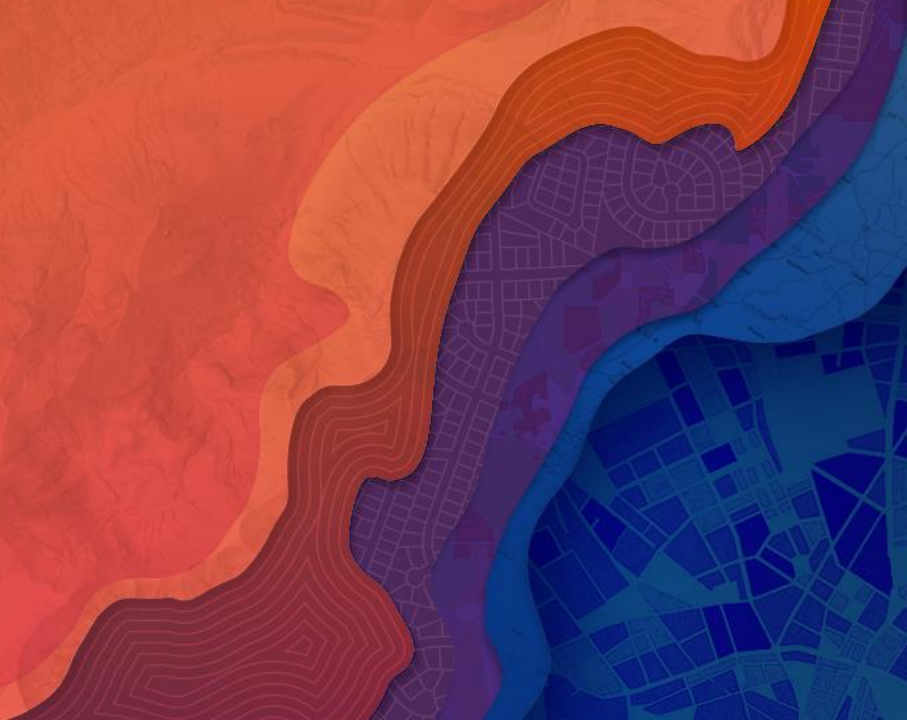


GIS Enabled Hurricane Response

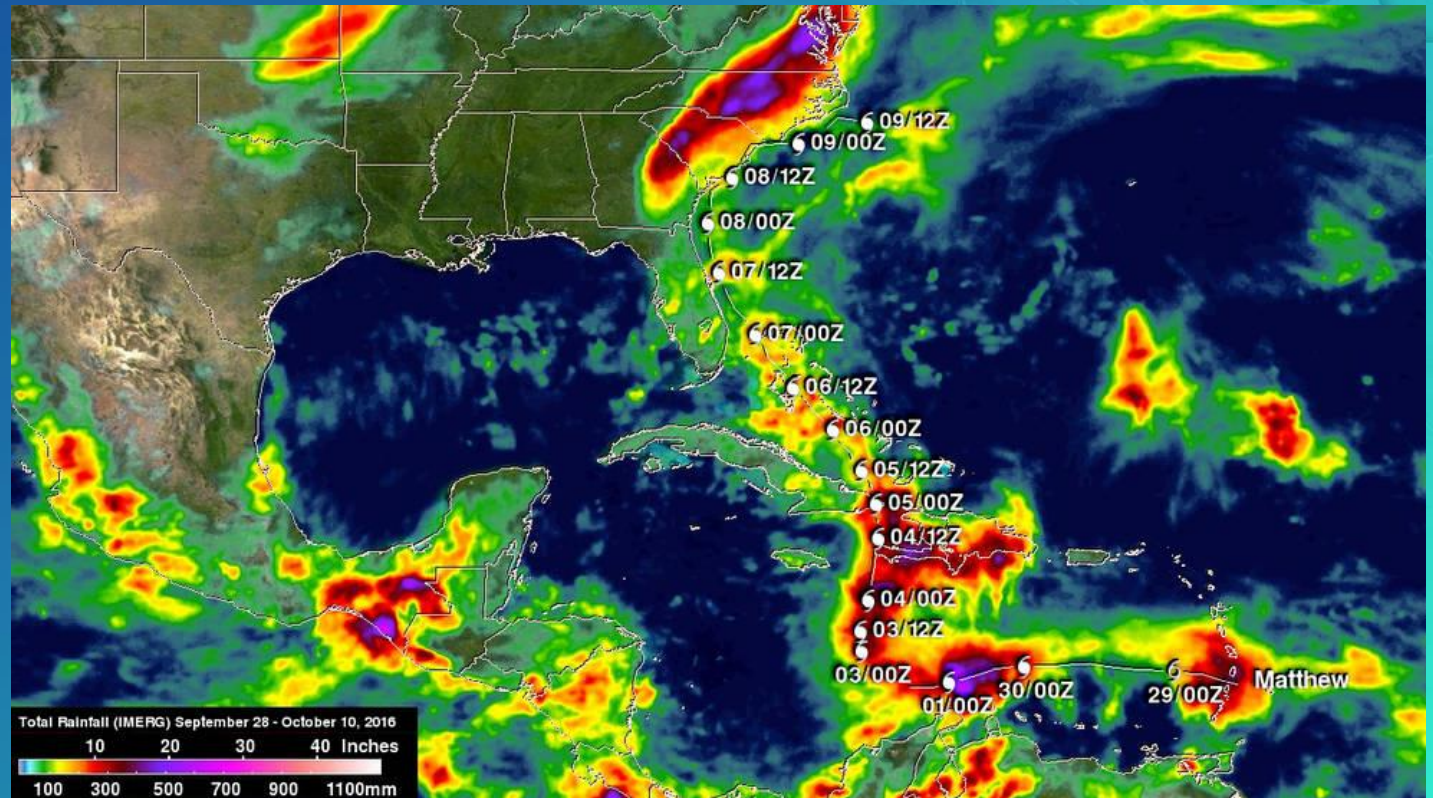
Lessons and Patterns Learned from Hurricane Matthew

