



Before the Storm: Debris Management Best Practices

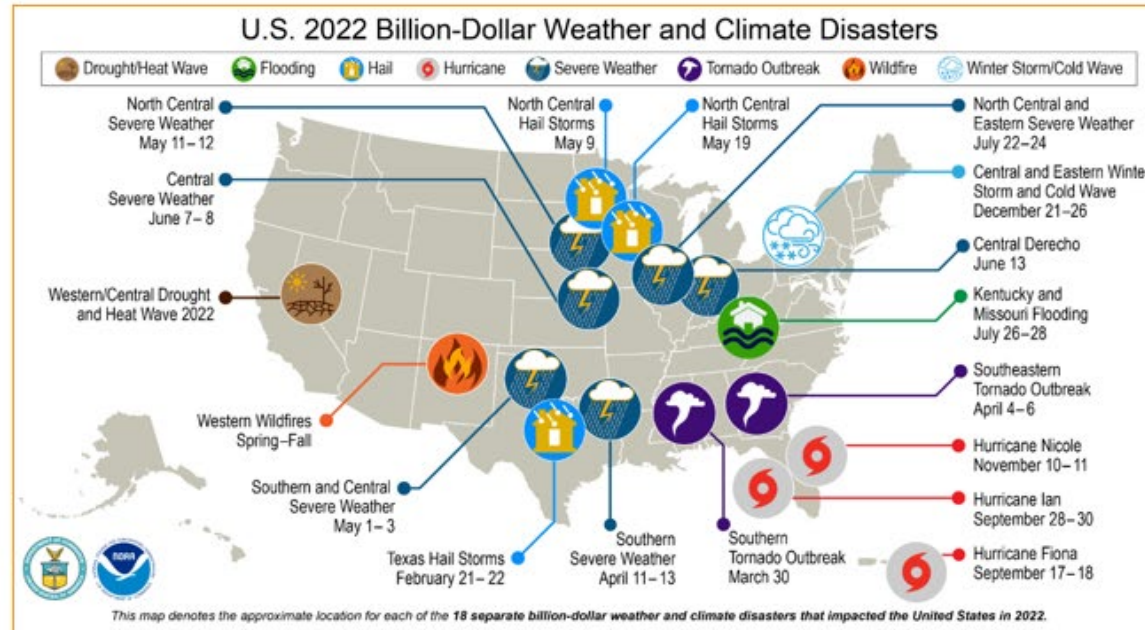


SWANA FL Winter Conference 2024

DEBRIS MANAGEMENT

It's a Big Deal ...

Climate driven disasters are not only becoming more frequent, but more costly



2022 by the Numbers

- 18 weather / climate disaster events
- 1 Flood
- 11 Severe storms
- 3 Hurricanes
- 1 Wildfire
- 1 Winter storm
- Total cost estimate \$ 165B
- 3rd most costly of all time

PRE-PLANNING



- Annual Coordination Meeting with Contract Stakeholders
- Technical Assistance and Contract Management
 - Debris Management Plans
 - Site evaluations and selections:
 - Debris Management Sites (DMS)
 - Final Disposal Sites (FDS)
 - Staging Sites
 - Recycling Sources
 - ID work priorities
 - Public Assistance Policy Updates
 - FEMA documentation
 - Personnel trainings/ Interdepartmental Coordination
 - After Action Review (AAR) and “Lessons Learned”
 - Open line of communication 365 days a year

DEBRIS MANAGEMENT PLANNING

- Disaster debris removal operations can be costly and time consuming
 - Typically 40 to 50 % of all disaster related costs are associated with debris management
- Imminent threat to public health and safety
- Impacts on landfills
- Wear and tear on roadways and bridges
- Debris operations and documentation places additional burden on staff and resources
- Federal regulations must be followed



DEBRIS MANAGEMENT PLANNING

- Plan for major impacts
 - Weather driven natural disasters are becoming more frequent and more costly
 - 2022 was 3rd most costly year in history with \$165 billion in damages
- More intense weather disasters require more specialized debris removal - not just vegetative / C&D
 - White goods, e-waste, and HHW
 - Sand, soil, and mud
 - Standing dead trees (drought, saltwater intrusion, root damage)
 - Abandoned vehicles and vessels
 - Ash
 - Private property debris removal and demolition
- Special debris types may require advanced approval from local, state, and federal regulatory agencies





Pre-Positioned Contracts



Establishing New Best Practices

STEP 1

Competitively solicit and award contracts for:

