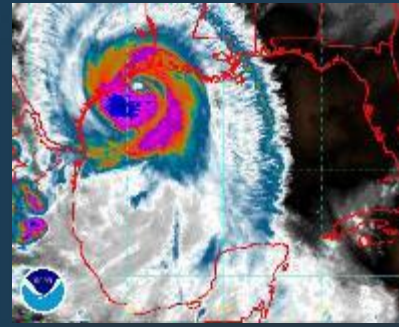


H-GAC 2019 Webinar/Workshop Series



The Effect of Disaster Debris on Landfills

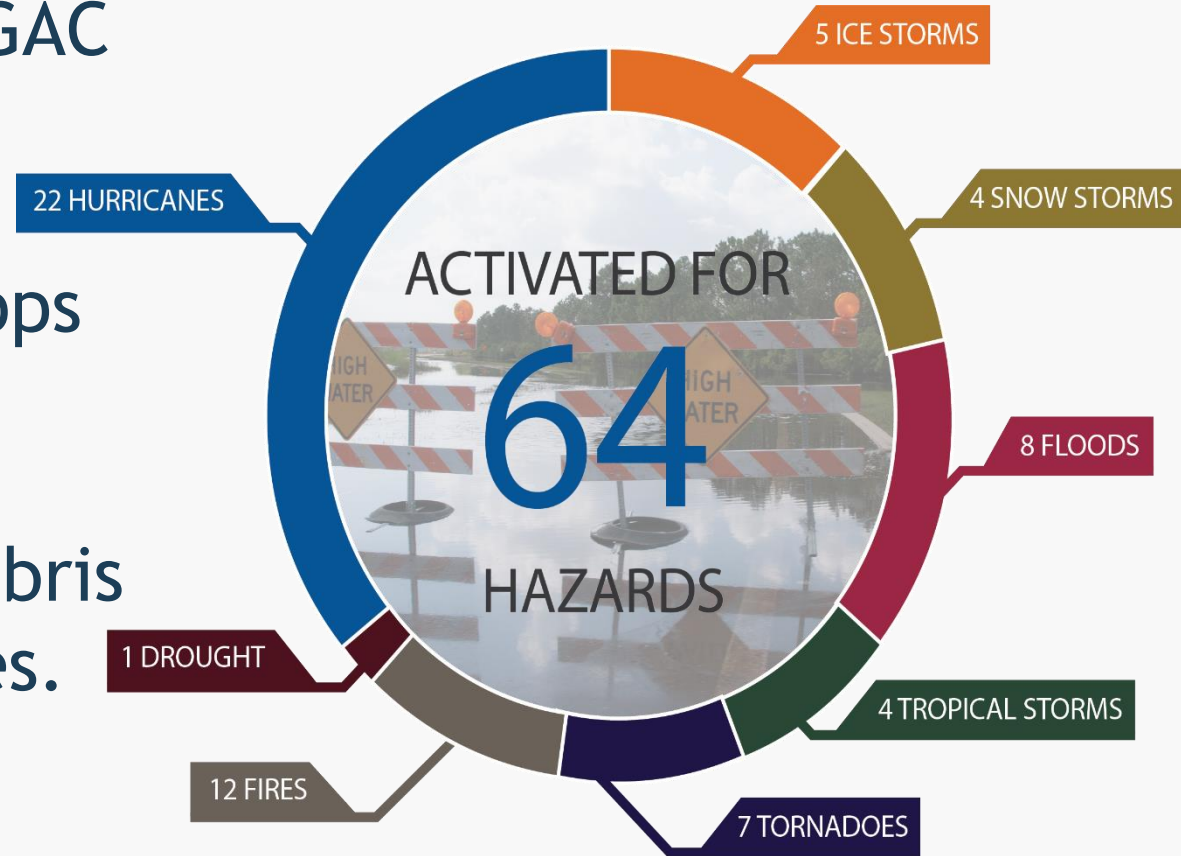
SOLID WASTE MANAGEMENT COMMITTEE MEETING:

OCTOBER 23, 2019





- A partner with H-GAC for over 17 years.
- Have conducted numerous workshops and webinars to educate regional stakeholders in debris management issues.