By Ariel Low



Hurricane Matthew

- Landfall October 8th as a Category 1
- Caused widespread flooding in North and South Carolina
 - Also impacted Florida and Georgia
- Most significant effect on Haiti



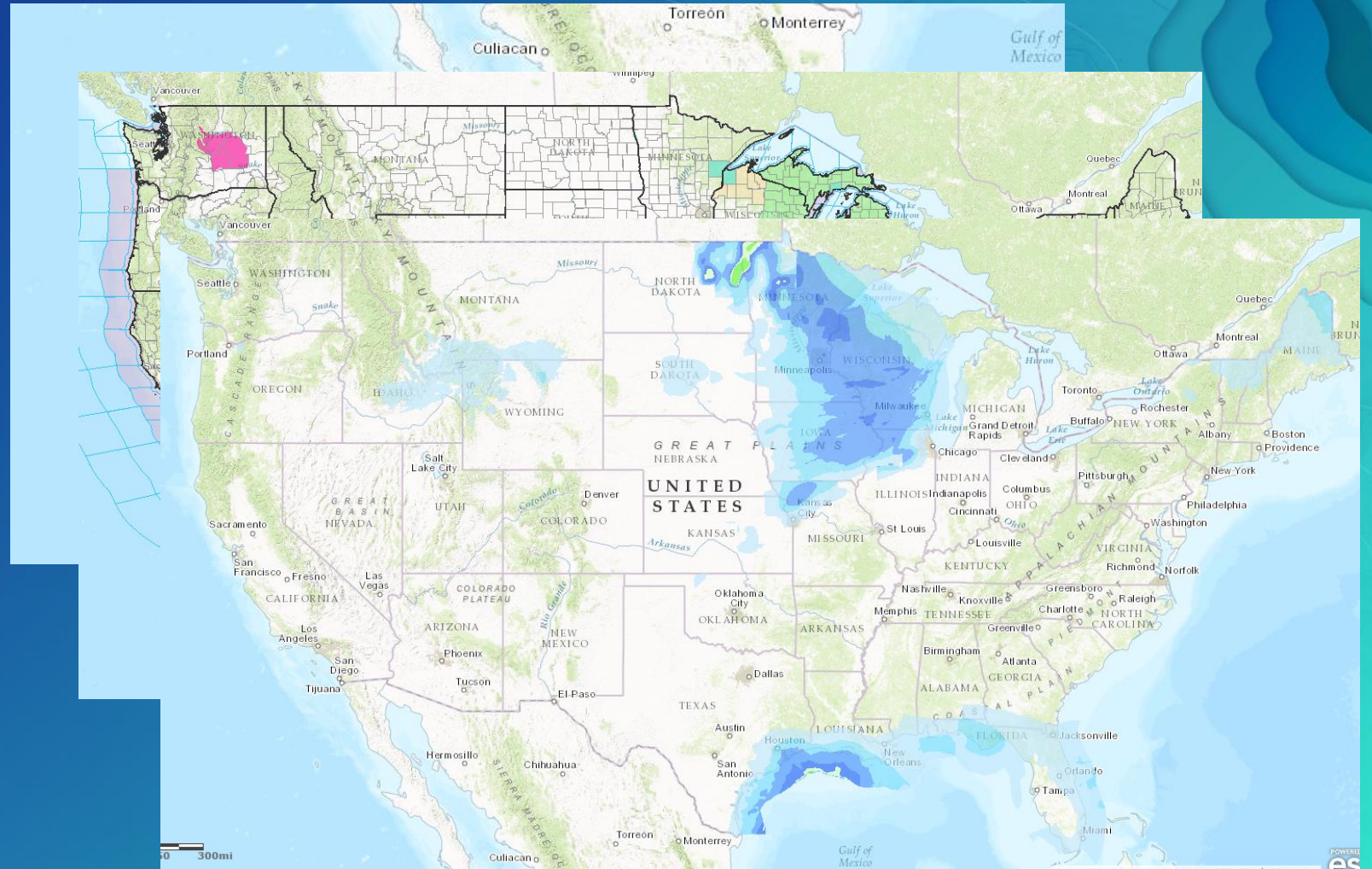
Preparation

Tools for Before the Storm



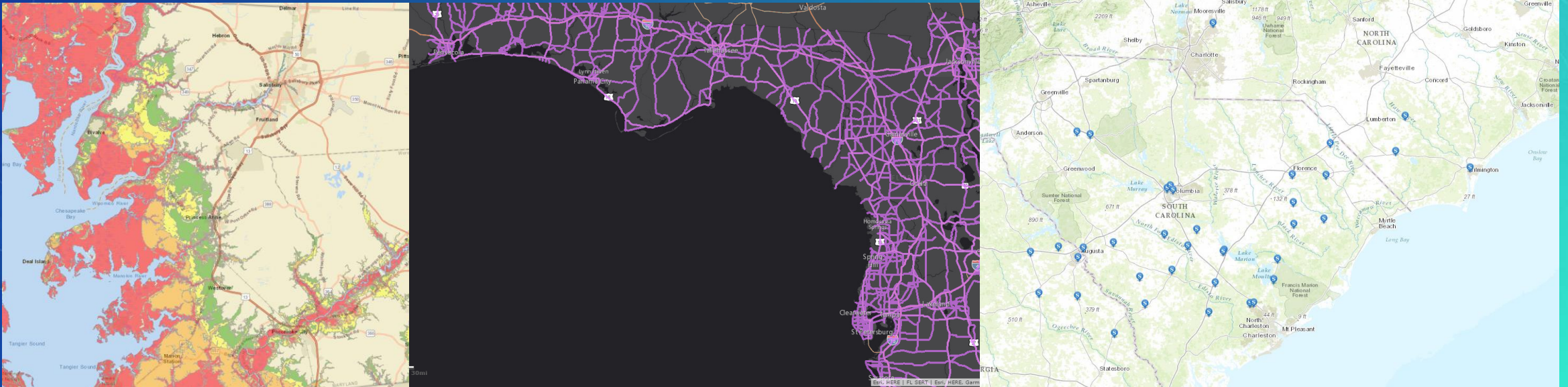
Hurricane Forecast

- Layers in ArcGIS Online
 - Active Hurricanes
 - National Weather Center Watches Warnings and Advisories
 - Precipitation Forecast