- Disaster Debris Management
- Debris Monitoring



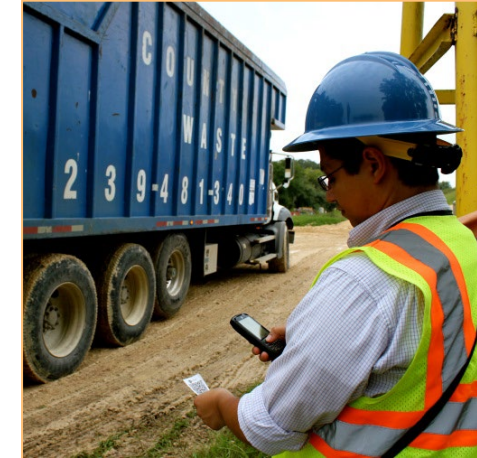
PRE-POSITIONED CONTRACTS

- **Primary Driver of Operational and Administrative Project Success**
- Continual Coordination and Refinement of Pre-Planning Frameworks
- Operational and Administrative planning that account for:
 - ✓ Complex operational environments unique to each contract activation and geographical work area
 - ✓ Evolving Environmental and Historical Considerations
 - ✓ Potential resource needs
 - ✓ Administrative requirements such as:
 - Documentation and Invoicing
 - Regulatory Compliance
 - Public Information & Outreach



PRE-POSITIONED CONTRACTS

- Time and Materials Contract
 - May be used during response phase for time and materials
 - Hourly rate for labor equipment and materials
 - Flexible for emergency response operations
- Unit Price Contract (ton, cubic yard, tree)
 - Work is known but exact quantity is unknown
 - Flexible performance basis for contractors
 - Must be monitored closely
- Lump sum contract
 - Work and quantity are known
 - Easy to manage, determine when work is complete



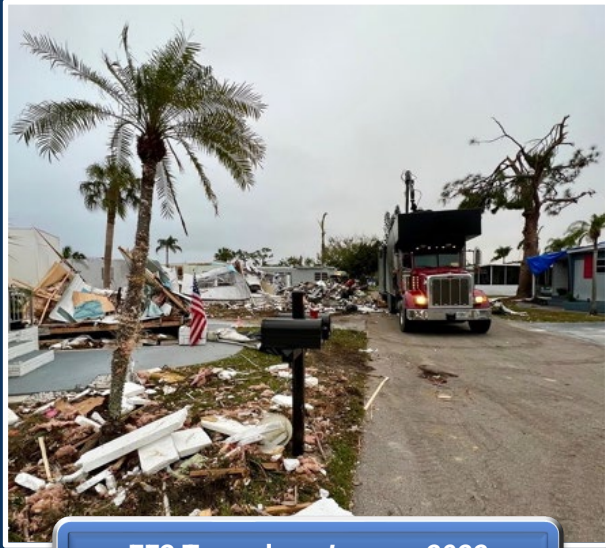
Tip: Review hauler contracts and ensure pricing for special debris types / waste streams are included

PRE-POSITIONED CONTRACTS: PLANNING LIFE CYCLE



- **Efficient debris removal and disaster recovery missions begin on blue sky days**
- Stakeholders are vested from Day 1 in pre-planning and preparing for a severe weather event
- Comprehensive planning efforts include all aspects of debris removal operations, administrative requirements, and should be scalable to all levels of project size and scope
- Unique operational considerations specific to geographical area are identified and integrated into operational capacity/ capability and debris management planning, including current PA Policy Guidelines
 - ✓ *Example: Coastal Barrier Island Communities vs. Inland Rural Communities vs. Heavily Developed Urban Communities*
- These considerations extend to Environmental and Historical preservation and compliance

PRE-POSITIONED CONTRACTS: PLANNING LIFE CYCLE



EF2 Tornado – January 2022
Fort Myers, Florida



- Strong working relationships are fostered by continued blue sky coordination and successful past performance, allowing stakeholders to:
 - Implement After Action Reviews & “Lessons Learned” from past events
 - Integrate expanding Public Assistance Policy & implement necessary measures
 - Ensure compliance with evolving Environmental and Historical considerations
 - Review and Assess current DDMS inventory and identify new sites
 - Augment planning frameworks with Interlocal Agreements and expanded coordination
 - Refine internal process and streamline communication with assigned POC’s at all levels from field operations to leadership
 - Consistently account for factors such as population growth, expansions to work areas, and proactively plan for events of all scale based on the current operational environments that comprise the broader geographical area

