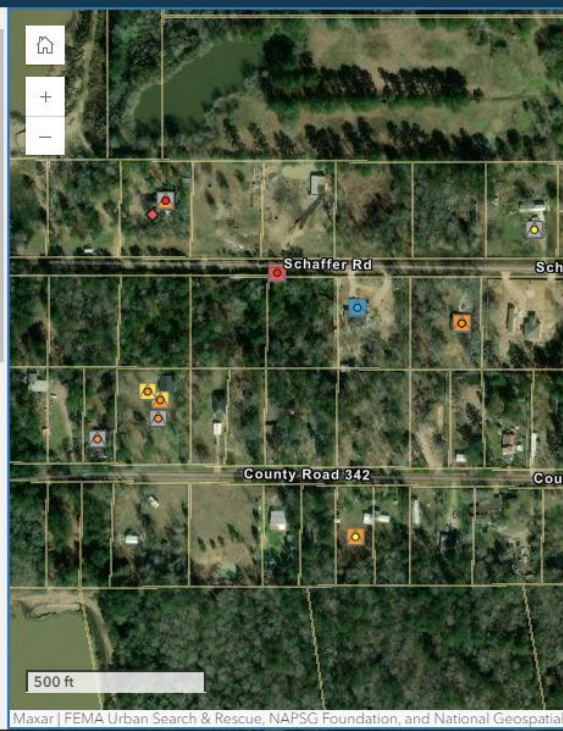
**SARCOP Damage Points**

- Structure - Destroyed
- Structure - Major
- Structure - Minor
- Structure - Affected
- Structure - Unaffected
- Structure - Unknown