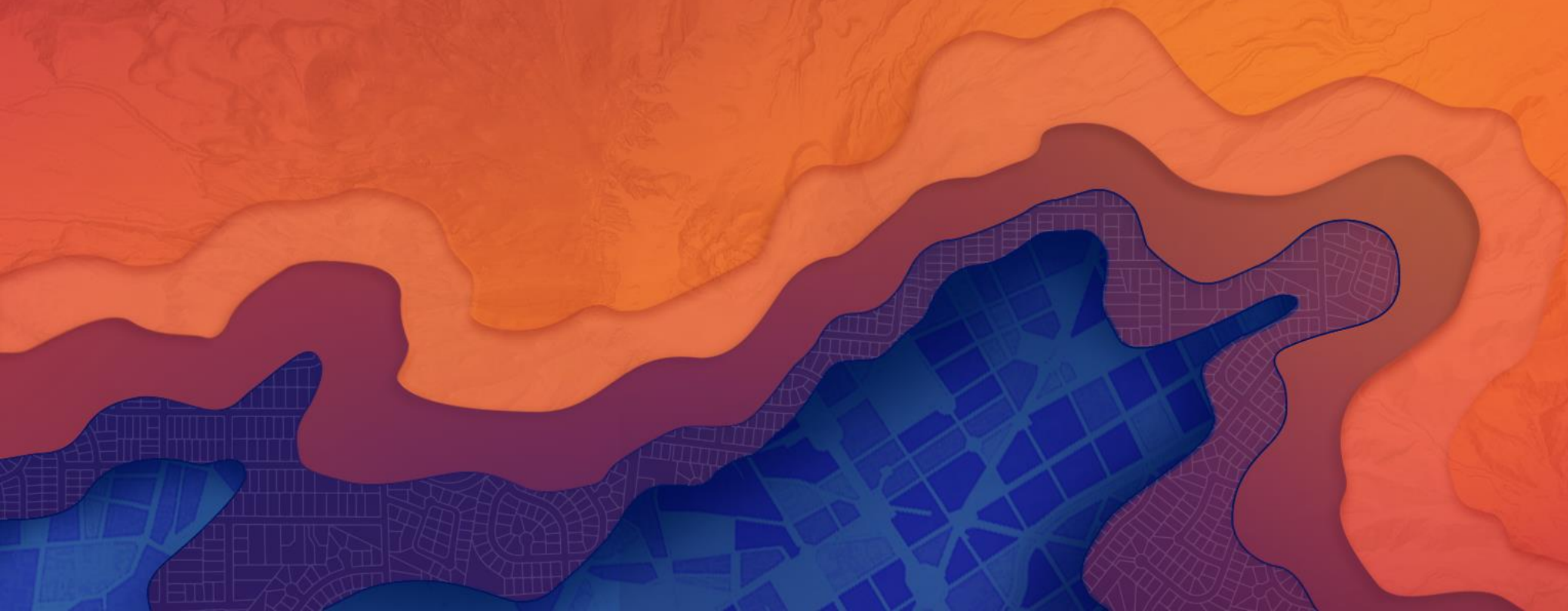
Planning the Evacuation

- Information the public needs:
 - Evacuation Zones
 - Evacuation Routes
 - Shelters
- Relay this information to the public using apps