Incorporate Solid Waste

Establishing New Best Practices

STEP 2

Incorporate Solid Waste
curbside collection into your
planning



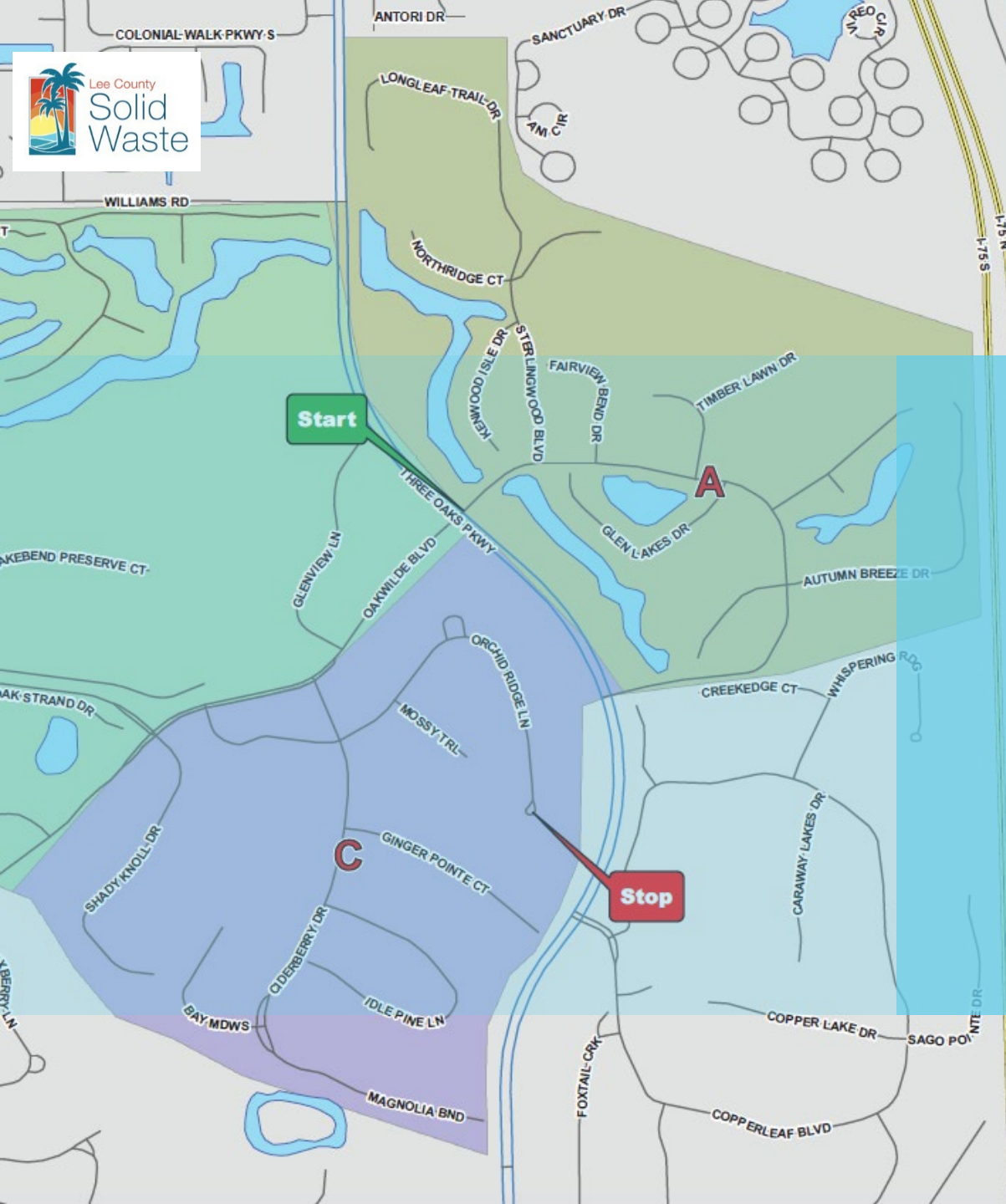
Establishing New Best Practices

Plan Ahead With Your Franchise Haulers

- Review your Franchise Haulers disaster plan
- Establish Post Storm expectations
 - Communications
 - Prioritized MSW
 - Suspended YW & REC
 - Anticipate lost equipment (carts, dumpsters, trucks)