**ISTAT - Citizen Damage Lvl**

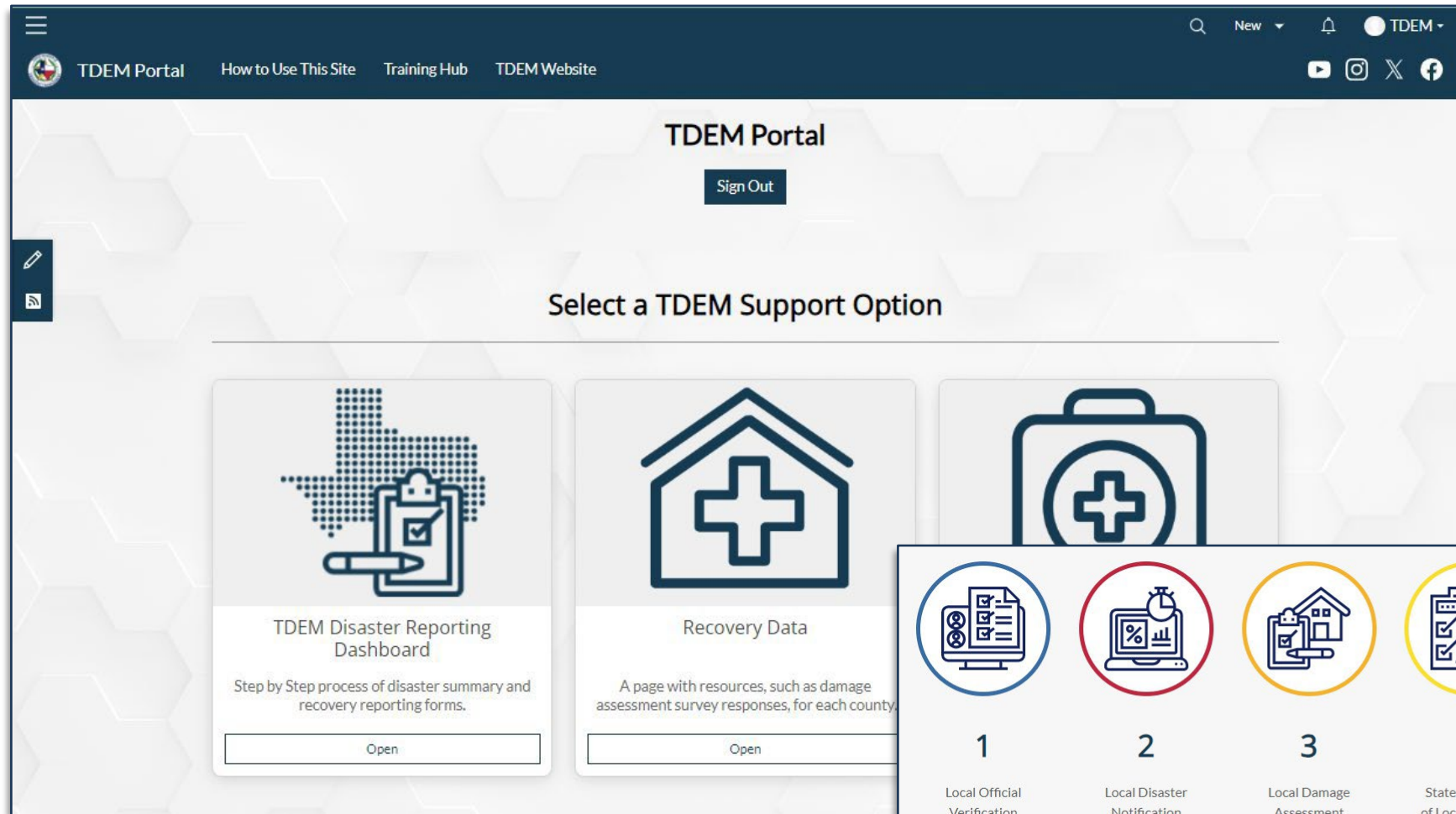
Damage Level

- Destroyed
- Major
- Minor
- Affected





# TDEM Portal for Local Jurisdictions





# Self-Survey Damage Assessments

## 2020

- Hurricane Hannah
- Hurricane Laura

## 2021

- Winter Storm Uri
- Since Feb 2021**
- 50 Incidents



TDEM iSTAT

Individual State of Texas Assessment Tool (iSTAT) Damage Surveys

Option below to submit damages and losses to your **Residential, Commercial, and/or Agricultural**

de incidente a continuación para presentar daños y pérdidas a su propiedad **Residencial, Comercial, y/o Agrícola**

## Active Incidents / Incidentes Activos



- **Spring Severe Weather and Flooding Event** (English)
  - (April 26 - Ongoing Severe Weather Event)
- **Evento de Inundaciones y Clima Severo de Primavera** (Español)
  - (Evento Climático Severo de 26 de Abril en Curso)

## Individual State of Texas Assessment Tool (iSTAT)

The objective of this survey is to help state and local emergency management officials across Texas identify and gain an understanding of damages that have occurred during recent natural disaster activity.

Please submit **one survey** per impacted address.

**Reporting damages to Emergency Management is a voluntary activity, is not a substitute for reporting damage to your insurance agency, and does not guarantee disaster relief assistance.**

Para la encuesta en Español, haga [Click Aquí](#)