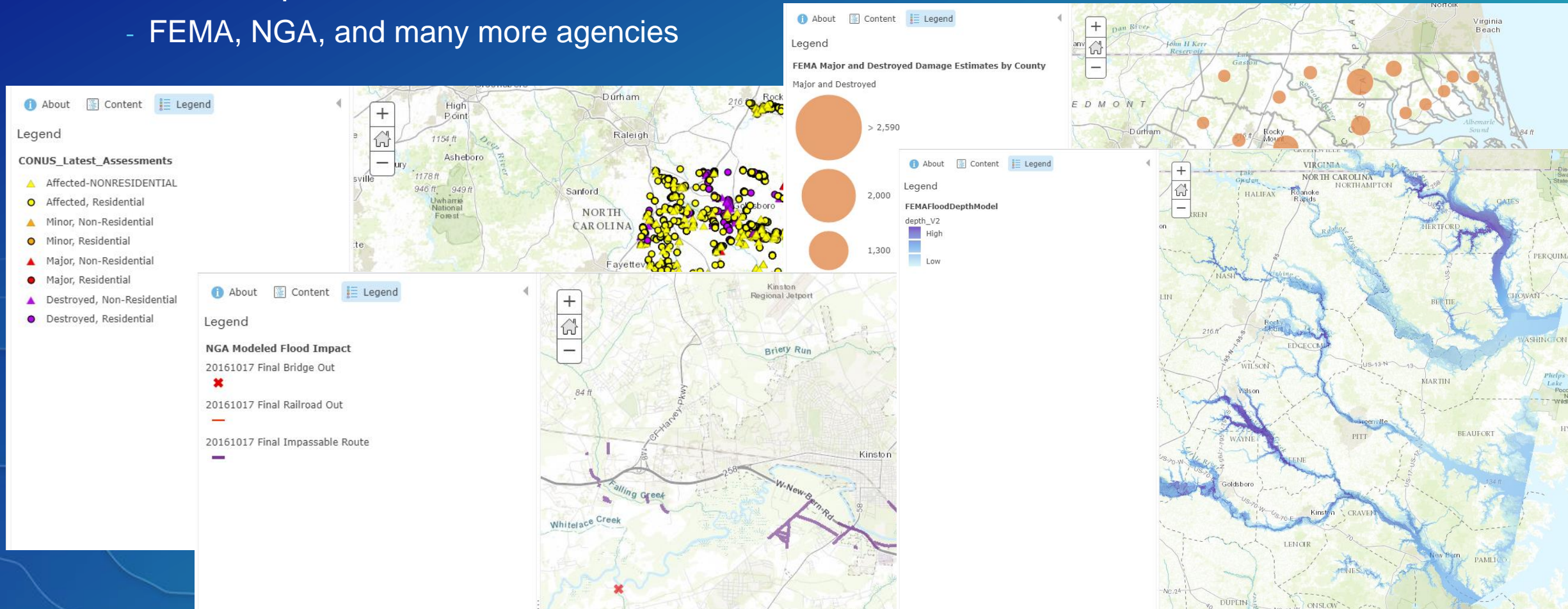
Response

Providing Help to the Areas that Need It



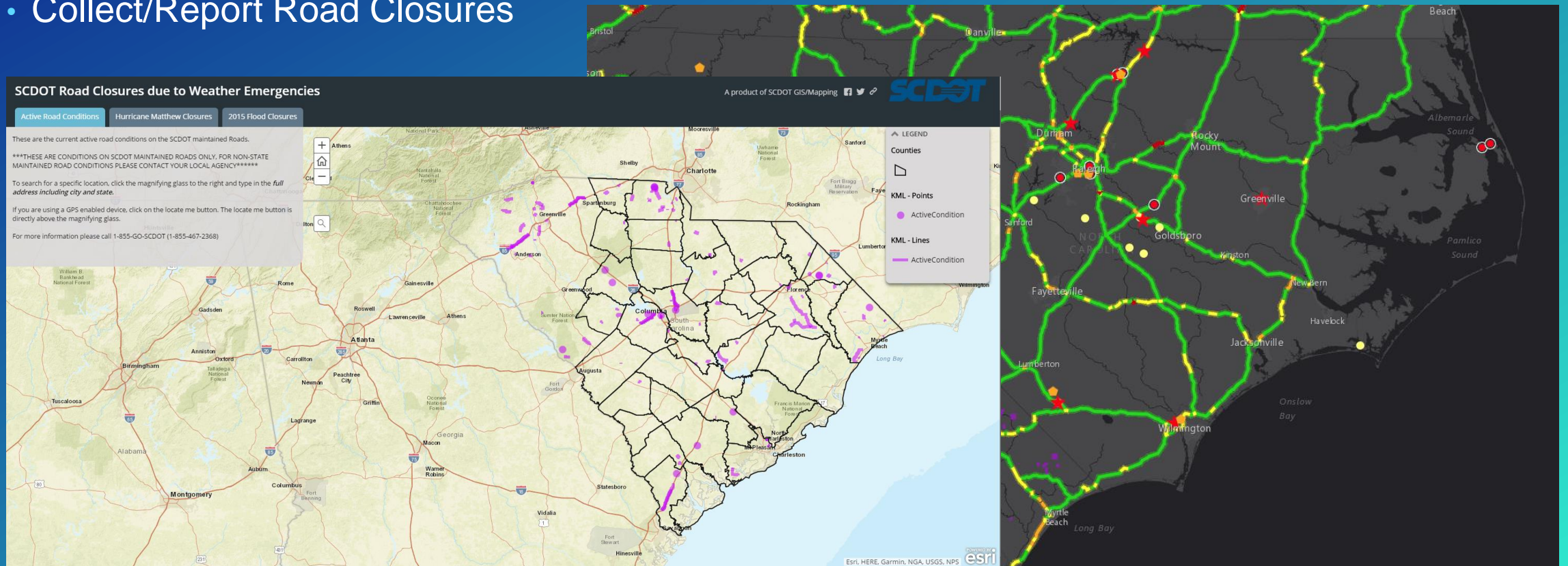
Situation Awareness

- A common platform builds situation awareness
 - FEMA, NGA, and many more agencies



