GOVERNOR'S HURRICANE CONFERENCE®

South Florida Water Management District (SFWMD)

EOC Visit & Tour 2025

Welcome to the SFWMD EOC

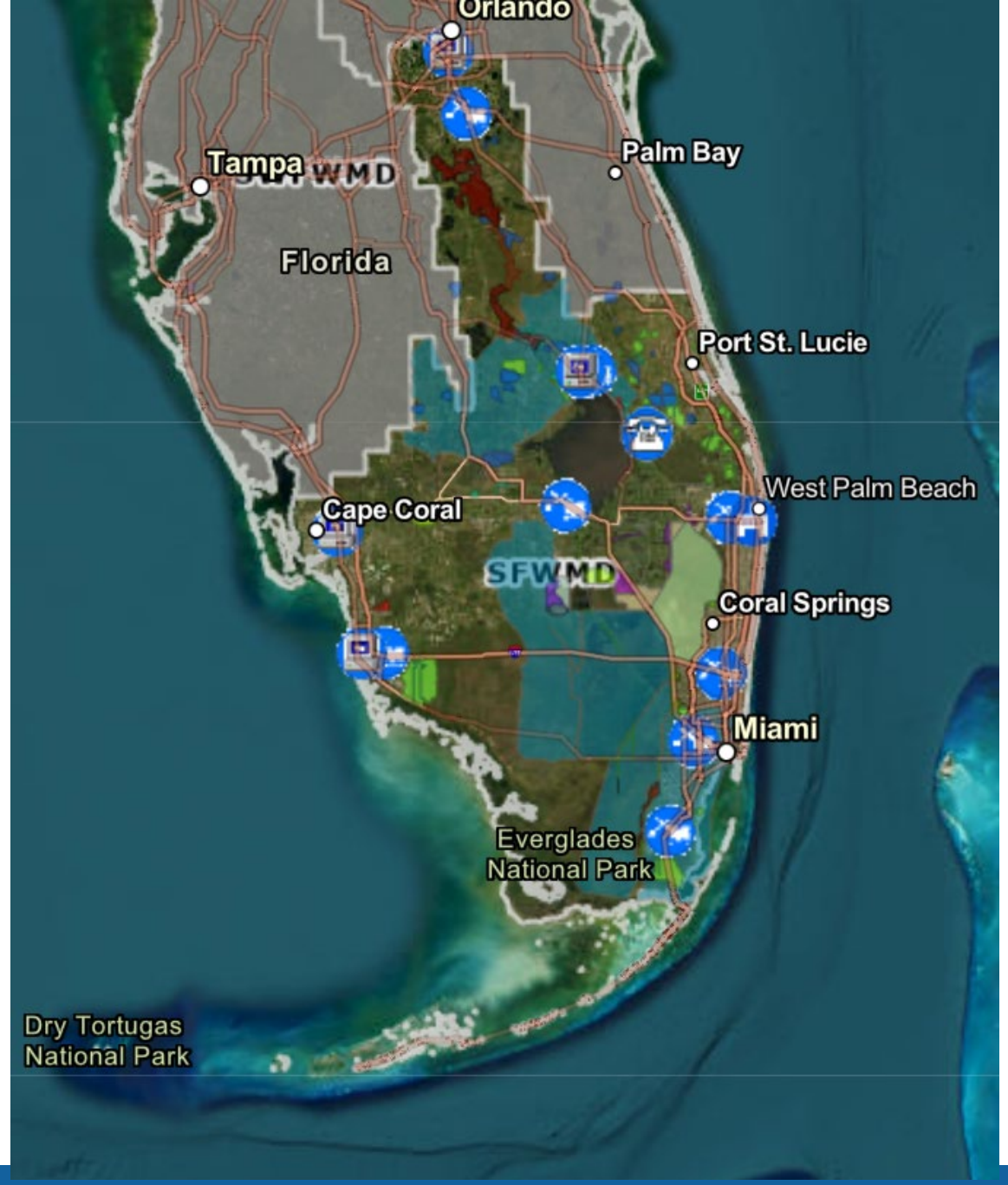
Agenda:

- Welcome & Introduction
- Safety – Emergency Exits
- What is the SFWMD?
- EOC Facility Capabilities
- EOC Operations
- EOC & EM Tools
- sUAS / Drone use in EM
- Group Break-out Tour

What is the South Florida Water Management District (SFWWMD)?

What does the SFWMD do?

Where does the SFWMD operate?


Orlando
Tampa
SFWMD
Palm Bay
Florida
Port St. Lucie
West Palm Beach
Cape Coral
SFWMD
Coral Springs
Miami
Everglades
National Park
Dry Tortugas
National Park

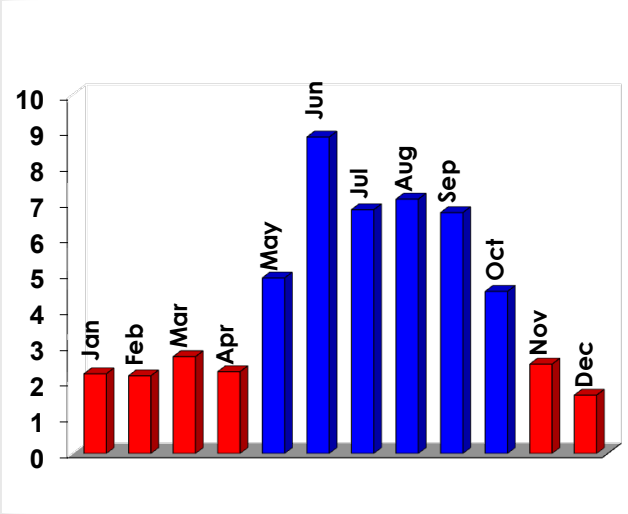
SFWMD

- Covers 16 Counties
- Serves more than 9.5 Million Residents

Primary Water Control System

- More than 2,175 miles of canals
- Over 2,130 miles of levees/berms
- Over 778 water control structures
- Over 620 project culverts
- 89 Pump Stations

Our terrain is low and flat, and seasonal rainfall can be intense



Optimum flood control is a three-tiered system Functioning much like a roadway system

It starts in your community…

Secondary canals connect to farm and neighborhood systems

Major canals receive inflows and move water into storage or discharge to the coast

Components of the system must all work together

SFWMD Role:

- Monitor weather conditions and water levels around the clock
- Proactively manage the system, adjust gates to lower water levels in primary canals in anticipation of expected inflows
- During and after heavy rains, route excess water through waterways to storage or coastal discharge points

Emergency Management & EOC Operations

Planning and Preparedness (Blue Skies vs Gray Skies)

- Training
  - Exercises & Drills (Internal and External)
- Plan Reviews – Updates – Enhancements
  - CEMP (Comprehensive Emergency Management Plan)
  - COOP (Continuity of Operations Plan)
  - SOP
  - EOP

Emergency Management & EOC Operations

- Coordination and Collaboration
  - Internal Operations
    - Review and Update Processes and Procedures
  - External Operations
    - Key Stakeholders (City, County, State, Federal)
    - Vendors & Contractors (New & Existing)
      - Debris Removal and Management
      - Fuel
      - Equipment

All Hazards Planning and Preparation

- Extreme Weather Events
  - Tropical Events
  - Flooding
  - High Wind Events or Tornado
  - Drought
- Wildfire
- Dam/Levee Failure
- Pandemic
- Human-caused incident