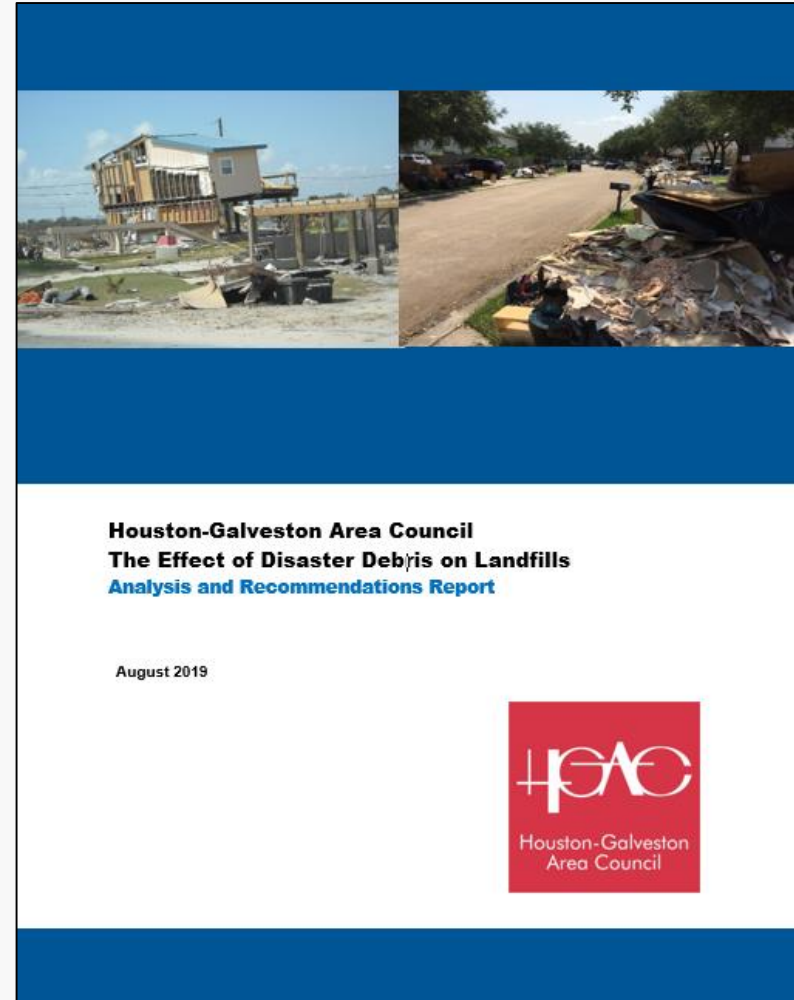


Past Webinar and Workshop Topics

- Concepts for Disaster Debris Management
- Understanding State/Federal Debris Operations
- Working with Regulatory Agencies
- Debris Disposal Methods
- Financial Realities of Debris Operations
- Planning for Special Debris Operations
- National Communication Plan Workshop
- Regional Debris Management Workshop
- Risk and Vulnerability Workshop
- Federal Reimbursement Programs
- Debris Preparedness and Immediate Response
- Long Term Debris Management and Recovery
- Changes in Legislation
- Debris Management Documentation
- Funding Sources and Mitigation Opportunities
- Accounting Procedures and Best Practices
- No-Notice Events
- Utilizing Volunteer Resources
- Social Media
- Mitigating Your Hazards
- Changes in Disaster Debris Management
- New Technology in Debris Management
- Debris After-Action Reporting
- Life After Harvey
- Short Term Debris Operations
- Long Term Debris Operations
- Debris Estimation
- Contracting and Procurement
- Public Information
- Funding Sources
- Mitigation
- Long Term Recovery
- Preparedness for Debris Operations
- Wildfire, Tornado and Terrorism Debris Operations
- Effects of Disaster Debris on Local Landfills
- Report of the Governor's Commission to Rebuild Texas
- Recent Changes in Regulations, Guidance, and Legislation
- Lessons Learned and Trends in Debris Management

Purpose of the Report

- Analyzes the effect that disasters and the resulting quantities of debris can have on the lifespan of landfills and what can be done to minimize those effects.



Cities Highlighted in the Report

- The report highlights the experiences of the cities of Dickinson, Friendswood, and League City in response to Hurricanes Ike and Harvey.
 - Representative of midsize communities in the region.
 - Each are vulnerable to the same hazards.
 - Each suffered severe impacts from Hurricanes Ike and Harvey.

Hurricane Ike

- September 13, 2008
- Strong winds
- Moderately heavy rainfall
- Strong storm surge
- Much vegetative debris
- Roof/structure damages
- >80% vegetative debris

Hurricane Harvey

- August 25 - 30, 2017
- Moderate winds
- Severe flooding rains
- Moderate storm surge
- Very little vegetative debris
- Flood damage
- Most all C&D. Very little vegetative debris.