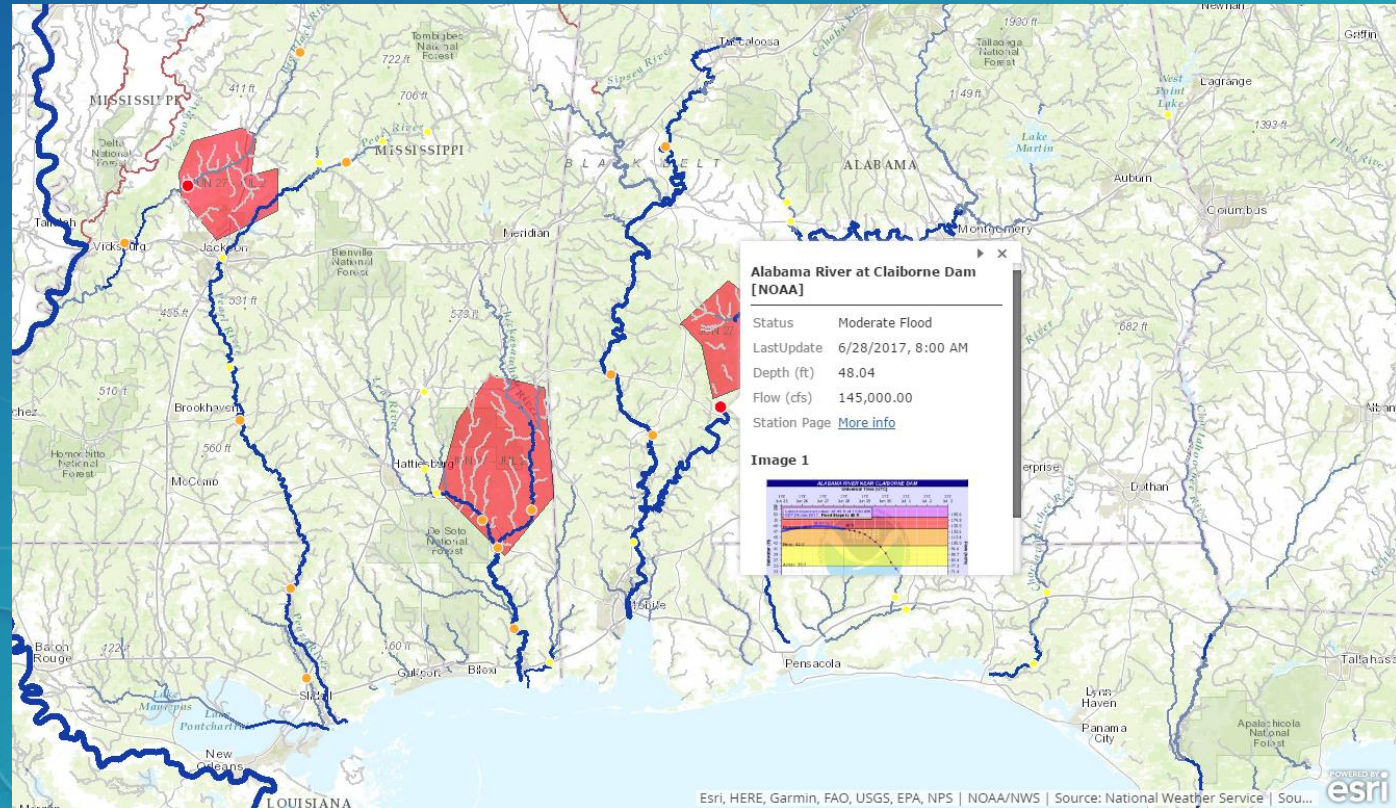
Road Closures

- Esri Live Traffic Layer
- State Road Closure Layers
- Collect/Report Road Closures



Flooding Awareness

- 100 Year Flood Zones
- National Water Model
 - Hourly Anomaly Forecast
 - Hourly Forecast
 - 10 Day Anomaly Forecast
 - 10 Day Forecast
- Stream Gauges