## Contact Information: ▼

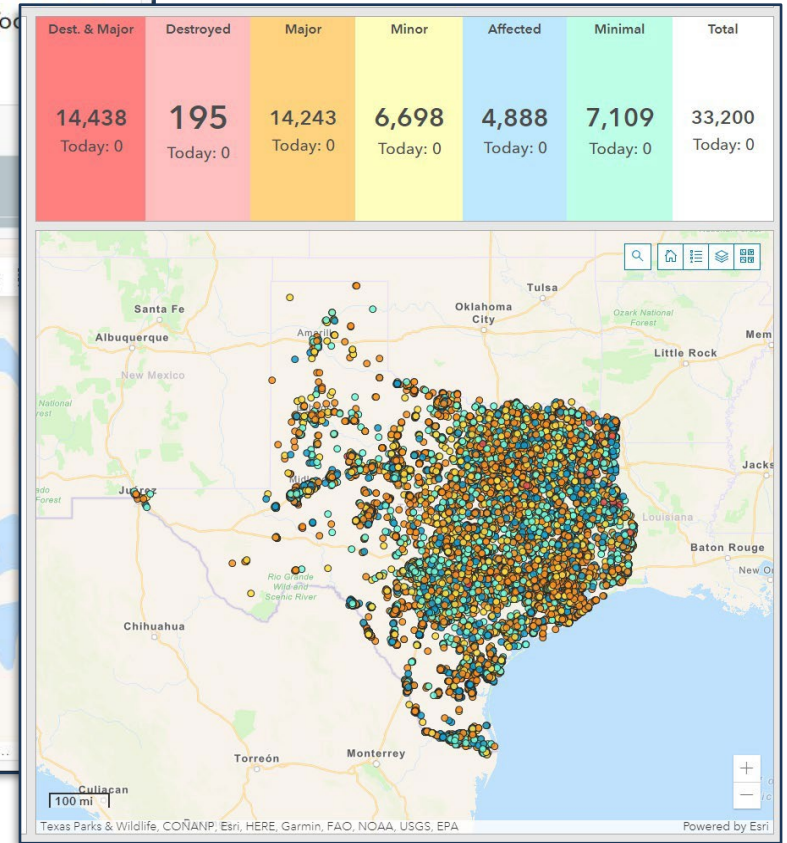
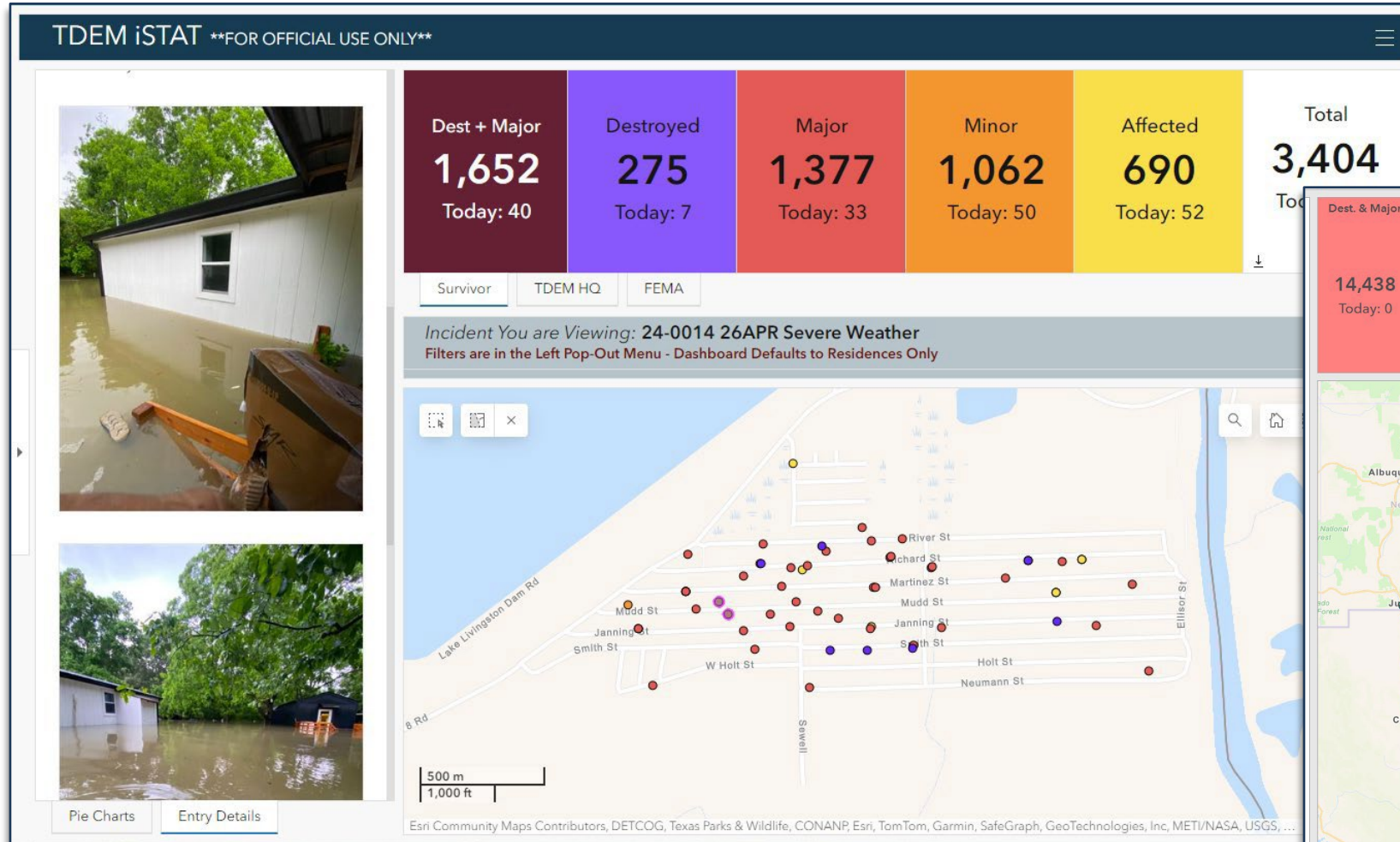
Is the impacted location a Residence or Business?\*

☒ Residence

☐ Business



# iSTAT Dashboard





# Full Circle - Hazard Mitigation





[Why apply for HMGP?](#)[Eligible Activities](#)[How to Apply](#)[Add](#)