SFWMD – West Palm Beach, FL
Headquarters – Building B-1

EOC – Resiliency & Sustainability

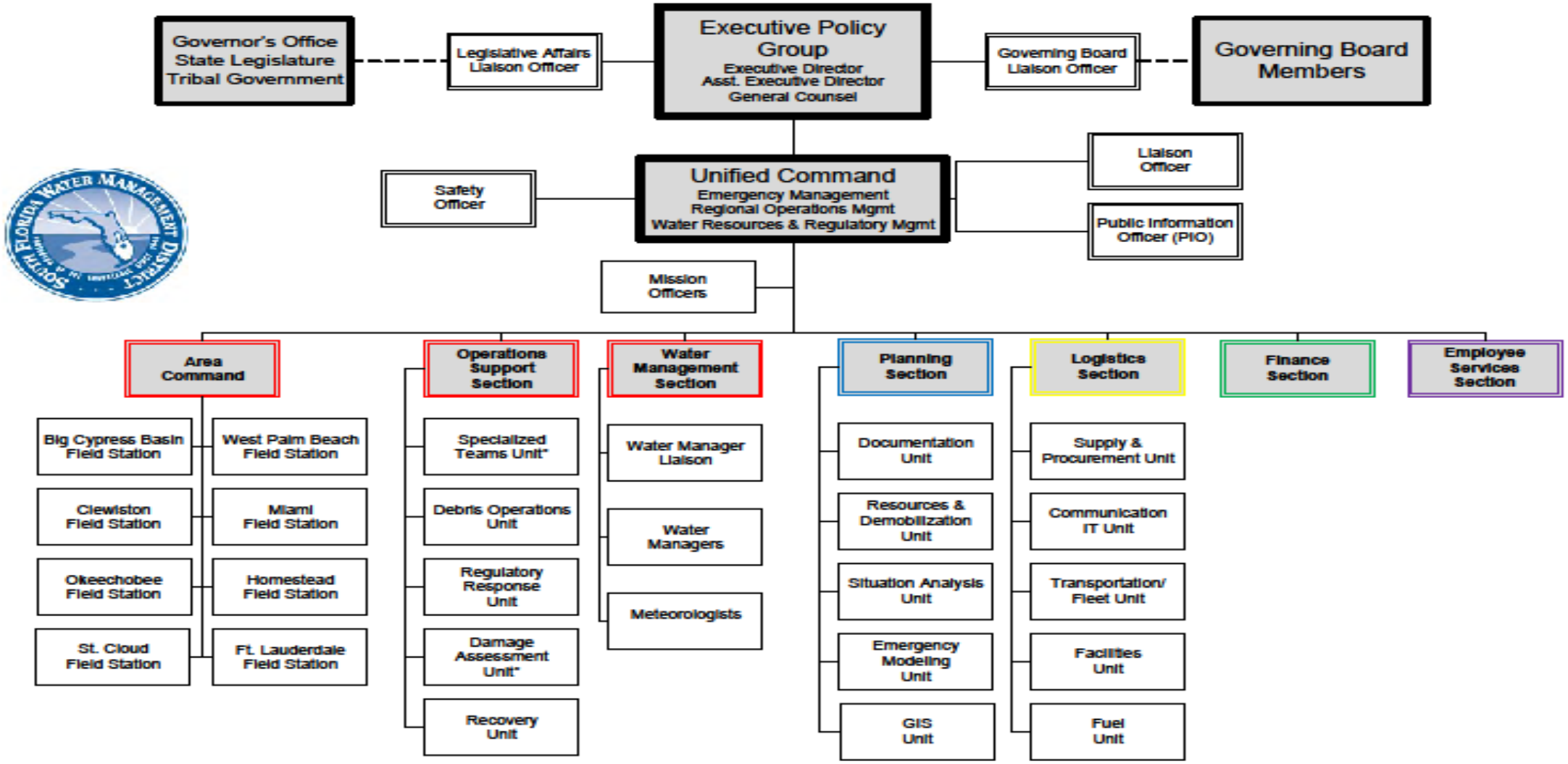
- EOC Facility Built to withstand F5 Tornado
  - 205 mph sustained and 230 mph Gust

- EOC Core Operational Components
  - Main EOC and Overflow Room
  - Tier III Data Center
  - Operation Control Room (OCC)
  - Broadcast Studio

- Multiple Backup Systems
  - Backup Generators, Fuel, and UPSs
  - Backup Fire Suppression, Water Supply, and Septic

EOC Set Up and Operations

- EOC is set up in an ICS Like Model



SFWMD Emergency Management
Emergency Operations Center
Master Organizational Chart
Revision Date: April 2018

**Teams assigned to these units will activated in a scalable manner as per ICS as dictated by the scope and magnitude of the incident.*

EOC Set Up and Operations

- EOC is set up in an ICS Like Model
  - Command – Unified Command
  - Operations & Planning
    - 4 in a Box
  - Logistics
  - Safety
  - Employee Services
  - Finance
  - Administration
  - IT & Communications

Emergency Management and EOC Tools

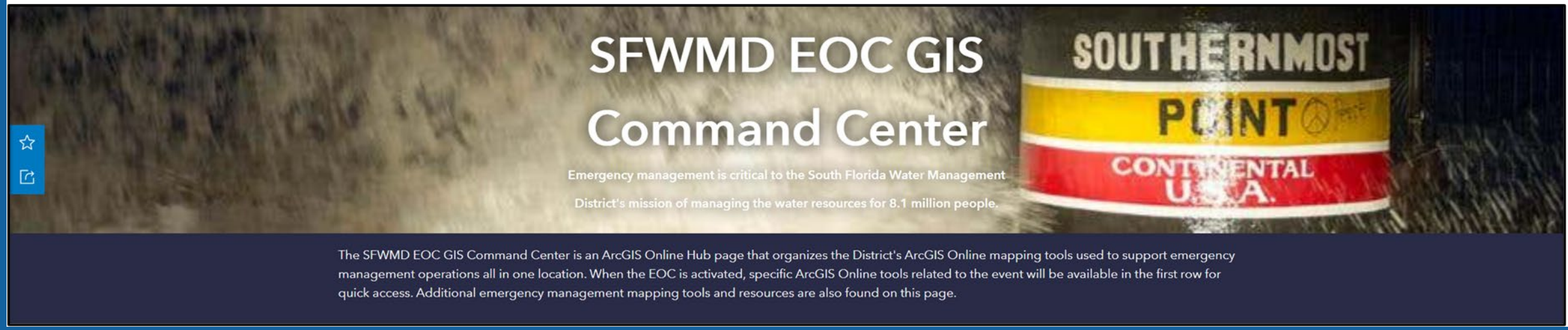
- WebEOC
- SFWMD GIS EOC Command Center

EOC Geospatial Support

Geospatial Services supports EOC operations throughout an event with multiple web applications and mapping products and also provides comprehensive geoprocessing analyses.

- **Products include but are not limited to dashboards to display missions, web applications for visualizing flooding incidents, and mapping products for field teams.**

- **Geospatial Services also maintains an ArcGIS Online Command Center Hub to centralize geospatial data and products in one location for streamlined access during an event.**



Emergency Management and EOC Tools

- WebEOC
- SFWMD GIS EOC Command Center
- Teams

Emergency Management and EOC Tools

Survey 1,2,3

ArcGIS

sUAS – Drones

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
PROTECTION OF THE EVERGLADES SINCE 1949
UAS PROGRAM

Skydio

PIX4D

EOC Drone Operations

Initial Response & Assessment (Photos & Video - Regular and Thermal)

- Life Safety
- Initial Rapid Critical Infrastructure Inspection
- Mapping
- Search and Rescue/Recovery

Detailed Damage Assessment

Debris Management & Inspection

- Mapping and Debris Calculations

Safety & Security

Drone – sUAS Fleet

SkyDio S2+ Enterprise

Skydio X10

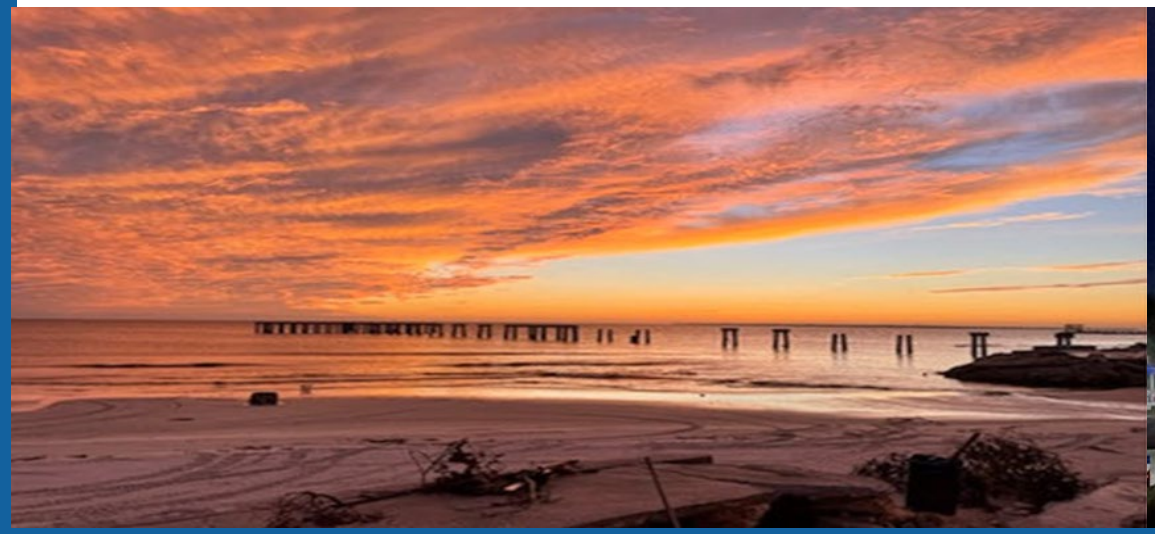
FreeFly AltraX

FreeFly Astro Max

Parrot Anafi

Sensefly eBee

Questions?