- NOAA Significant Flood Outlook



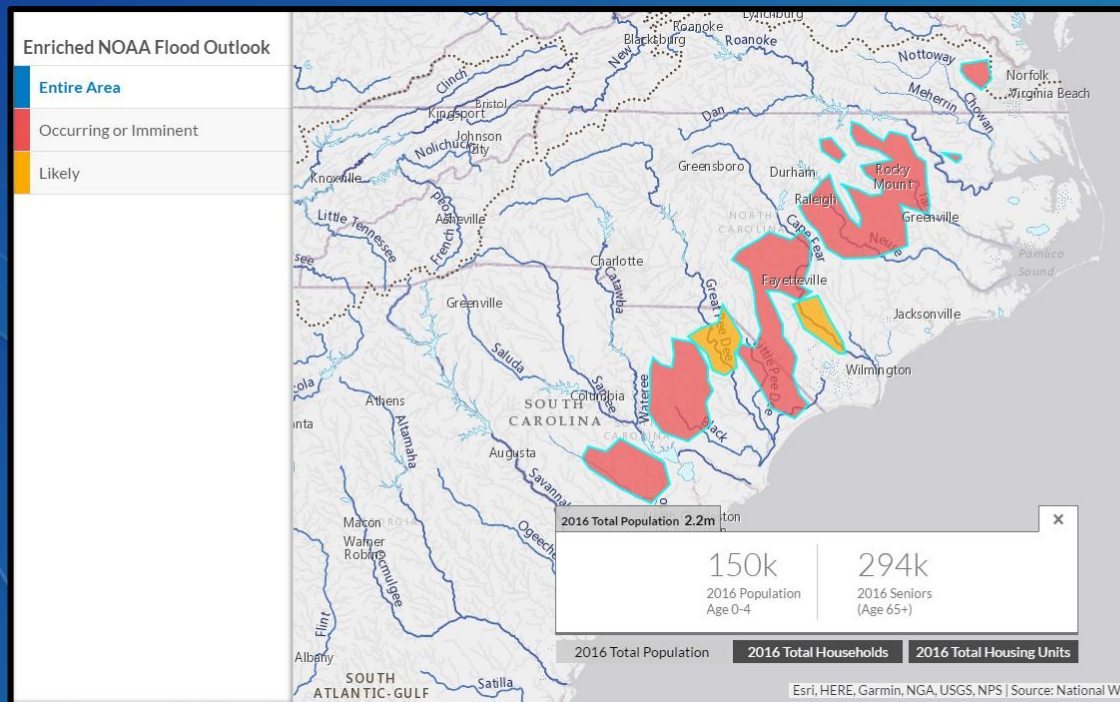
Additional Flood Modeling

- Some more detailed local models available
- NWM can be used to create the following:
 - Flood Extent
 - Flood Depth
 - Flood Impacts
- Requires:
 - National Water Model
 - Terrain (DEM)
 - Address Points
 - Demographics (*optional*)