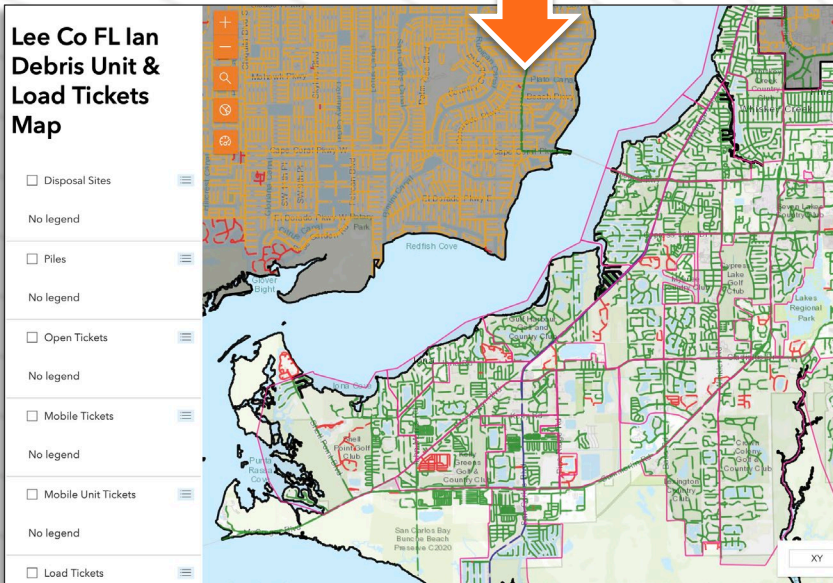
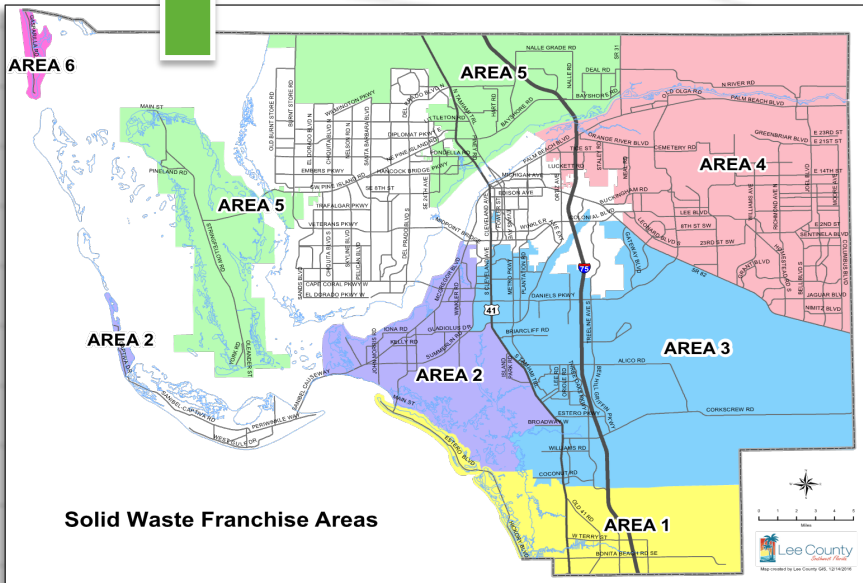
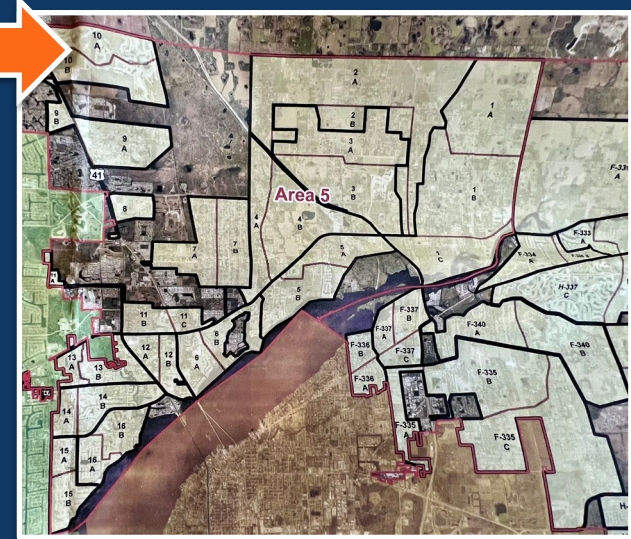
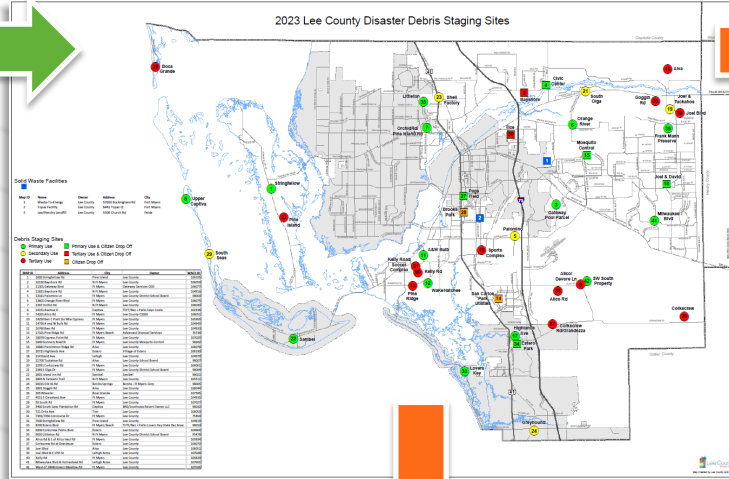
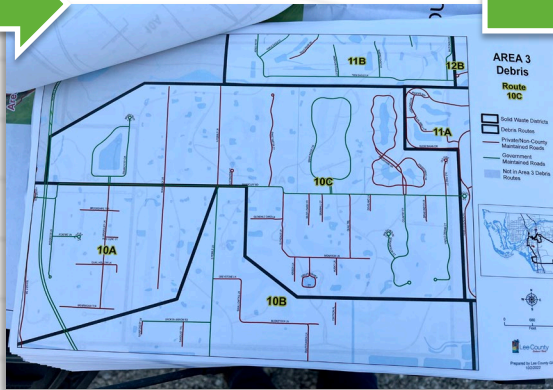