EOC – Breakout Stations

Stations:

- EOC – Drone Operations within the EOC
- 1st Floor – East Parking Lot –

  EM Drone Ops & Mobile Command/Media Tk

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SFWMD GIS and Emergency Management

Madelyn Rinka

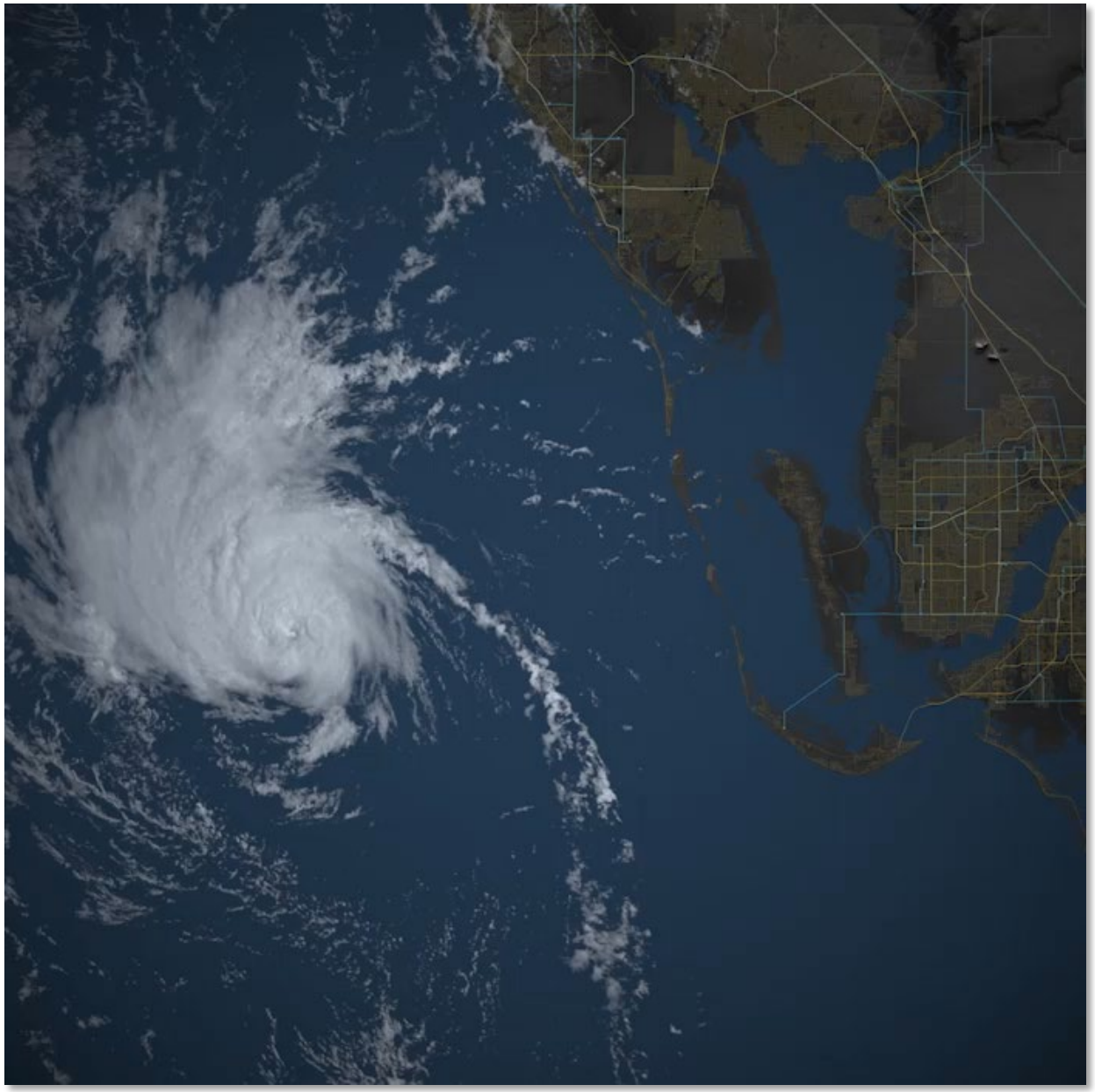
Geographer, Drone Pilot, & EOC GIS Assistant Program Manager

What is GIS?

- Geographic Information Systems (GIS) is technology used to map and analyze spatial data
  - "GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there). This provides a foundation for mapping and analysis that is used in science and almost every industry. GIS helps users understand patterns, relationships, and geographic context. The benefits include improved communication, efficiency, management, and decision-making." (Source: Esri)

GIS & Emergency Management

- Location is critical when it comes to managing and responding to emergency events like hurricanes and tropical storms
  - ***Where*** a hurricane may hit and the project path
  - ***Where*** we can expect storm surge and flooding
  - ***Where*** shelters are available during evacuation planning
  - ***Where*** we see reports of damage or calls for assistance
  - ***Where*** communities may be able to set up relief centers and/or points of distribution for supplies



Video Credit: Esri – *What is GIS?*

GIS & Emergency Management

- GIS data enhances understanding of conditions in the field and aids in decision making before, during, and after a storm
- GIS has been a part of Emergency Management at the South Florida Water Management District (SFWMD) for over 25 years