Impact Summary

- Enrich impact areas with demographics
- Easily summarize characteristics of population affected



Data Browser

Search for a variable name

United States

Population Income Age Households Housing

Health Education Business Race Spending

Behaviors Jobs Poverty Marital Status Tapestry

At Risk Key Facts Supply and Demand Policy Landscape

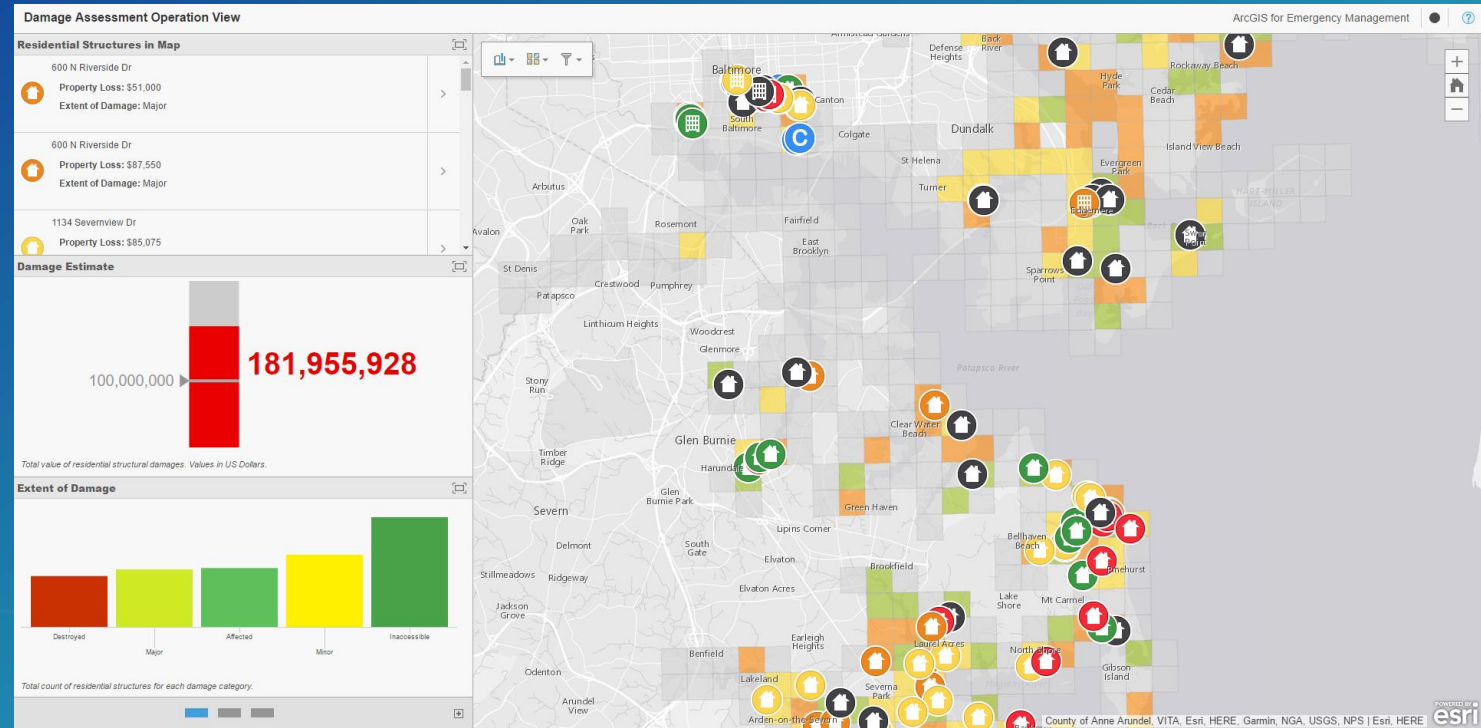
AT RISK

At Risk variables (64)

- 2010 Population (U.S. Census)
- 2010-2014 ACS Income
- 2010-2014 Household Income (ACS)
- 2010-2014 Households by Disability
- 2010-2014 Households by Other Income (ACS)
- 2010-2014 Households by Poverty Status (ACS)
- 2010-2014 Households by Vehicles Available (ACS)
- 2010-2014 Key Demographic Indicators (ACS)
- 2010-2014 Population by Language Spoken at Home (ACS)
- 2017 Automobiles & Automotive Products (Market Potential)
- 2017 Electronics & Internet (Market Potential)
- 2017 Income (Esri)
- 2017 Key Demographic Indicators (Esri)
- 2017 Media - Magazines & Newspapers (Market Potential)
- 2017 Media - Radio & Other Audio (Market Potential)
- 2017 Pets & Products (Market Potential)
- 2017 Phones & Yellow Pages (Market Potential)
- 2017 Tapestry Adult Population (Esri)
- 2017 Tapestry Households (Esri)