Establishing New Best Practices



- MSW routes are designed to:
 - Maximize efficiency
 - Account for windshield time
 - Balance house count (points of collections)
- GIS shape files can be used to quickly create a public dashboard

GIS BEST PRACTICES



GIS BEST PRACTICES

Lee Co FL Inland Debris Unit & Load Tickets Map







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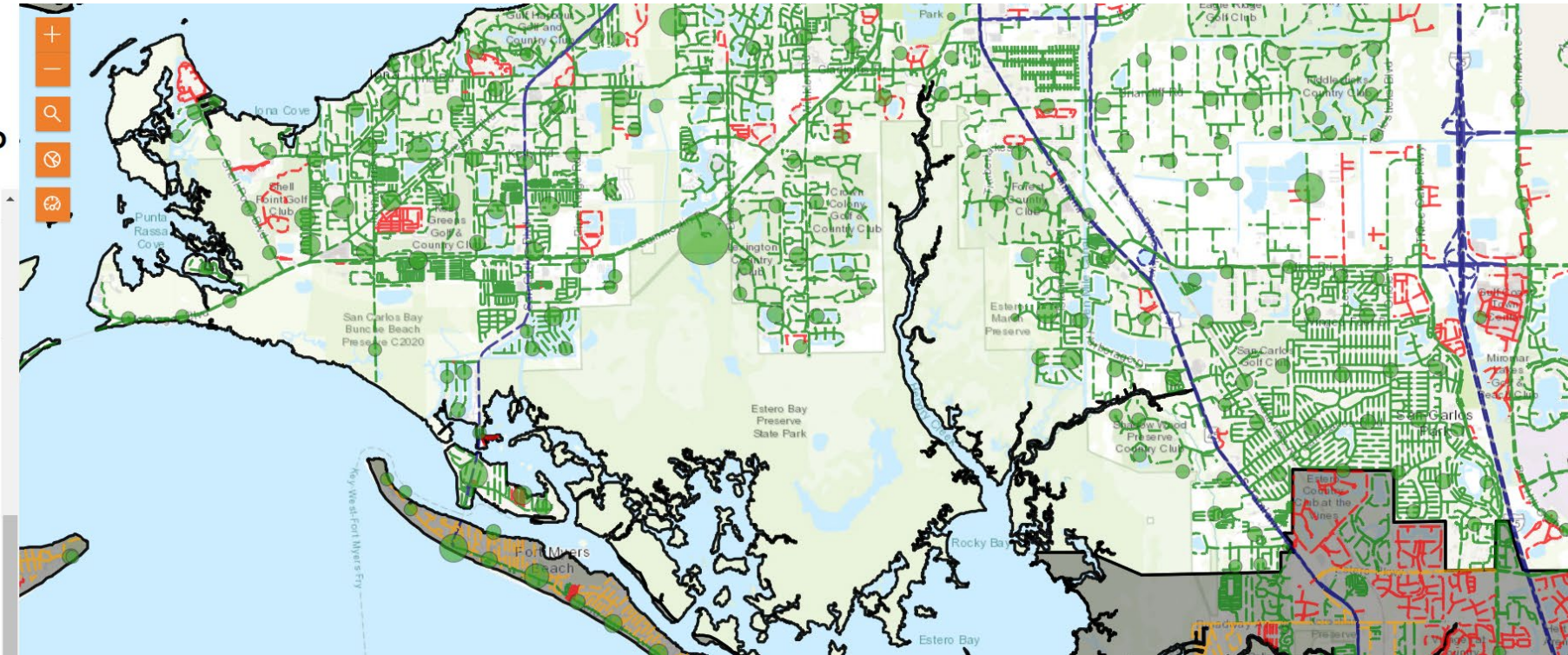
Zones