### About the Hazard Mitigation Grant Program (HMGP)

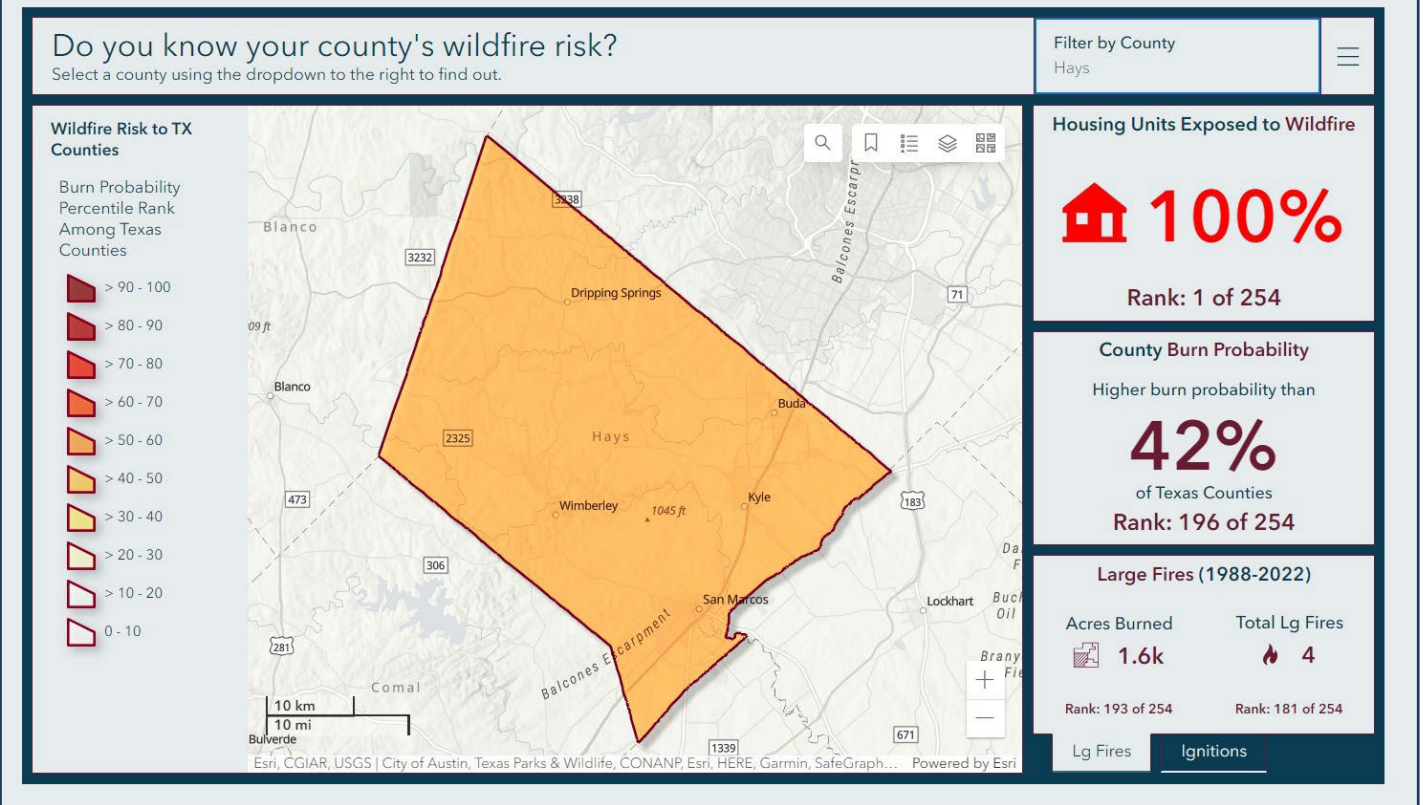
- Governor Abbott and the Texas Division of Emergency Management (TDEM) announce the open application period for the FEMA Hazard Mitigation Grant Program (HMGP) - FY2022 Post Fire. The application period opened on January 27, 2022 and will close on January 20, 2023.
- FEMA's Hazard Mitigation Grant Program (HMGP)-Post Fire assistance helps communities implement hazard mitigation measures after wildfire disasters.