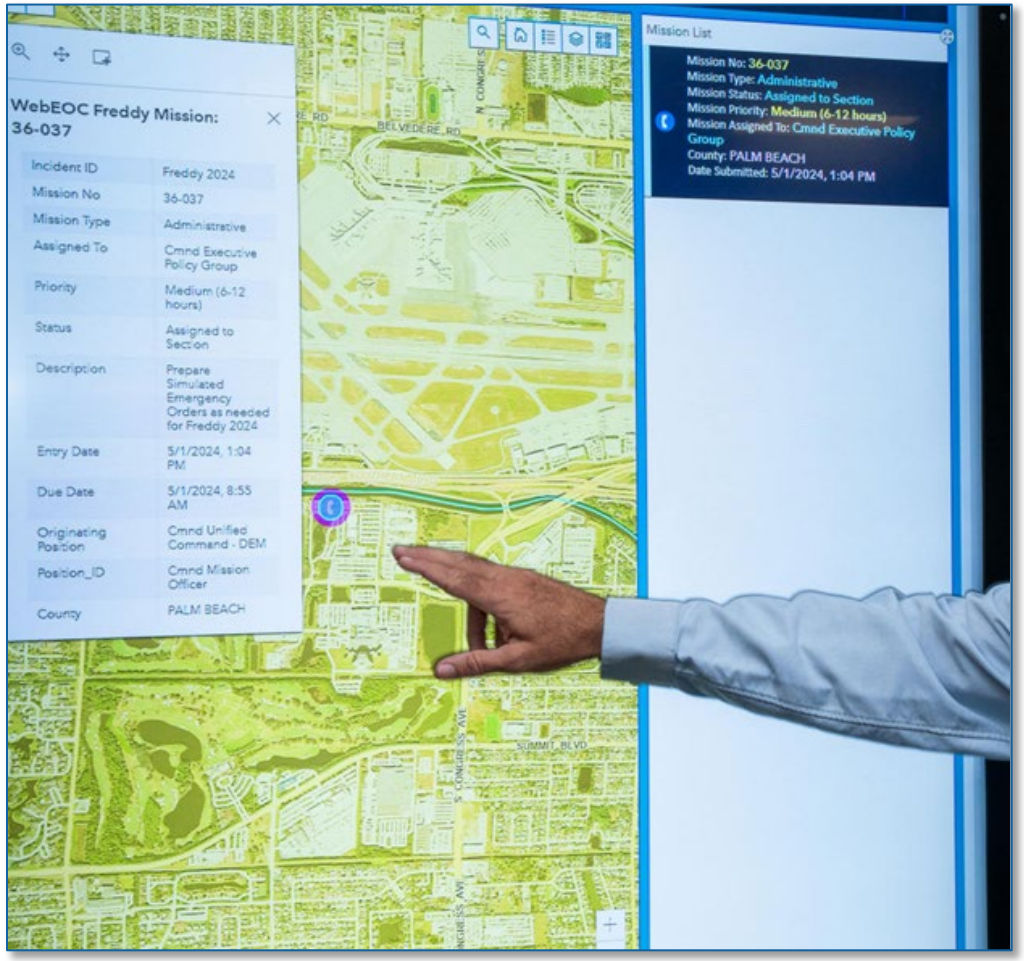


Photo Credit: SFWMD

EOC GIS Command Center

- The SFWMD's EOC GIS Command Center serves as a one-stop-shop for GIS applications and resources during an emergency event
  - Tools include web apps/maps, dashboards, QR codes for mobile mapping applications, and more

EOC GIS Command Center Other Agency Resources Geospatial Products Site

SFWMD EOC GIS Command Center

Emergency management is critical to the South Florida Water Management District's mission of managing the water resources for 8.1 million people.

Search for Data

The SFWMD EOC GIS Command Center is an ArcGIS Enterprise site that organizes the District's online mapping tools used to support emergency management operations all in one location. When the EOC is activated, GIS tools related to the event will be available in the first row for quick access.

Hurricane Milton

Both Hurricane Milton and Hurricane Helene WebEOC Missions are available on different tabs on the WebEOC Dashboard.

WebEOC Dashboard (Drone Photos, Flood O...

WebEOC Dashboard for Hurricane Milton and Helene....

SFWMD Situational Awareness

Identify infrastructure and the number of people that could b...

Live Traffic Feeds

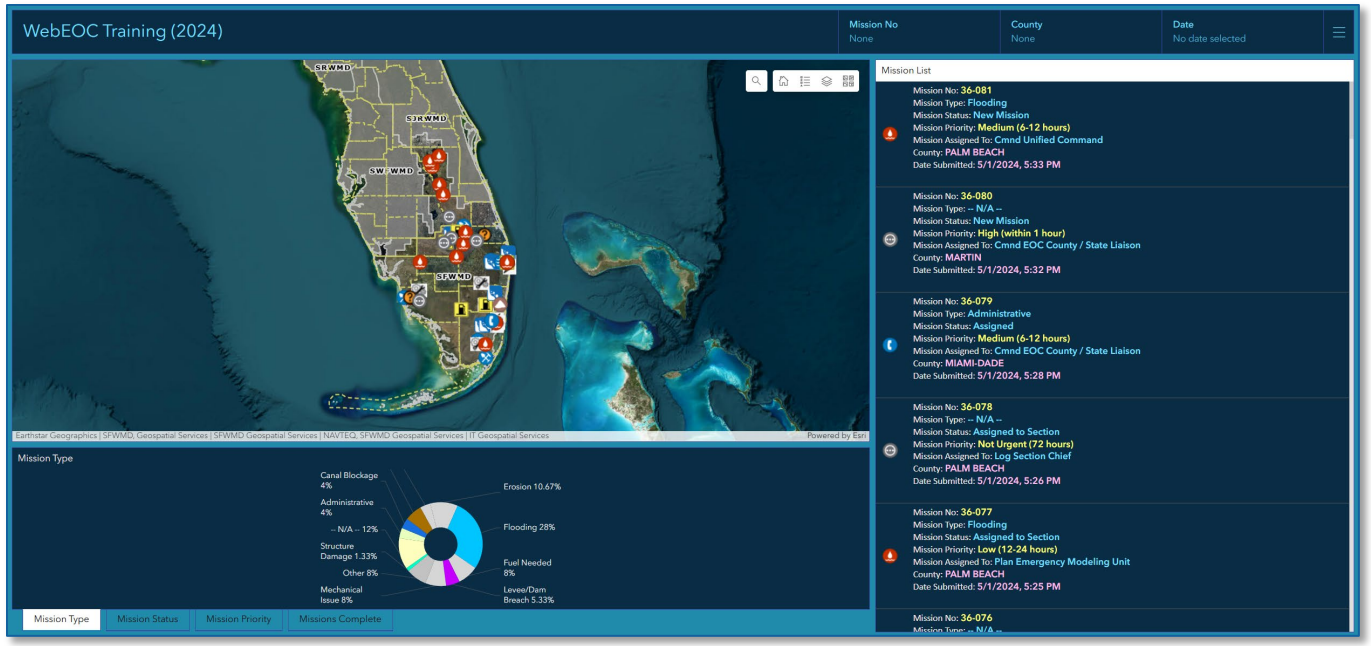
Live Traffic Feeds from FDOT/511 and World Traffic...

QR Codes for Mobile Apps

Scan the QR codes to launch the Quick Capture...

Event Dashboard

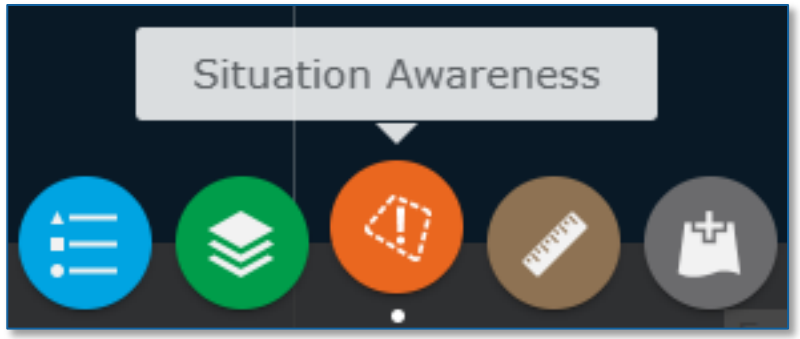
- Once a WebEOC event is created, the EOC GIS team creates a dashboard where staff can view the location of missions and further details about them, including:
  - Mission number
  - Mission type
  - Due date/time
  - Status
  - Priority
  - Description



Disclaimer: Points displayed are from testing and/or training exercises.

Situational Awareness Application

- The SFWMD Situational Awareness app gives users the ability to draw an area of interest and get information about water control structures, District facilities, demographic data such as population and housing units, cell towers, hospitals, and more, that fall within the input area
  - The resulting data can be exported as spreadsheets or PDF reports