Damage Assessment

- Faster, more efficient collection
 - Survey123
 - Collector
- View in real time at headquarters
 - Operations Dashboard



Service Delivery

- Situation awareness informs service delivery
- Target delivery based on:
 - Damage
 - Requests for help
- Track delivery and ensure appropriate distribution

Recovery



Justify Recovery Projects

- Standardized form -> easier to get disaster declaration
 - Better understanding of damage
 - Better understanding of need

Survey123 for ArcGIS

Preliminary Damage Assessment v0.5

For questions on conducting damage assessments, refer to the:
[FEMA's Damage Assessment Operations Manual](#)

Date & Time of assessment: *

7/5/2017 4:43 PM

Incident ID Number:
e.g. XXXXXX

Which program is this assessment for? *

☐ Individual Assistance

☐ Public Assistance

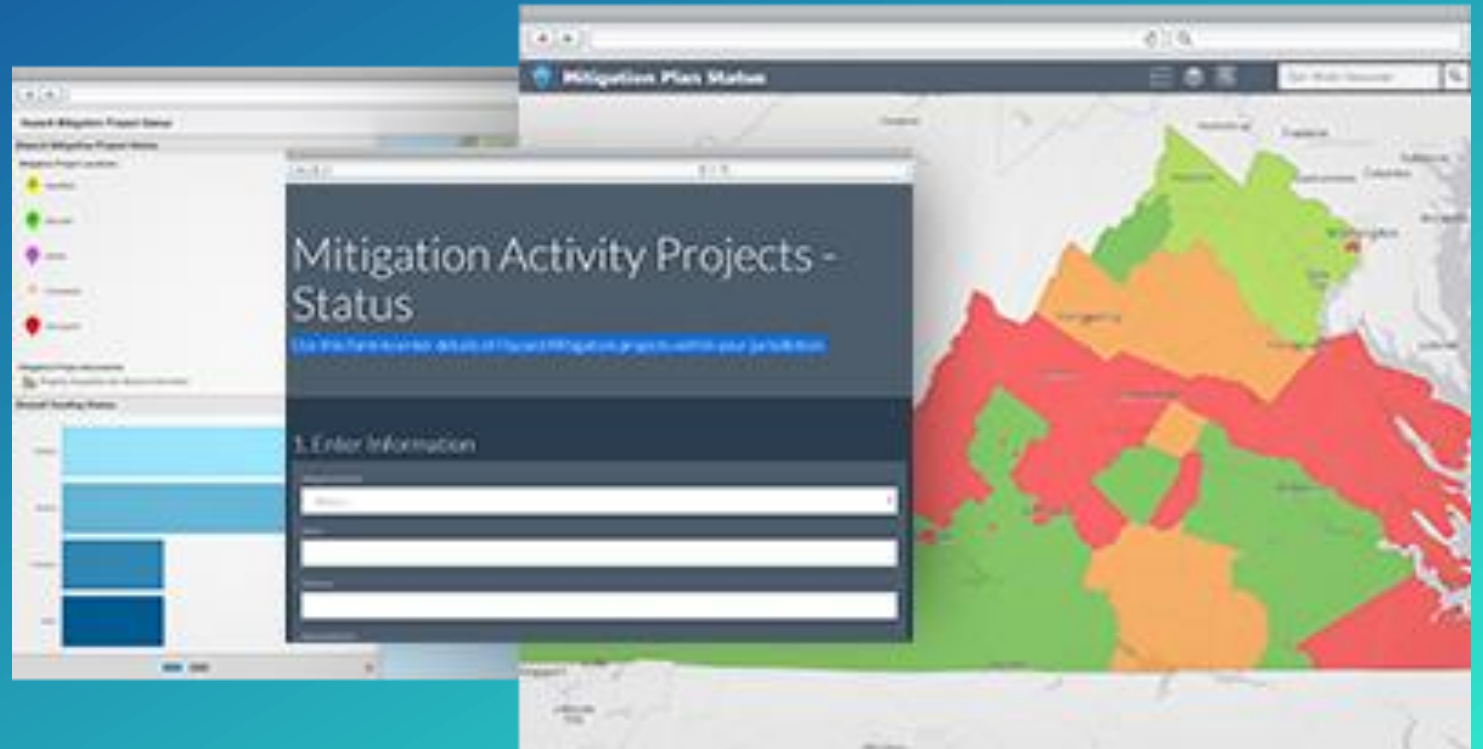
Street address of the dwelling:

Street Address:

City/Town:

Track Recovery and Mitigation Projects

- Ensure projects are on track
- Easier reporting to donors





esri

THE
SCIENCE
OF
WHERE