### TDEM/Texas A&M Forest Service Partnership

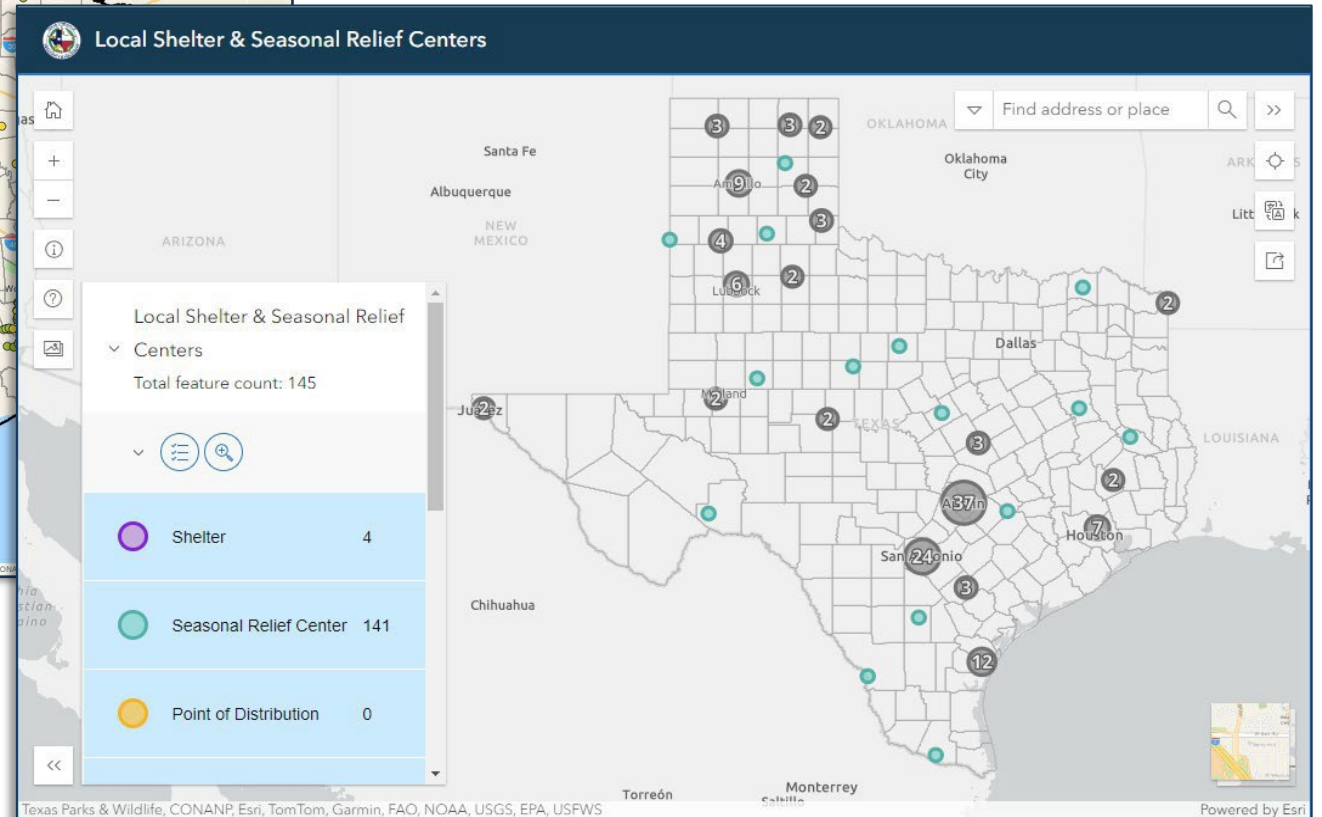
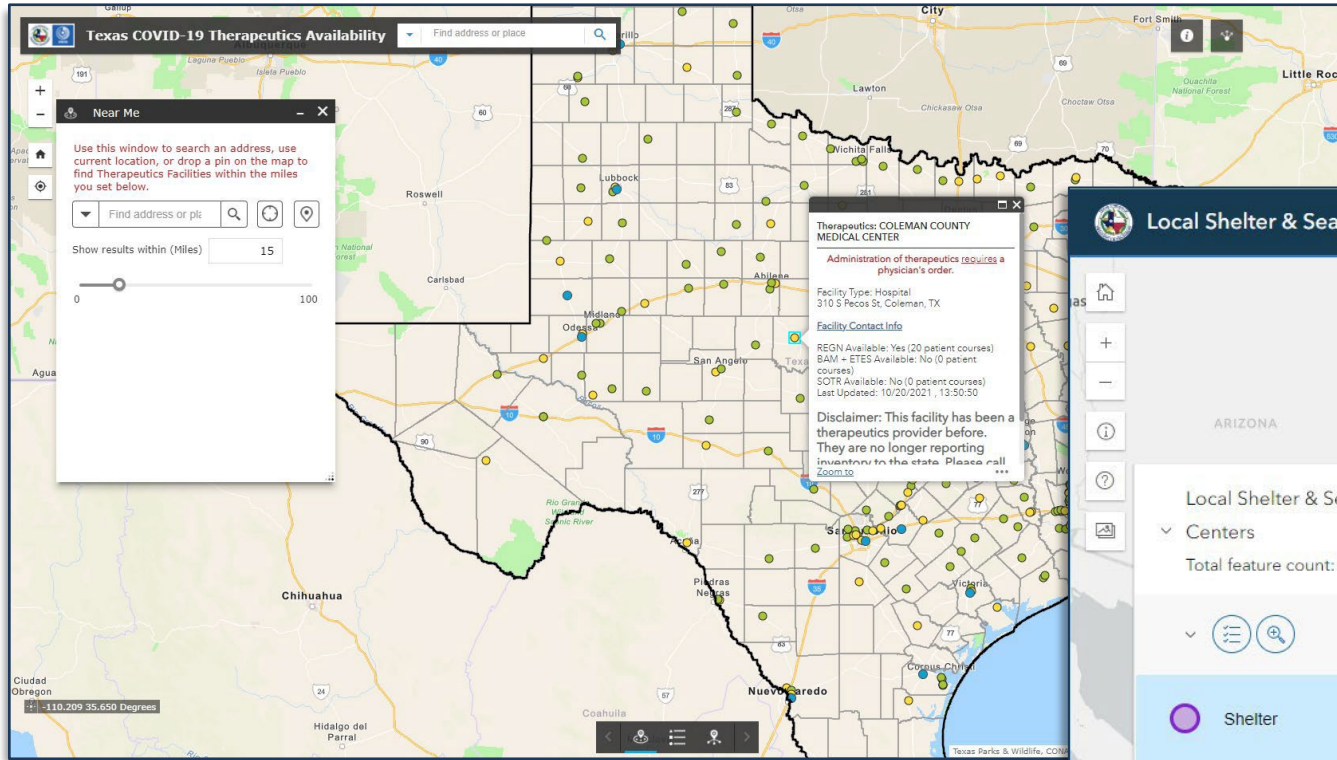
This website was developed in partnership between the Texas Division of Emergency Management (TDEM) and the Texas A&M Forest Service.

Wildfires continue to threaten **people** and **property** across Texas...