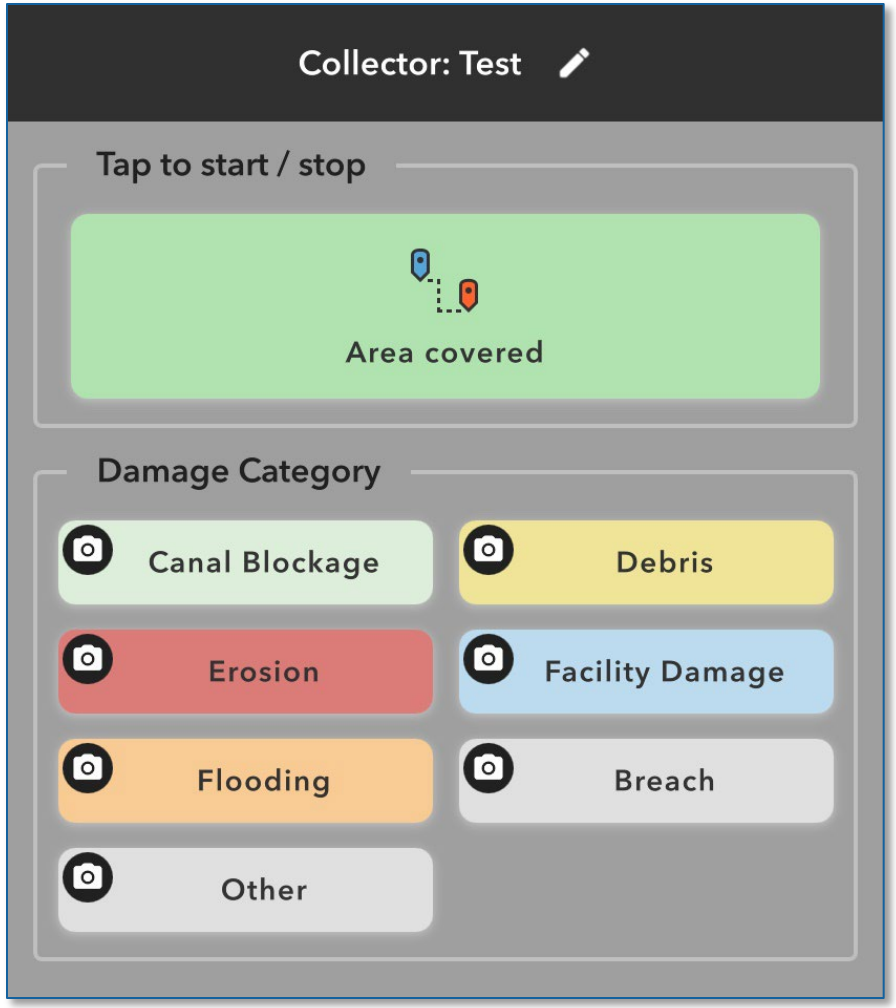
Mobile Mapping

- Mobile mapping applications make collecting geospatial data & reporting it back to staff in the EOC easier for everyone involved
  - Applications like QuickCapture, Survey123, and Field Maps can be used by staff to record & report findings in the field such as:
    - Flooding and flood concerns
    - Reported storm damage
    - Debris
    - High water marks

Esri's ArcGIS QuickCapture, Survey123, and Field Maps

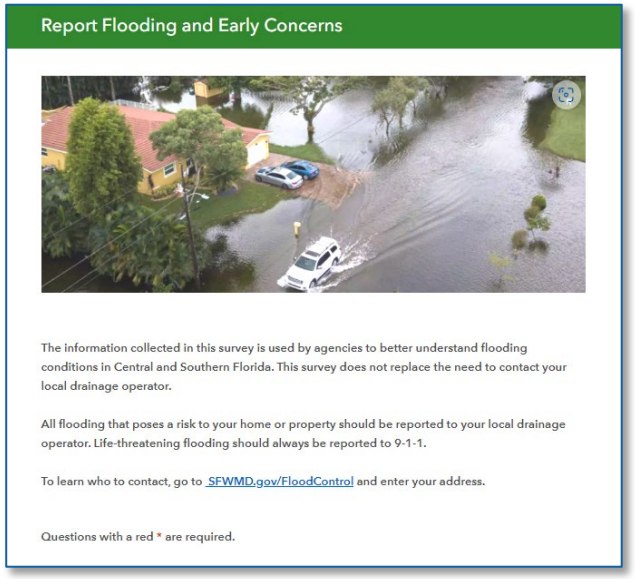
Post-Event Assessment QuickCapture

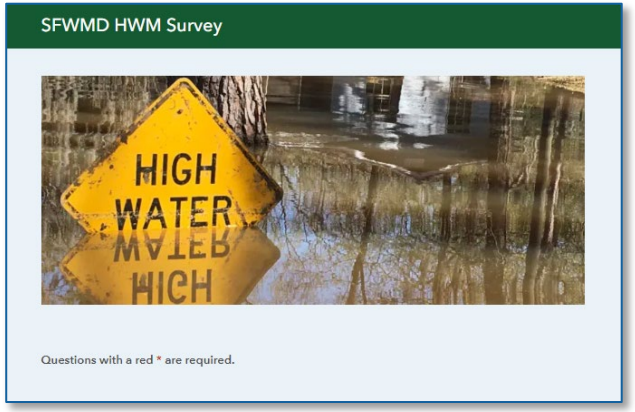
- After an event, staff can use the Damage/Flood Assessment QuickCapture to report findings back to the EOC
  - This gives EOC staff critical information about actual conditions in the field as far as canal blockages, erosion, flooding, debris, facility damage, or breaches



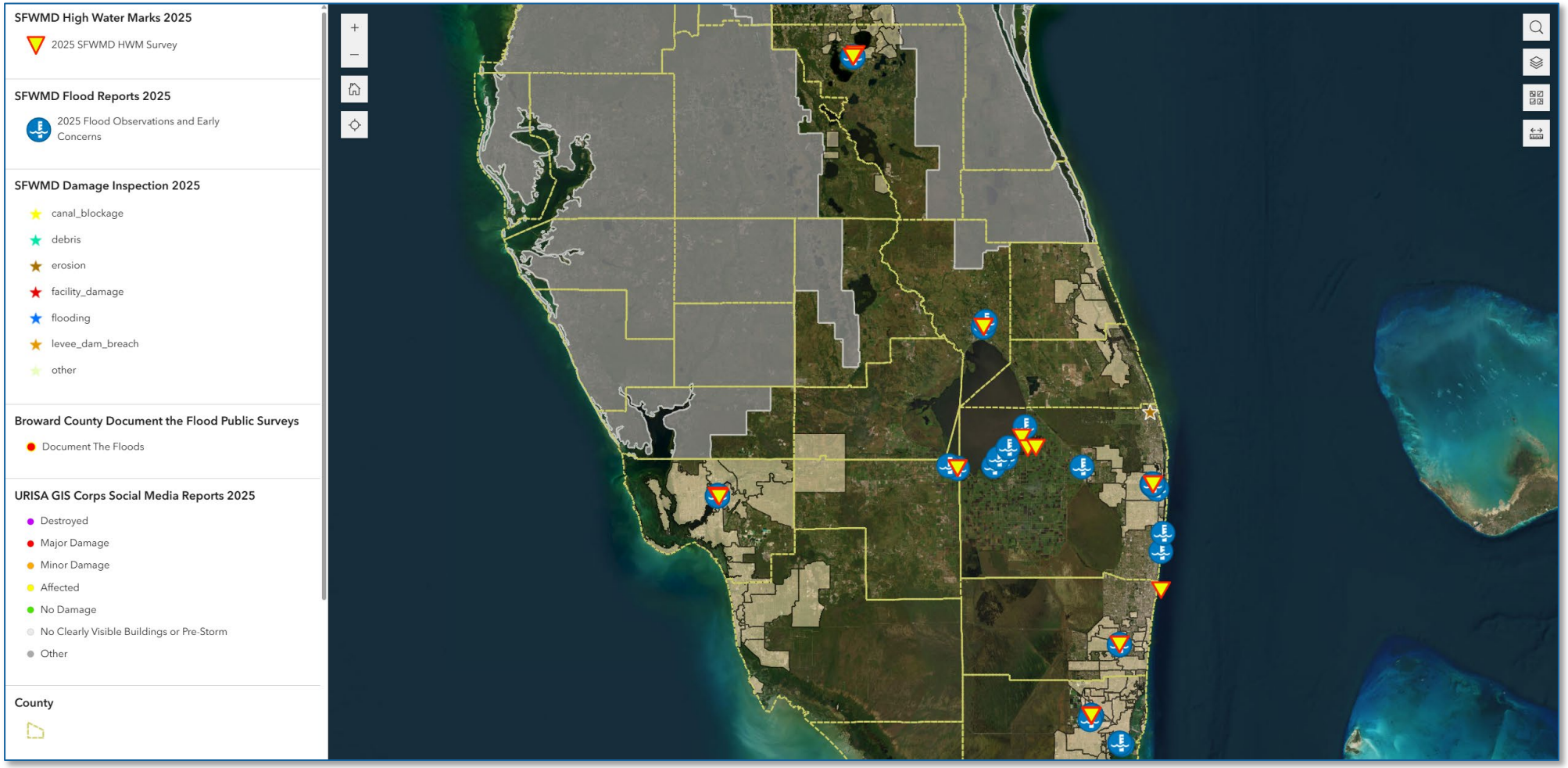
Flood/HWM Survey123s

- Flood observations and high water mark data are collected and submitted to the EOC
  - These photos and their associated data, along with the Damage/Flood Assessment QuickCapture observations, are displayed in our “Current Event Viewer,” a tool usable by our EOC staff as well as external partners





