Greens Bayou – Tax Day Event
Texas Floodplain Managers Concurrent Session
April 27, 2017
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Presentation Takeaways
- Interesting and beneficial observations
- Tools to dissect and understand the event

Agenda
- Study Goals
- Background
- Approach
- Simulation Results
Study Goals

- Position for DR funding
  - Define and validate the magnitude and extent of flooding
  - Identify Root Cause(s) of Flooding
    - Are there secondary flooding sources other than Greens Bayou?
    - Are there localized isolated challenges?

- Identify Improvement Opportunities

- Expedite
April 18, 2016 Event

- Event Concentrated on West Harris County
- 5890 Homes flood damaged
- 1066 Apartments flood damaged
- Event of Record
  - Cypress Creek Watershed
  - Little Cypress Creek Watershed
  - Addicks Reservoir Watershed

April 18, 2016 North Houston District Area

- Total 11-12 inches
- Peak 1
  - 4.9 inches in 1 hour
- Peak 2
  - 5.2 inches in 1.5 hours
- Greens Bayou
  - East of I-45 between a 50yr and 100yr Storm
Floodway

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Approach Overview

• 2D Analysis
  • Analyze Surface Flow
  • InfoWorks-ICM

• Simulated Historical Event
  • April 18, 2016

Technical Approach

→ Rain on Mesh

→ Upstream Boundary Condition

→ Combined Collection System and Channel Analysis

Model Validation

→ Flooded Structures Confirmation and Depth

→ Sources
  • City of Houston
  • Structural Flooding Reports
  • Harris County Flood Control District
  • Pictures and Event Aerials
  • North Houston District
  • Pictures
  • Eyewitness Accounts
Tools for Dissecting the Event

- Topography evaluation
- Velocity vectors
- Overland flow lines
- Mesh Reporting Data
  - Depth
  - Duration

Study Area Topography

Observed Overland Flow
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Event Simulation

Peak One Ponding
Conclusions

- 2 Distinct Area Challenges
  - Greens Bayou
  - Localized Collection System

- Analysis tools proved useful in understanding the event:
  - Where, how much, and when the water was moving

- Improvements