Risk Assessment and Pre-Disaster Planning
Disaster Planning and Response in Historic Texas Cemeteries
Zoom Webinar Housekeeping

- Trouble with computer audio? Try using your phone instead.
  - 1-346-248-7799  Webinar ID 841 3957 8009
- All attendees are in listen-only mode
- This session is being recorded for later viewing

  - Use the **chat box** to
    - Ask for help
    - Make comments during the presentation
    - Share links or tips

  - Use the **Q & A box** to
    - Ask the presenters a question
    - We’ll answer them live at the end of the presentation
Disaster Planning & Response in Historic Cemeteries
• The National Park Service (NPS) awarded THC $12.3 million from the Emergency Supplemental Historic Preservation Fund (ESHPF) to address the consequences of Hurricane Harvey on historic properties.

• THC has awarded over $9.2 million in sub-grants to date.
Online Training Series: Disaster Preparedness & Response for Historic Cemeteries

- **Goal**: Provide cemetery caretakers with the knowledge and skills necessary to build greater resiliency to withstand and recover from future disasters
- **Timeline**: Summer 2021 – Summer 2022
- **Project Team**: Led by Terracon Consultants, Inc.
- **Program**: Six webinars + six stakeholder meetings

Rockport Cemetery, Aransas County
Instructional Webinars

1. Lay of the Land: Cemetery Orientation
2. Cemetery Survey and Data Collection
3. Risk Assessment & Pre-Disaster Planning
4. Immediate Response to Natural Disasters
5. Post-Disaster Recovery & Restoration, plus Preservation Funding
6. People’s Choice!

Stakeholder Meetings

• Highly interactive
• Group discussions
• Feedback opportunities

McGaffey Cemetery, Jefferson County
Webinar Series Introduction and Overview

Stay Up to Date!

www.thc.texas.gov/Harvey-cemeteries
Webinar 1
Lay of the Land: Cemetery Components, Cultural Practices, and Materials

- Recognize the physical components of cemeteries beyond grave markers
- Recognize common cultural funerary practices and recognize items located at gravesites may reflect cultural traditions that should be determined prior to removal or disturbance of these features
- Understanding of basic cemetery safety practices.
Do we need to replace Ashley with Myself on this slide?
Connor Dixon, 3/22/2022
Webinar 2
Survey and Data Collection

- Historic significance of cemeteries and be able to convey the essential history contained in cemeteries to community stakeholders and potential funding partners.
- Baseline understanding of cemetery documentation methods
- Pre-disaster documentation strategies and data protection methods.
Risk Assessment and Pre-Disaster Planning

Disaster Planning and Response in Historic Texas Cemeteries

This material was funded by the Emergency Supplemental Historic Preservation Fund, National Park Service, Department of the Interior. Any opinions, findings, and conclusions or recommendations expressed in this material do not constitute endorsement or necessarily reflect the views of the Department of the Interior or U.S. Government.
Common threats to historic cemeteries

- Development pressure
- Weathering
- No caretaker or cemetery association
- Theft
- Insufficient mapping
- Lack or loss of records
- Animals
- Natural forces and man-made disasters
Learning Objective 1

• Identify and understand the potential threats to the cemetery from natural disaster events and identification tools for their region.

*Dory Hill Cemetery - Black Hawk, CO*
Learning Objective 2

- Understand maintenance, landscape, and pre-disaster preparedness plans and mitigation strategies.

Port Bolivar Community Cemetery, Galveston County
Learning Objective 3

- Learn more about the tools for implementing pre-disaster mitigation plans including basic through comprehensive measures.

*Keng Cemetery, Lee County*
The Pre-Disaster Plan

Plan Components

- Cemetery Layout
- Cemetery Survey Efforts
- Risk Assessment and Identification of Threats
- Maintenance Plan
  - Regular
  - Preventative
- Communication Plan
- Safety
- Protective Actions Checklist
### Assessing Risks: Natural/Industrial/Environmental Hazards

Please consider and rate the risks in the lists below. Consider which events are most likely to occur and which would have the most serious consequences. Rate each risk on the following scale:

1 = serious risk  
2 = moderate risk  
3 = minimal risk  
4 = not a risk

#### Natural Hazards

Is your institution at significant risk for:

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- Hurricane
- Thunderstorms/Lightning
- Tornado
- Severe Winter Storm
- Flooding (located near a lake, stream, or river)
- Coastal Flooding (located in a coastal area)
- Dam Failure (located near a dam)
- Earthquake
- Wildfire/Forest fire
- Other ________________________________
City Park Cemetery Pre-Disaster Plan

(UPDATED DECEMBER 2021)

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  Phase III Comprehensive Survey of City Park Cemetery (2020) ........................................... 20
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Cemetery Layout

Significant Cemetery Features

- Locate and map below-grade elements
- Understand the current drainage systems
- Identify areas of concern in a disaster event
- Determine the condition and location of access roads
- Prioritize areas subject to pre-disaster protection

Broadway Cemetery, Galveston, Galveston County
City Park Cemetery Pre-Disaster Plan

(UPDATED DECEMBER 2021)

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**RISK ASSESSMENT (UPDATING JUNE 2021)** ........................................... 50

- History of Natural Disasters within City Park Cemetery ............................... 51
Review Findings of Previous Surveys

• Determine condition of above ground resources in the cemetery and assign damage risk
• Informs the pre-disaster plan on what actions are required to protect resources.
• Prioritize pre-disaster protection efforts
• Compare pre- and post-disaster changes/damage

Dory Hill Cemetery - Black Hawk, CO
The Pre-Disaster Plan – Risk Assessment

City Park Cemetery Pre-Disaster Plan

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Assessment of Hazards and Threats

- Needs to happen before pre-disaster planning to determine threats, existing issues, and possible conditions the cemetery may experience during a disaster event.
- This will be most effective if the cemetery has been surveyed first.

Broadway Cemetery, Galveston, Galveston County
Identification of Potential Threats from Natural Disasters

- Document weather predictions for your cemetery
  - Flood zone
  - Hurricane models
  - Historical flood zone maps
- Talk to community members and city officials about known trends

*SLOSH Map, Texas Gulf Coast*
Confirm Permanent Address of Cemetery

• Apply for address, if doesn’t already exist
• Make sure it is clearly marked
• Recorded address is necessary pre- and post-disaster
  • Utility locates
  • Service providers
  • Funding requests
Tree Health Assessment

- Leading cause of damage after Hurricane Harvey due to trees
- Performed by certified professional every +/- 5 years
  - Priority 1 – remove dead/dying/diseased
  - Priority 2 – limb and trim healthy
  - Priority 3 – trim or remove threats to cultural resources
- Find resources within your community
- Keep healthy and intentional plantings

Old City Cemetery - Jacksonville, Florida
City Park Cemetery Pre-Disaster Plan

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Building Resiliency

• During risk assessment and prior to any disaster there are some actions which can minimize potential disaster related damage and ease the tasks required during the pre-disaster prepping.

Evergreen Cemetery, Jefferson County
Understand Plantings

- Initial cleanup
- Use survey findings to understand location of cultural plantings to be preserved
- Identify areas of concern, including results of tree health assessment
- Outline schedule for regular maintenance

Olivewood Cemetery, Harris County
Best Practices

• Find alternatives to harmful treatments
• Remove vegetation safely
• Plan for repair in conjunction with removal of vegetation between mortar joints
• Explore creative options for regular maintenance (short term and long term goals)
Markers and Monuments

• Understand material composition to define appropriate repair technique
• Check for damage before cleaning
• Simple cleanings are typically what’s needed
Demonstration Video – Understanding Materials Hardness and Repairs; Recognizing Deterioration Mechanisms and Issues
Best Practices

- Repairs should be undertaken by those experienced in conservation of monuments
- Use least invasive conservation and repair techniques necessary
- Consider material properties and structural stability
- When in doubt, leave as-is and seek expert guidance

Lamar Cemetery, Aransas County
City Park Cemetery Pre-Disaster Plan

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Build Contacts and Establish Roles

- Establish relationships with professionals and volunteers
  - Include professional contracts information within communication plan
- Assign primary and support roles
- Include primary and secondary contact information