Current Event Viewer

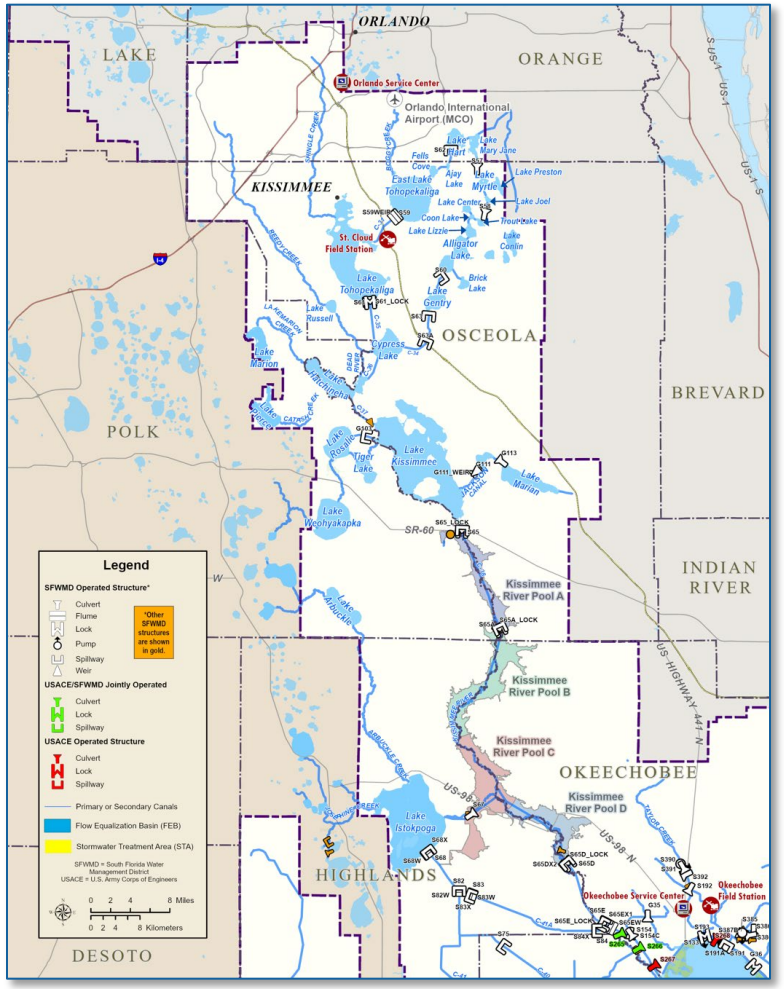


Disclaimer: Points displayed are from testing and/or training exercises.

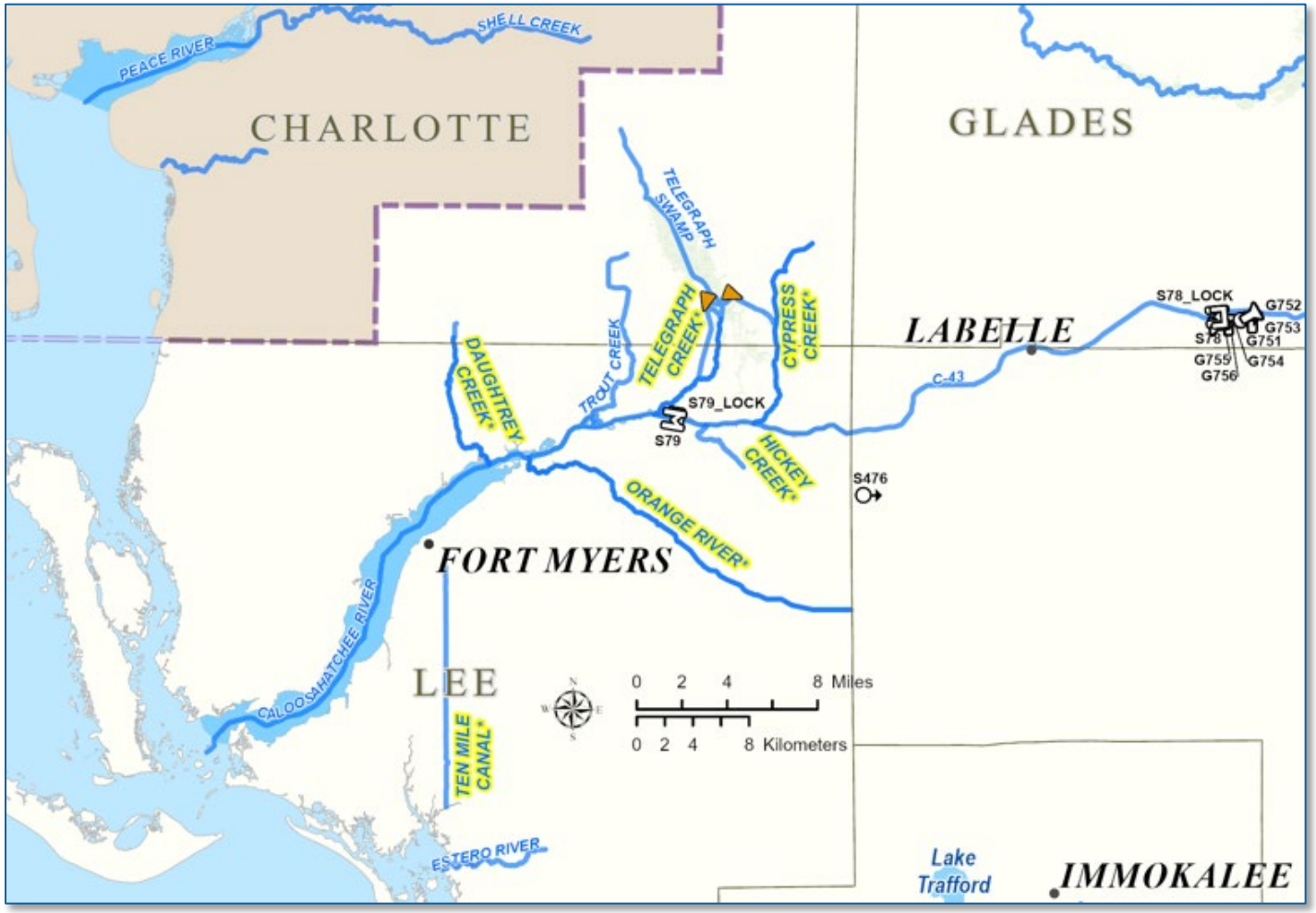
Mapping Requests

- The EOC GIS team also supports mapping requests outside of web products
  - These requests can include (but aren't limited to) maps of:
    - Infrastructure
    - Deployment locations for other staff/missions
    - Imagery using orthomosaics from drone flights
    - Debris
    - Permits & parcel ownership