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Roads

Road Owner Type

-  Municipality
-  County
-  State
-  Federal
-  Private
-  Other



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Tip: Understand your maintenance responsibilities including gated communities and private roads

Disaster Debris Management Sites

Establishing New Best Practices

STEP 3

Search the county for potential disaster debris management sites and then map them out.





Establishing New Best Practices

Lee County Disaster Debris Management Sites

TIP:
Find land close enough to residential areas to make collection practical for debris contractors but not so close that you get neighborhood push back (NIMBY).



Establishing New Best Practices

Lee County relies on the generosity of land owners.

17 of the 45 sites for 2024 are not county owned.



A BIT OF HISTORY

Pre-Hurricane Irma 2017

7 – 10 Sites

identified for storm debris management



A BIT OF HISTORY

Pre-Hurricane Ian 2022

36 Sites

identified for storm debris management



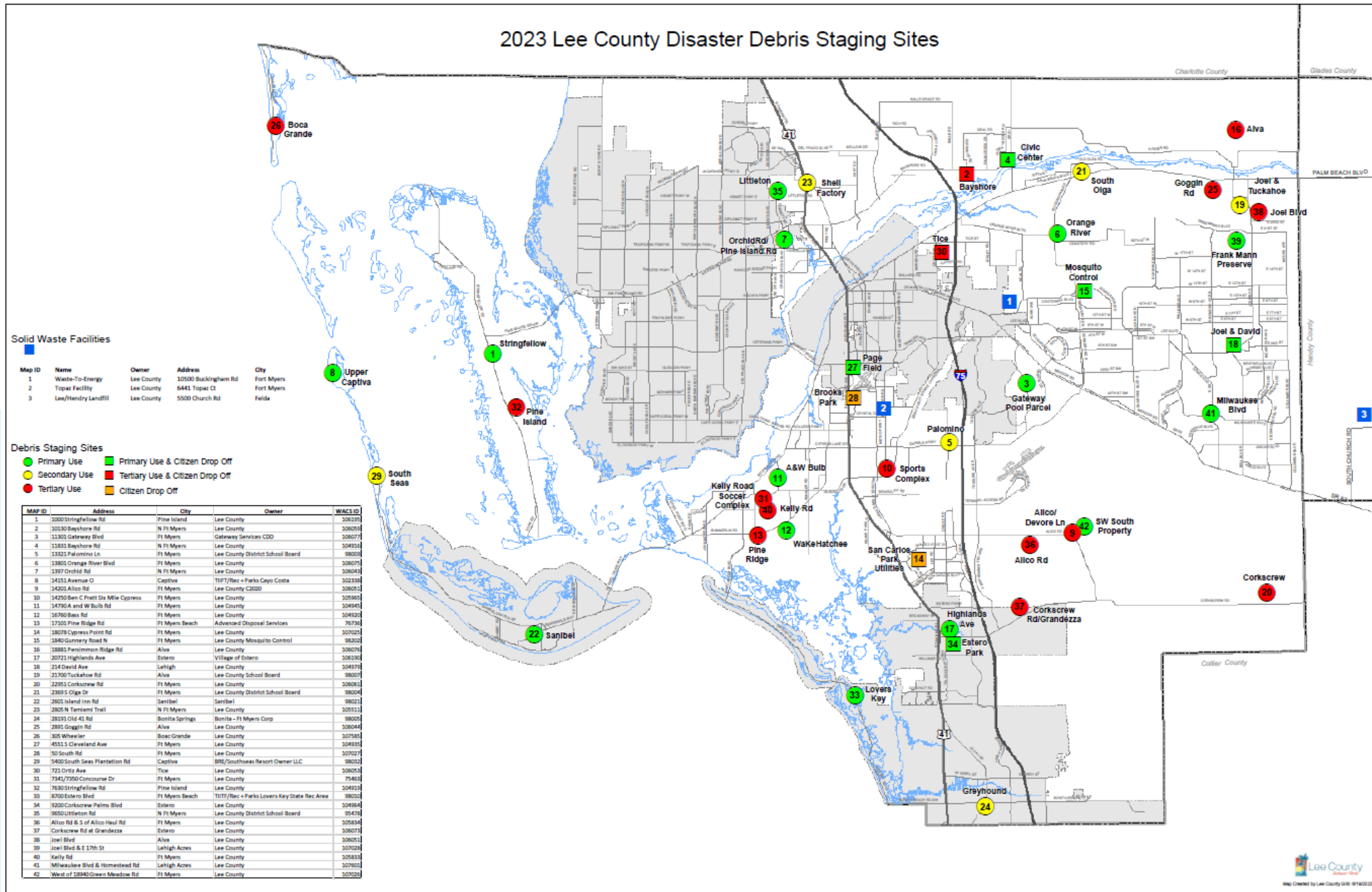
Present

Pre-Hurricane Season 2024

46 Sites

identified for storm debris management

2023 Lee County Disaster Debris Staging Sites



DEBRIS MANAGEMENT SITES – HURRICANE IAN

LEE COUNTY, FLORIDA

- **36 DDMS Inventory**: Pre-authorized by the Florida Department of Environmental Protection (FDEP), FEMA EHP Compliant, Soil Samples taken upon NTP
- **Additional Sites** available through Interlocal Agreements (ILA) with municipalities
- **18 DMS** utilized for debris collection in unincorporated Lee County
- **Private sites** utilized by CrowderGulf integrated into debris management planning post-Ian
- **3 DMS** received, managed, and reduced over 1 million cubic yards of debris