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**Signature Authority**

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact 1</th>
<th>Contact 2</th>
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<tbody>
<tr>
<td>Barbara Jones, President</td>
<td>512-456-7890</td>
<td>512-456-9203</td>
</tr>
<tr>
<td>Carl Wise, Vice President</td>
<td>512-234-5678</td>
<td>407-303-0388</td>
</tr>
<tr>
<td>Deidra Peterson, Board Member</td>
<td>512-890-1234</td>
<td>512-890-3294</td>
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**Protective Actions Checklist**

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<tr>
<th>Name</th>
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<tr>
<td>Gilbert Warner, primary</td>
<td>512-901-2345</td>
<td>407-958-3408</td>
</tr>
<tr>
<td>Bernice Medina, secondary</td>
<td>512-345-6789</td>
<td>512-345-9685</td>
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**Volunteer Coordination**

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<tr>
<th>Name</th>
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<tr>
<td>Sonja Douglas, primary</td>
<td>512-932-8934</td>
<td>512-858-3494</td>
</tr>
<tr>
<td>Vernon Mitchell, secondary</td>
<td>512-849-3839</td>
<td>512-849-9583</td>
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</tbody>
</table>
Build Contacts and Establish Roles

- Research disaster plans of local utility providers and municipal governments
- Include contact information for adjacent land owners
- Maintain current contact list; update annually
Communication Plan

Partnerships

• Professional conservators
• Trade organizations
• Volunteers
• Municipal and state agencies
• Emergency managers
• Funeral home directors/coroners
The Pre-Disaster Plan

City Park Cemetery Pre-Disaster Plan

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Site Concerns

- Note overhead hazards (power lines, trees)
- Remove damaged or fallen trees and limbs
- Address areas prone to erosion
- Identify site elements that could create flying debris hazards (signs, shutters)
Environmental Concerns

• Poisonous vegetation
• Venomous or otherwise dangerous wildlife (wasps, snakes)
• Protected wildlife
• Protected waterways
Safety

Equipment and Supplies Inventory

- Safety equipment
- Ladders
- Tools
- Access to larger equipment (equipment rental contracts)
# City Park Cemetery Pre-Disaster Plan

*(UPDATED DECEMBER 2021)*

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<td>110</td>
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<tr>
<td>Site Concerns</td>
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</table>
Pre-Disaster Checklist

- Understand type of threat
- Instructions on actions to be taken
- Role assignments
- Prioritize tasks
- Include post-disaster response supply list
Pre-Disaster Actions

- Shut off utilities (water, electricity)
- Secure monuments and buildings prioritized for protection
- Sandbags at areas prone to erosion/flood damage
- Remove hazards prone to become flying debris or falling hazards
- Ensure recovery supplies on-hand in location accessible post-disaster
- Move important documents to safe location
Make it Accessible, but Keep it Safe

• After completing the plan components, compile the written pre-disaster plan based on risks perceived.

• Thorough but adaptable based on the known conditions of an incoming storm/event.

• Store written plan in a safe location (multiple copies)
Putting the Plan in Place

Funding

- Annual budget item(s) for disaster preparedness and disaster recovery
- Connect with partner organizations to pool resources
- Grants available for plan components
  - Pre-disaster planning (CLG grants)
  - Post-disaster recovery – depends on disaster declaration

Glenwood Cemetery, Houston, Harris County
Community Involvement

- Engage community in setting priorities for disaster protection
- Train volunteers on the pre-disaster plan.
- Run drills to assure volunteers understand their roles, the tasks involved, and location of post-disaster supplies

Union Hill Cemetery, Williamson County
Pre-Disaster Planning

- What is significant?

*Site Plan, Eureka Springs Cemetery, Arkansas*
Conclusions

Pre-Disaster Planning

- What is significant?
- What is the threat?

NOAA 24-hour Precipitation Totals Map, Texas
Conclusions

Pre-Disaster Planning

- What is significant?
- What is the threat?
- How to protect significant features?

Lamar Cemetery, Aransas County
Resources and References

• Handouts
  • Pre-Disaster Plan
  • Webinar 3 Slides

• Resources
  • General and Cemetery Preservation
  • Risk Assessment and Disaster Preparedness
  • Survey Resources
  • Legal/Legislative References
  • Landscape Preservation Planning and Maintenance
Stay Up to Date!

www.thc.texas.gov/Harvey-cemeteries
Questions?

Next time… Sound the Alarm! Natural Disasters and Immediate Response