Mapping Requests - Infrastructure

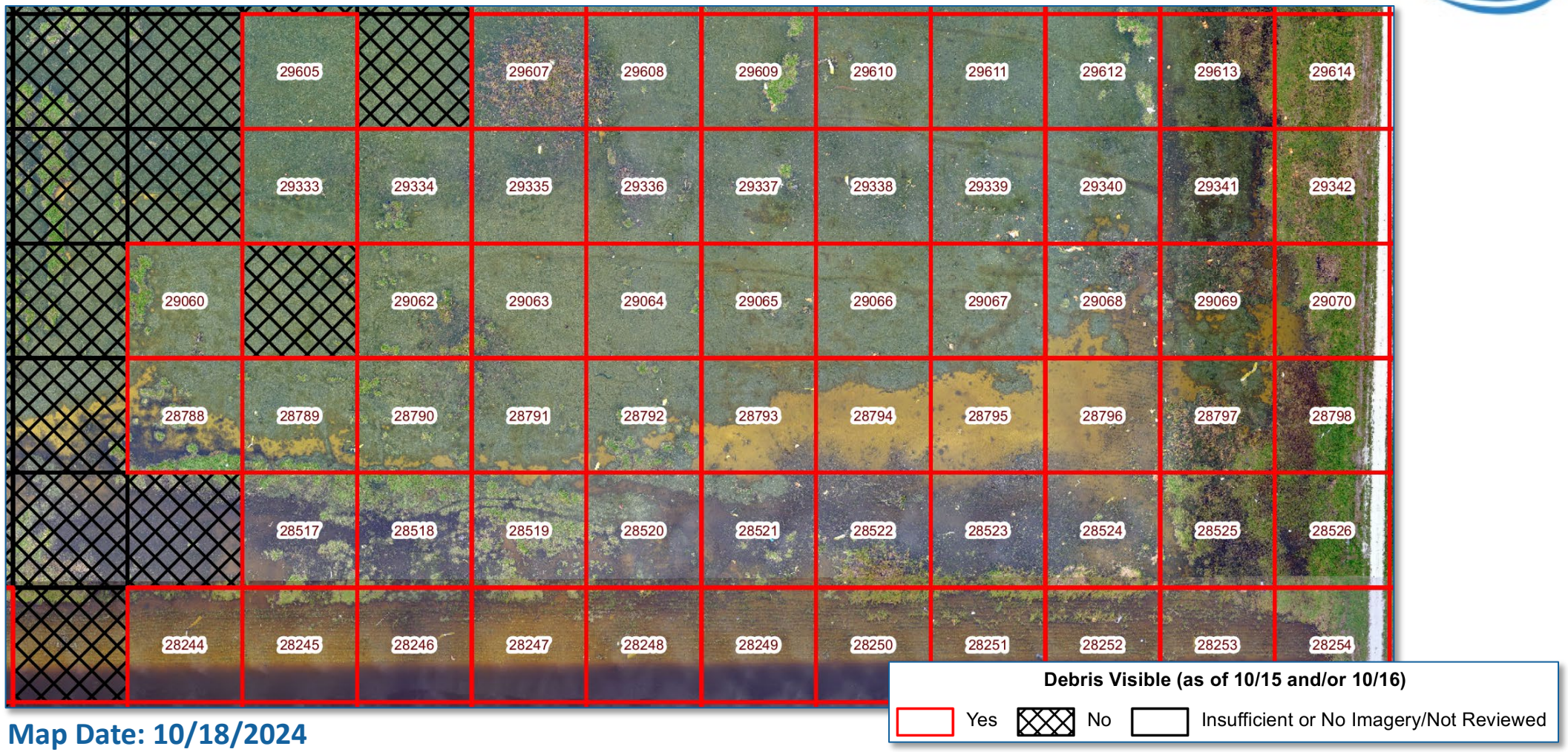


Map Date: 9/30/2022



Map Date: 10/6/2022

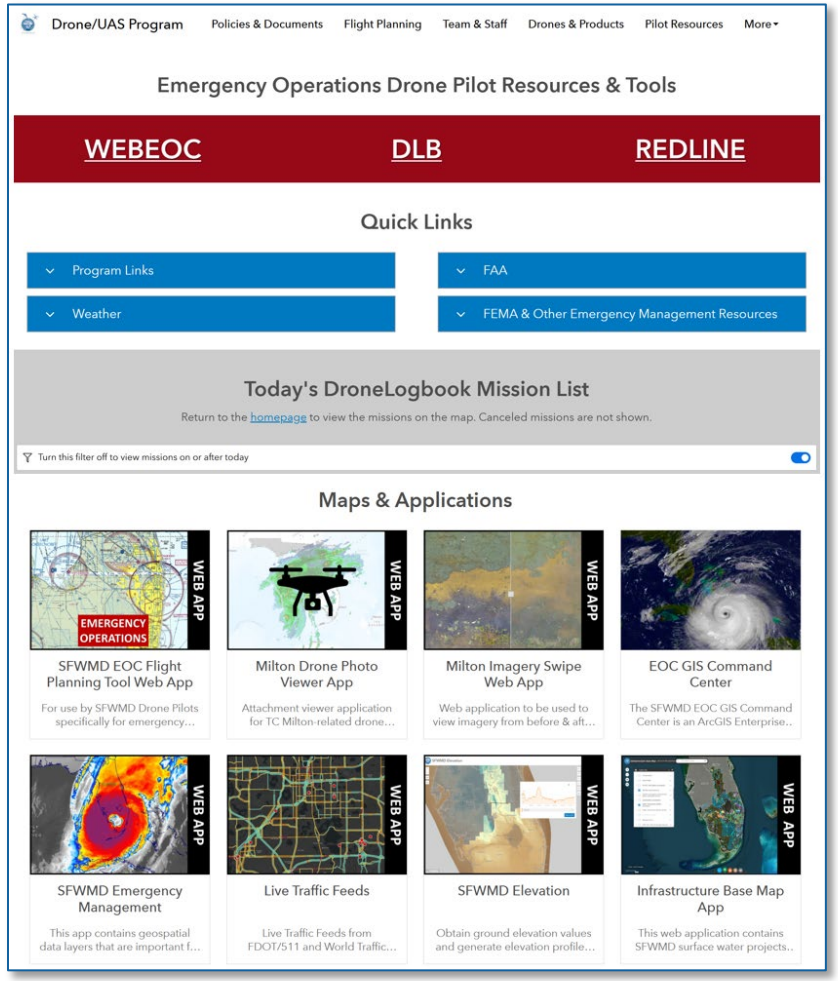
Mapping Requests – Drone Imagery



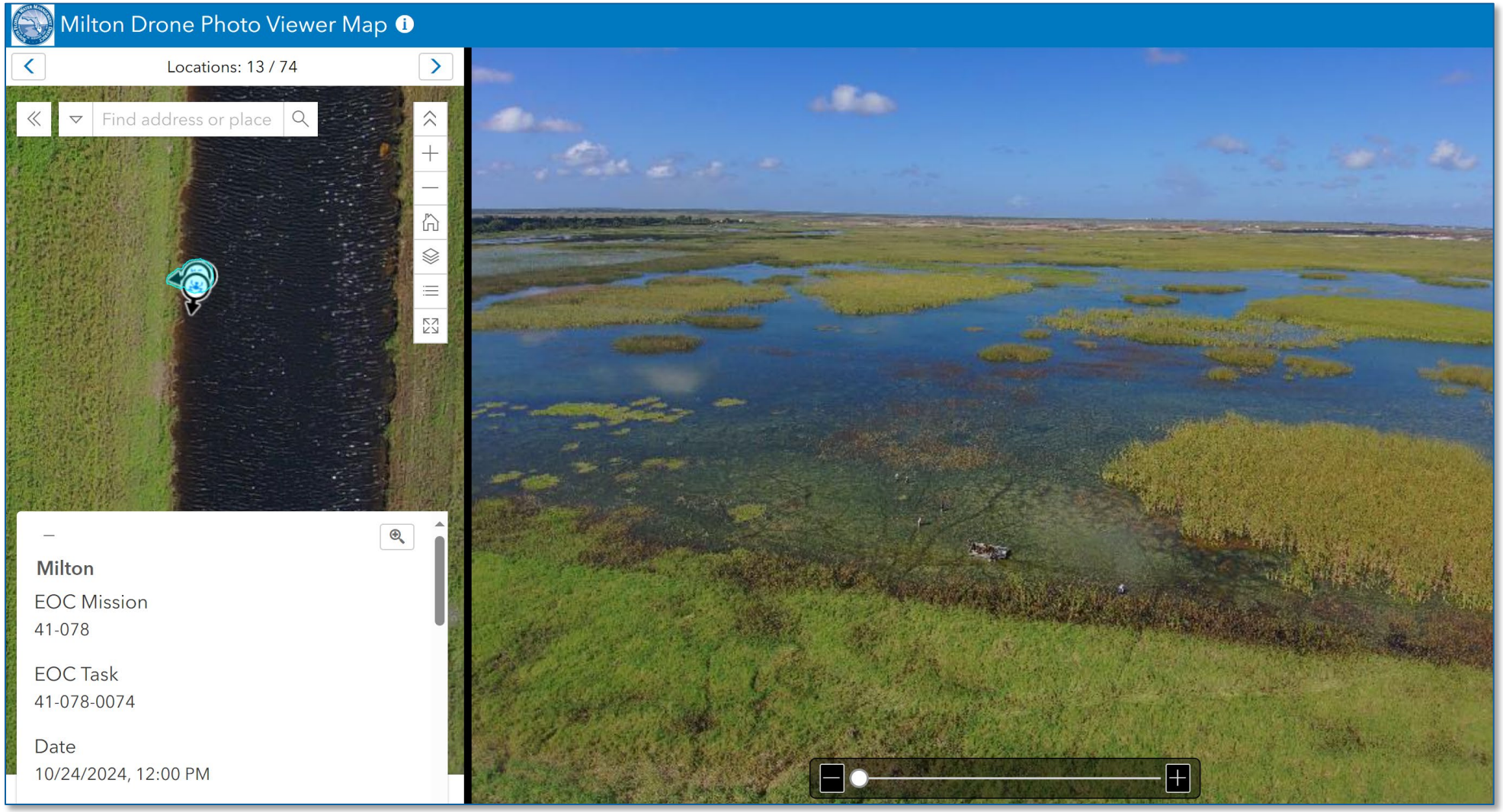
Map Date: 10/18/2024

EOC GIS & Drones

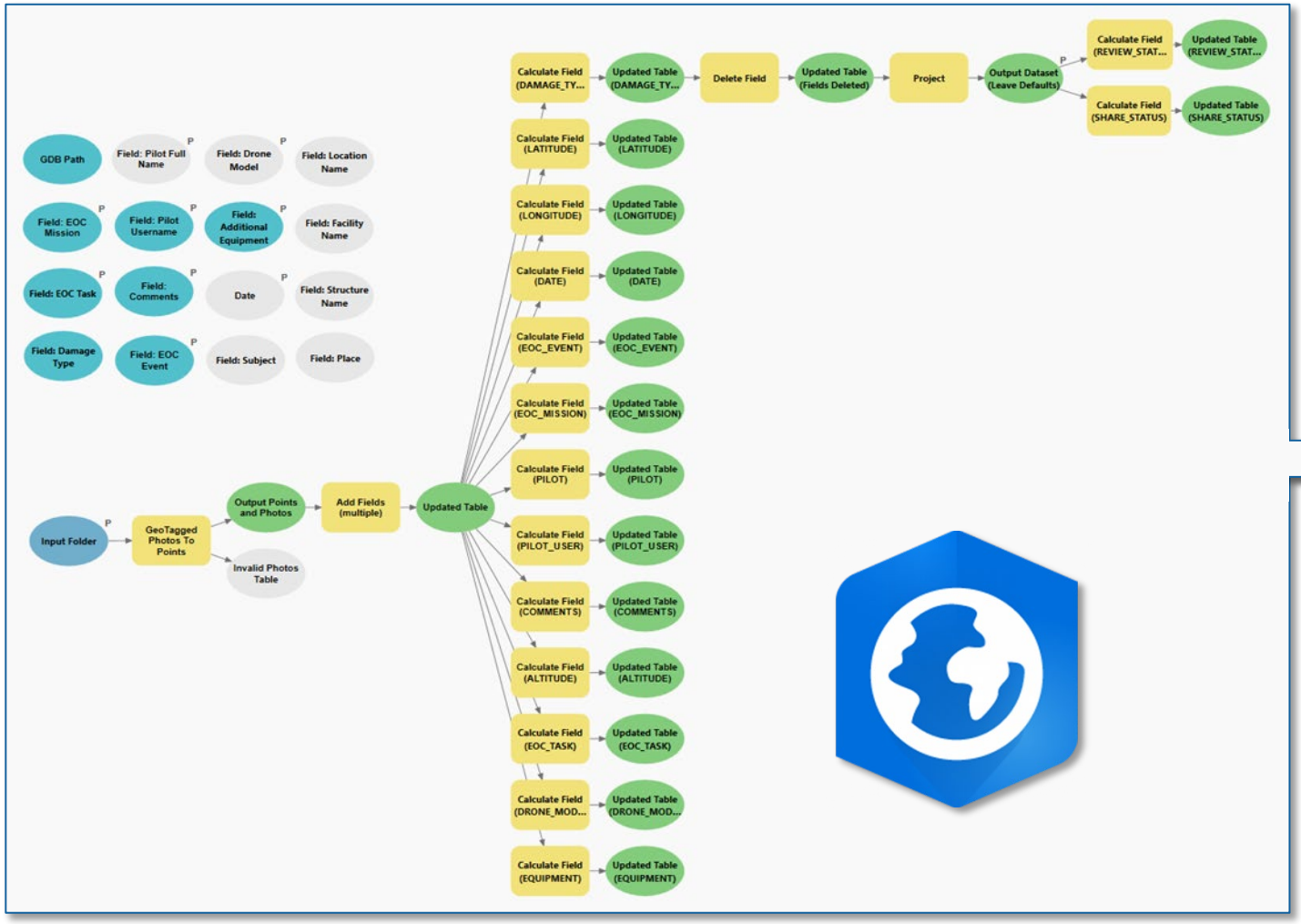
- GIS can be used to enhance drone imagery to make analysis more efficient & effective
  - The SFWMD Drone/UAS Program Homepage was built as an ArcGIS Site
  - The Emergency Operations page gives pilots & program managers access to drone-specific GIS resources & other tools, including web applications, embedded NHC hurricane forecasts, wind durations, and more

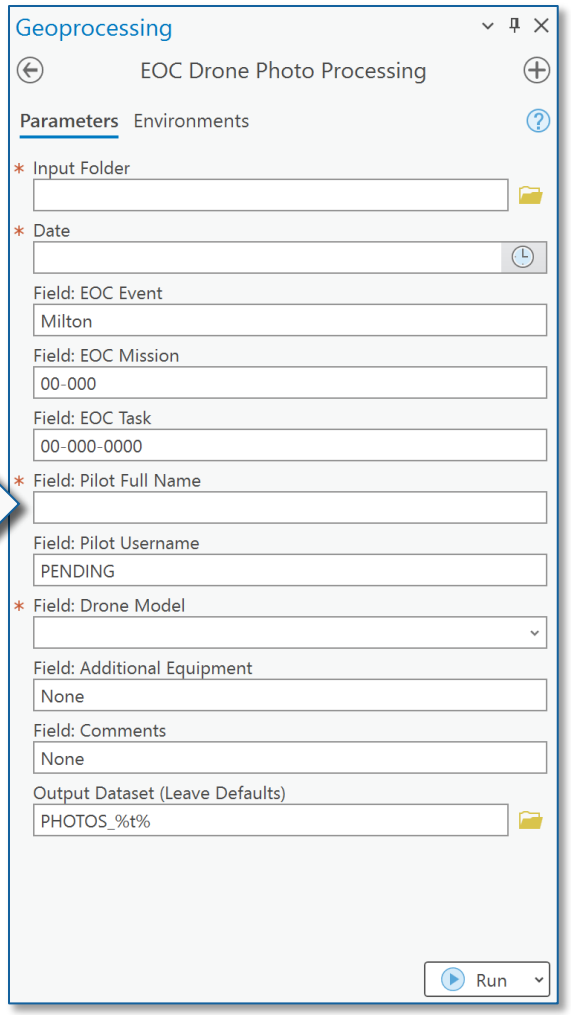


EOC GIS & Drones



EOC GIS & Drones





Questions?

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Thank You!

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SFWMD Geospatial/ Geographic Information Systems (GIS)

GOVERNOR'S HURRICANE CONFERENCE®

South Florida Water Management District (SFWMD)

Thank you

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SFWMD sUAS/Drone Program Resources List

Drones

Freefly Systems, AltaX
Freefly Systems, Astro Max
Skydio, 2+E
Skydio X10
Parrot, Anafi

Sensors

Workswell Wiris Pro (thermal)
Skydio VZ300T (thermal)
Sony LR1 – 61mp RGB
Inertial labs Resepi (LiDAR)
MicaSense Altum (Multispectral)

Software Platforms & Applications – sUAS/Drone Operations

Software Platforms

Auterion Suite/AMC
Drone Amplified
Skydio Cloud/Enterprise
Parrot Freeflight6
Pix4D
DroneLogBook

Software/Applications

FlightAware
Flight Radar24
Foreflight
AirspaceLink – AirHub Portal (B4UFly/LAANC)
ALOFT – AirAware (B4UFly/LAANC)
Skyvector.com
FAA website for NOTAMS and TFRs
ESRI ArcGIS

Hardware & Other Equipment

Communications/UAS/EOC truck
Airband Receiver/Scanner
Starlink
LiveU
Two-way radio

Depending on the mission type, the SFWMD Drone program conducts UAS flight operations under Part 107 and a Public COA.
This list contains equipment and services that the SFWMD is using or testing. SFWMD does not endorse any of these products or services.

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