- **Lee County Solid Waste DDMS framework** supported debris operations for:
 - School District of Lee County (SDLC) – **1 DDMS**
 - Lee County Natural Resources Waterway Debris Removal (FEMA, NRCS) – **3 DDMS**
 - Florida Division of Emergency Management (FDEM) – PPDR/ CPDR/ Title Property – **6 DDMS**
 - City of Sanibel, Town of Fort Myers Beach, Village of Estero, and City of Bonita Springs – **4 DDMS**

DEBRIS MANAGEMENT SITES



Lee County DDMS – Hurricane Ian



Foster Relationships

Establishing New Best Practices

STEP 4

Establish and Strengthen
stakeholder relationships.



Who are your stakeholders?

- **Municipal Partners**
- **Elected Officials**
- **Emergency Management**
- **FDEP (certifies the sites)**
- **Procurement Management**
- **Parks and Recreation, Conservation 20/20**
often provides emergency DDMS at parks and preserves
- **County Lands**
helps identify landholders and secure property leases
- **GIS**
- **DOT**
- **Vendors**
- **Volunteer Organizations**
- **Residents**

Training

Establishing New Best Practices

STEP 5



Conduct Annual Training/Meeting
with Stakeholders



Establishing New Best Practices

Nurturing a good relationship builds trust.

PRE-PLANNING: PRIORITY OF WORK

- High level identification and coordination of work priorities with contract stakeholders including:
 - Establishing **direct points of contact** for ground-level coordination of operations pre and post-event
 - Clearly define stakeholder and interdepartmental roles and responsibilities
 - Integrate updates in Public Assistance Policy with operational planning and current debris management plan
 - Identify Primary, Secondary and Tertiary sites:
 - ✓ Debris Management Sites (DMS)
 - ✓ Final Disposal Sites (FDS)
 - ✓ Staging
 - ✓ Recycling