# Public Outreach





# EM GIS Data Resources

National Association of  
Public Safety GIS (NAPSG)



FEMA Geospatial  
Coordination Group



NASA Disaster Response  
Coordination System (DRCS)







# **ARCGIS FOR COMPREHENSIVE HURRICANE READINESS**

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**HOUSTON PUBLIC WORKS  
OFFICE OF EMERGENCY  
MANAGEMENT**







# **SPEAKERS:**

Anthony Powell - Interim IT Assistant Director

Francesco Carmine – Emergency Management GIS Specialist





# ABOUT OEM :

The City of Houston Office of Emergency Management (**OEM**) is the chief coordinating agency for disaster response in the nation's fourth-largest City. **OEM** provides emergency response coordination and communication assistance to City agencies, and serves as liaison to regional, state and federal agencies during times of emergency. In addition, **OEM** engages with the local community to promote emergency preparedness through a variety of initiatives. In 2025 **OEM** was transitioned to operate from within the City of Houston Public Works Department.



# SERVICE LINES



**DIRECTOR'S  
OFFICE**



**OFFICE OF  
EMERGENCY  
MANAGEMENT**



**PLANNING**



**HOUSTON  
WATER**



**TRANSPORTATION  
AND DRAINAGE  
OPERATIONS**



**ENGINEERING**



**CONSTRUCTION**



**UTILITY BILLING**



**TECHNOLOGY**




**HOUSTON  
PERMITTING CENTER**



# HOUSTON PUBLIC WORKS

**16,000**  
LANE MILES OF  
STREETS




**3,900**  
MILES OF  
STORM DRAINS

**163B**  
GALLONS OF WATER  
TREATED PER YEAR

**2,450**  
TRAFFIC SIGNALS

**2,800**  
MILES OF  
ROADSIDE DITCHES

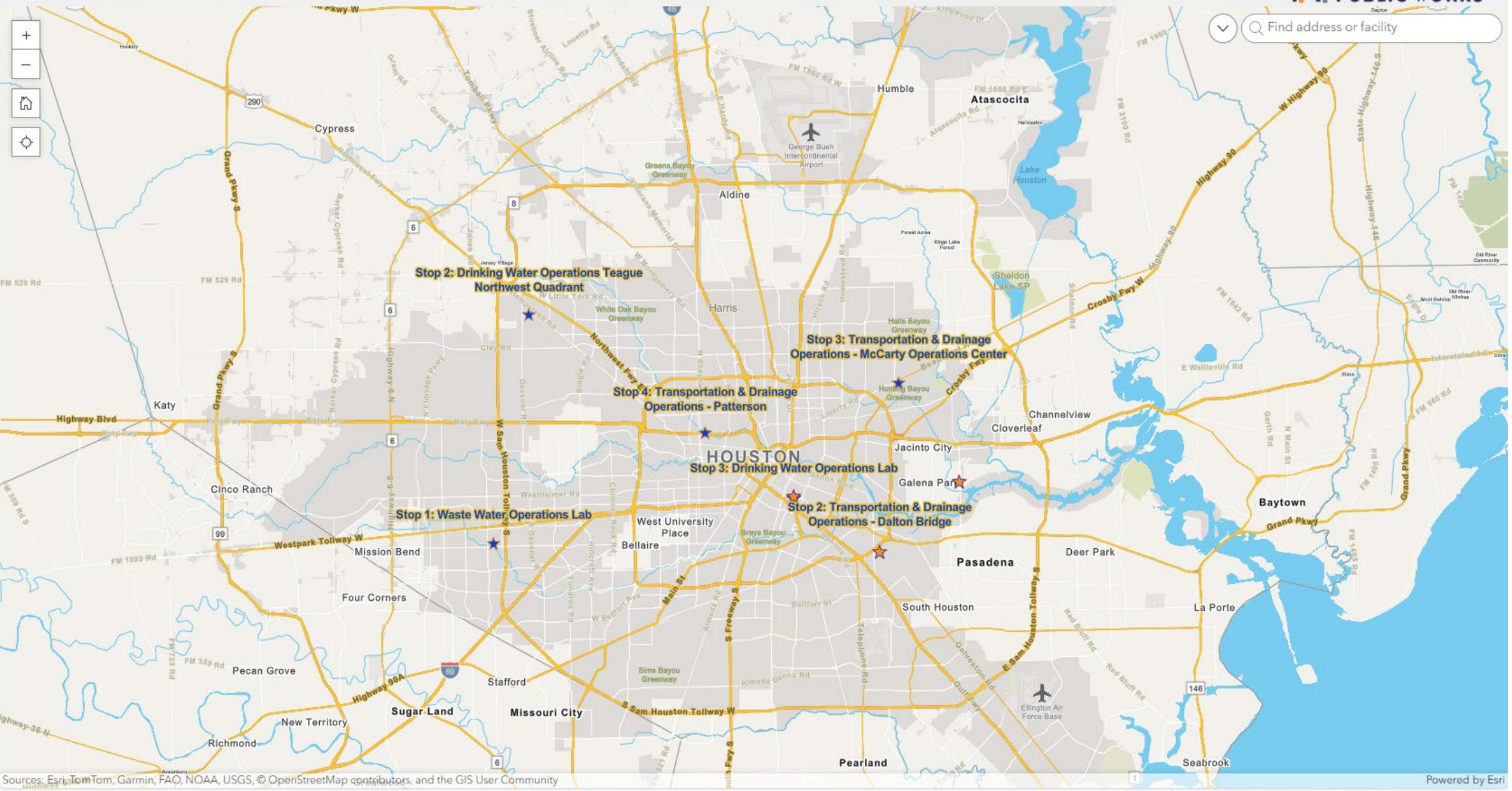
**5.8M**  
WATERBILLS  
SENT PER YEAR

**500+**  
TYPES OF PERMITS

**\$1.8B**  
ANNUAL BUDGET

**3,900**  
EMPLOYEES









**HOUSTON  
PUBLIC WORKS**

## Critical Facilities Tracker

Service Line:

0 Selected

### LYNCHBURG PUMP STATION

Houston Water - Drinking Water Operations  
908 S. Lynchburg Rd-Baytown  
(Staffed)

### SOUTHEAST WATER PURIFICATION PLANT

Houston Water - Drinking Water Operations  
3100 Genoa-Red Bluff Rd  
(Staffed)

### TRINITY RIVER PUMP STATION

Houston Water - Drinking Water Operations  
8419 FM 1409 Dayton-Liberty County  
(Staffed)

### SOUTHWEST REPUMP PLANT

Houston Water - Drinking Water Operations  
4410 Westpark Dr  
(Staffed)

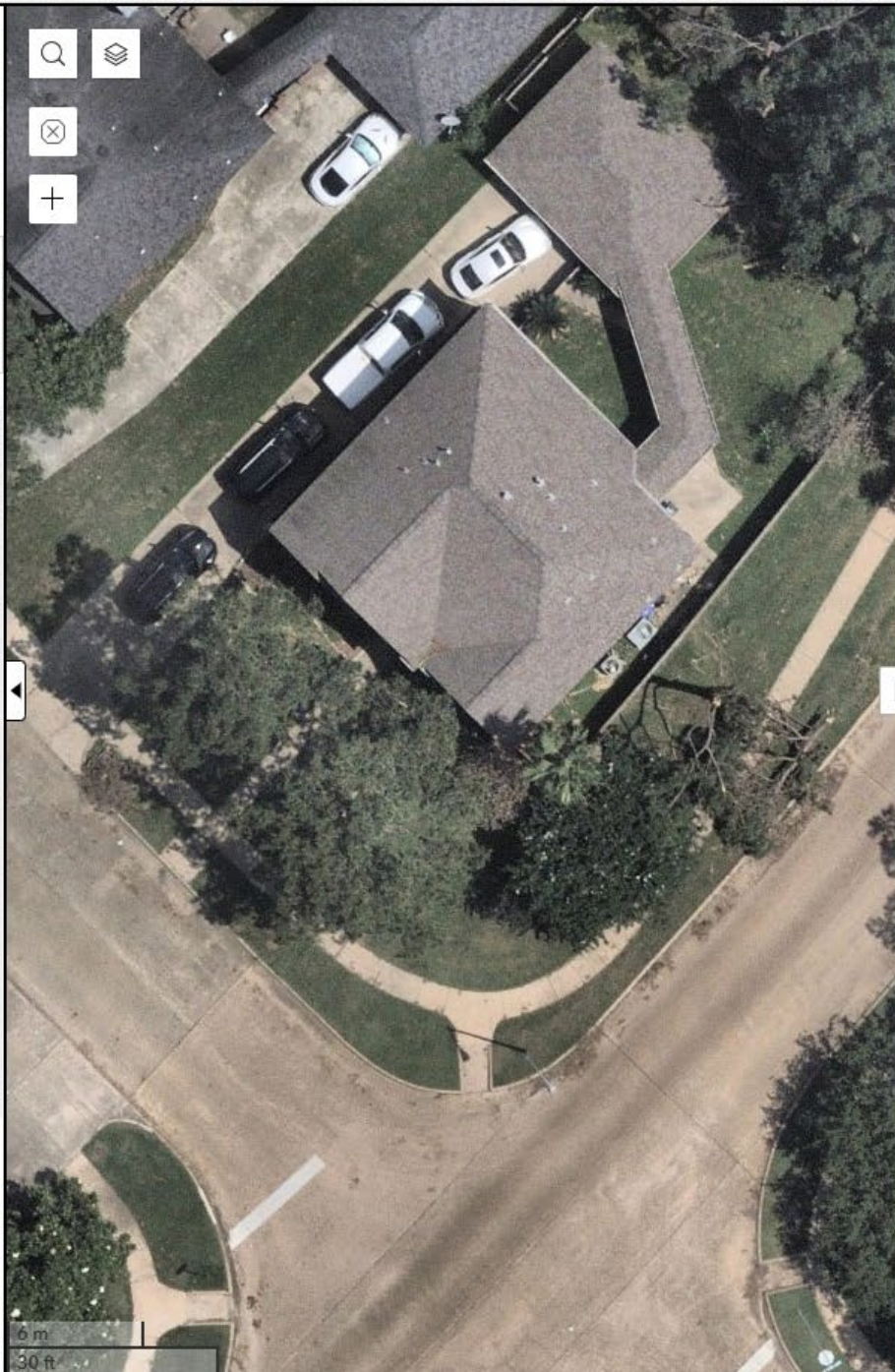
### ACRES HOME REPUMP

Houston Water - Drinking Water Operations  
1810 Dolly Wright St  
(Staffed)