**Both hurricanes but with very different effects in the
Houston – Galveston Area**

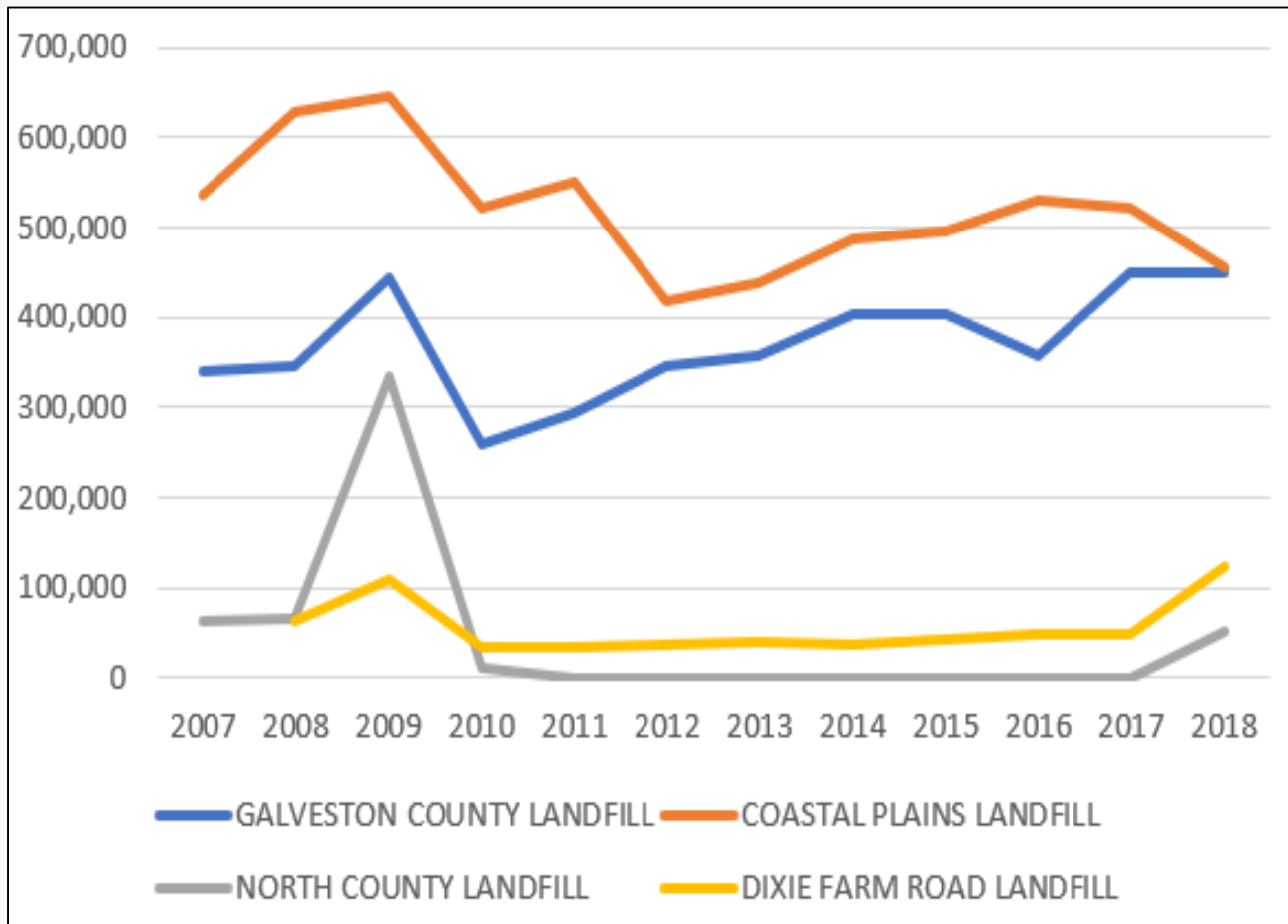
Hurricane Ike

- Dickinson 217,052 CY
 - Veg taken to mulch vendor
 - C&D hauled to landfill
- Friendswood 488,214 CY
 - DMS at Landfill
 - C&D hauled to landfill
- League City 216,351 CY
 - DMS at city park
 - Ground veg to mulch vendor
 - Some to mulch to Bolivar

Hurricane Harvey

- Dickinson 182,355 CY
 - Drop off site for residents
 - C&D hauled to landfill
- Friendswood 135,957 CY
 - C&D hauled to landfill
- League City 116,462 CY
 - C&D hauled to landfills

Landfill Waste Intake 2007 to 2018



Category 5 Hurricane Scenario

- Will generate 19,060,000 CY for Galveston County or 5.4 times the annual intake at the primary landfills.
 - 80% or 15,248,000 CY will be vegetative
- Can be reduced to:
 - 2,638,400 if using air curtain incineration and compacting C&D
 - 5,688,000 if using grinding and compacting C&D
- Additional impacts to landfills can be achieved through finding markets for mulch, recycling metals, concrete, etc.

Recommendations

- Examine hazards, debris types, and amounts
- Develop a resource list to aid in disaster debris management
- Update DDMPs
- Develop a public information plan
- Identify DMS
- Involve recycling firms, landfill operators, and solid waste haulers in disaster debris management planning
- Identify and implement mitigation actions to reduce debris from disasters



Thank You!