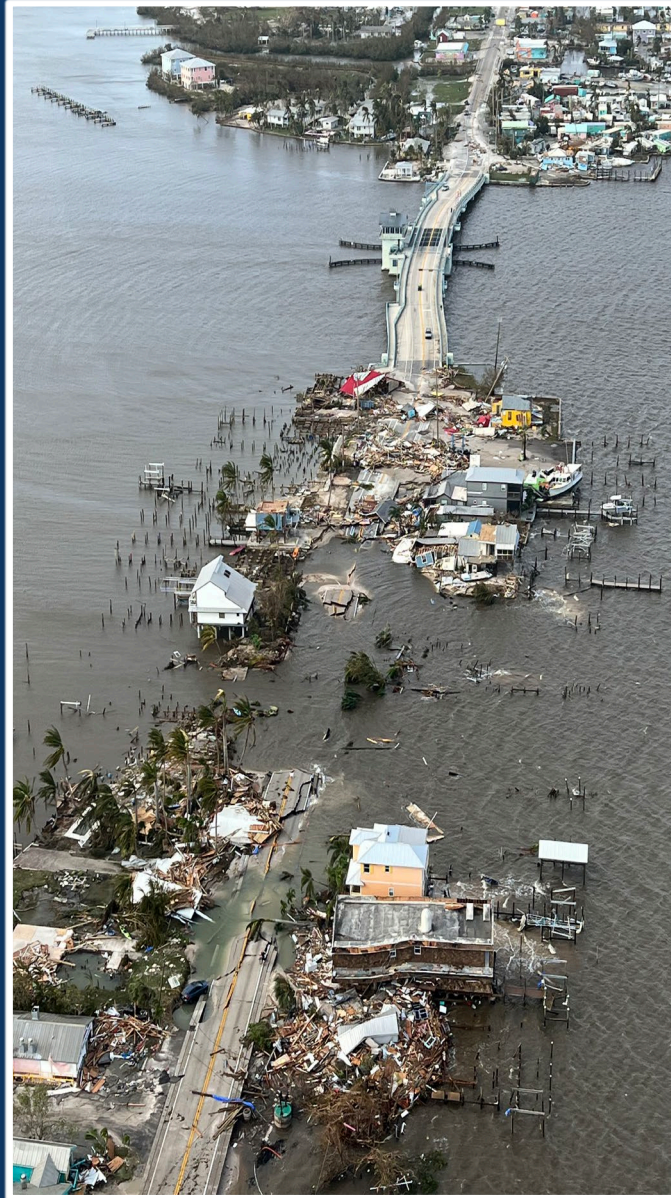
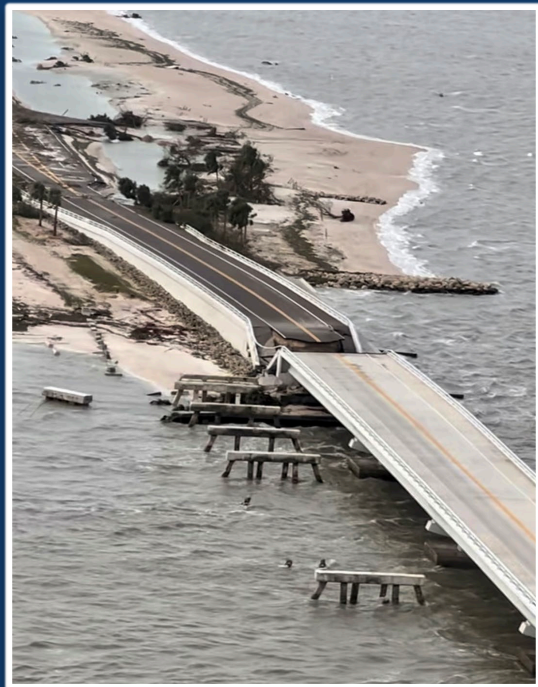


POST-EVENT: PRIORITY OF WORK



- Ground-level coordination between stakeholders and Project POCs
- Clearly defined roles and responsibilities set in pre-planning allow for execution of assigned duties while remaining adaptable to emergent challenges
- Open communication and interdepartmental coordination fosters proactive problem solving and highly coordinated, safe, and efficient operations
- Established Pre-Planning Frameworks serve as the foundation of response

HURRICANE IAN – SPECIALIZED SCOPES



- Full-scale Barge Operations
- Specialized Emergency Road Clearance
- **Over 150,000 cubic yards** of Concrete removed throughout Lee County (**approx. 300,000 tons**)
- Extensive HHW, E-Waste, and White Good collection and Disposal
- Hundreds of Schools, Parks, and Facilities
- Sand Screening and Beach Debris Removal
- Asbestos Containing Material (ACM)
- FDEM – PPDR/ CPDR/ Title Property

A map of Florida showing the path of Hurricane Ian. The hurricane is depicted as a blue and white storm system moving from the Gulf of Mexico towards the Florida coast. The map uses a color scale from green to red to indicate the intensity of the storm's impact. Major cities are labeled: Sanford, Orlando, Sarasota, Fort Myers, Fort Pierce, West Palm Beach, and Miami. A white banner at the top of the map contains the text 'IAN AT LANDFALL'.

IAN AT LANDFALL

HURRICANE IAN

Cayo Costa, Florida
September 28th, 2022

- *Category 4*
- *150 mph Winds*
- *18 ft Storm Surge*

12+ MILLION

CUBIC YARDS REMOVED ACROSS
LEE COUNTY

6.3 MILLION

CUBIC YARDS REMOVED FROM RIGHTS OF WAY THROUGHOUT
UNINCORPORATED LEE COUNTY

19+ MILLION

CUBIC YARDS REMOVED STATEWIDE

Key Messages

- The aftermath of a storm event is not the time to figure things out. Be prepared.
- Foster stakeholder relationships early and frequently.
- Build trust through communication.