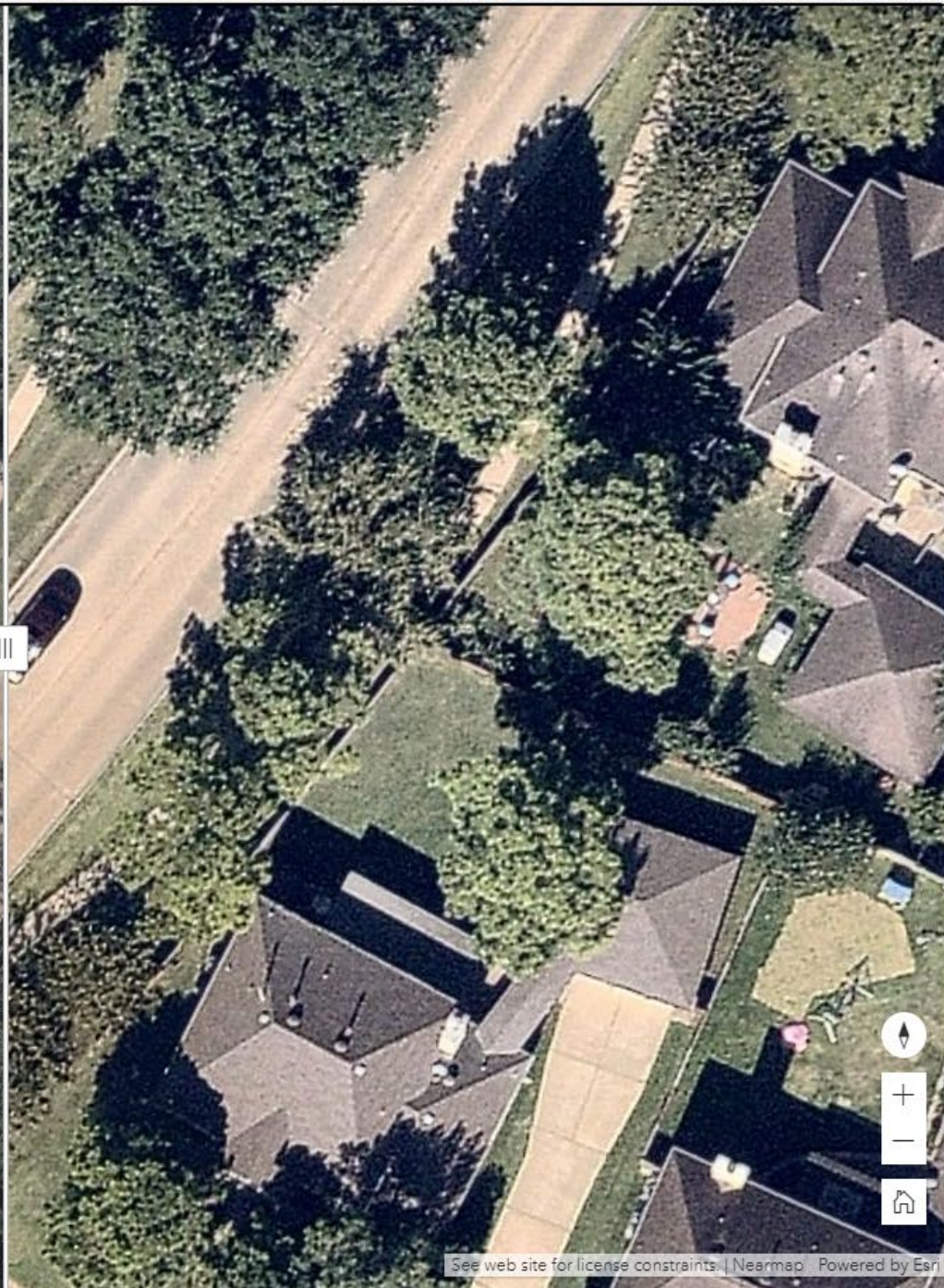
### SIMS RAYON REPUMP PLANT



< Sat May 18 2024 > < Fri Oct 24 2014 >



6 m  
30 ft



See web site for license constraints | Nearmap Powered by Esri





## Critical Facilities Tracker

Service Line:

0 Selected

### LYNCHBURG PUMP STATION

Houston Water - Drinking Water Operations

908 S. Lynchburg Rd-Baytown

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< Sat May 18 2024 >



6 m

30 ft

See web site for license constraints. | Nearmap Powered by Esri



# THANK YOU

