Agenda

- **Introduction**
  - Hurricane Harvey
  - Erosion Hot Spot Analysis Purpose
  - Study Area

- **Technical Analysis Considerations**
  - Texas Shoreline Characteristics
  - Historical Shoreline Trends

- **Harvey-Induced Erosion Assessment Methodology**
  - Aerial Imagery Assessment
  - Shoreline Topographic Analysis
  - Coastal Model Review

- **Erosion Hot Spot Assessment Results**
Agenda

- Introduction
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  - Study Area
Hurricane Harvey
Erosion Hot Spot Analysis Purpose

▸ Review most current coastal hazard analysis data
▸ Locate areas potentially altered by erosion from Hurricane Harvey
▸ Evaluate extent of impacts relative to coastal flood risk for communities
▸ Define what a coastal erosion hot spot is relative to this analysis

For purposes of this study, an erosion hot spot is a location where erosional changes resulting from Hurricane Harvey could lead to an increased coastal risk of a given community.

Base Flood Elevation on FIRM includes 4 components:
1. Storm surge stillwater elevation
2. Amount of wave setup — Determined from ADCIRC Model
3. Wave height above storm surge (stillwater) elevation
4. Wave runup above storm surge elevation (where present)
Study Area
Agenda

▸ Technical Analysis Considerations
  • Texas Shoreline Characteristics
  • Historical Shoreline Trends
Texas Shoreline Characteristics
Texas Shoreline Characteristics

Mainland Bay Shoreline

Barrier Islands & Peninsulas

Inlets
Historical Shoreline Trends

Historical Shoreline Advance (BEG)
Historical Shoreline Trends

Historical Shoreline Retreat (BEG)
Agenda

- Harvey-Induced Erosion Assessment Methodology
  - Aerial Imagery Assessment
  - Shoreline Topographic Analysis
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Aerial Imagery Assessment

- Imagery
  - Post-Harvey Satellite
  - Post-Harvey Oblique Imagery
Aerial Imagery Assessment

HARBOR ISLAND

PORT ARANSAS
Aerial Imagery Assessment

Multiple occurrences of dune over wash on southern portion of San Jose Island.
Aerial Imagery Assessment

Oblique Imagery of San Jose Island Post-Harvey
Aerial Imagery Assessment

Oblique Imagery of Surfside Post-Harvey
Shoreline Topographic Analysis

- **LiDAR Data**
  - Pre-Storm Mosaic
  - Post-Storm BEG/GLO Data
Shoreline Topographic Analysis

- Pre- and post-ground profiles
- Comparison grid
- Quantify erosion
Coastal Model Review

- Assessing potential impacts
- Wave model only (WHAFIS)
Reminder: For purposes of this study, an erosion hot spot is a location where erosional changes resulting from Hurricane Harvey could lead to an increased coastal risk of a given community.
Erosion Hot Spot Assessment Results
Southern San Jose Island was identified as an erosion hot spot because it has the potential to increase mainland shoreline coastal flood risk for unincorporated portions of Aransas County.

San Jose and Matagorda Islands were calculated to have lost approximately 11.5 million cubic yards of sediment, which while not defined as a erosion hot spot due to a lack of impact to a community’s coastal flood risk, was still deemed significant based on magnitude.
Erosion Hot Spot Assessment Results

- Sargent and Surfside Beaches were identified as erosion hot spot with significant shoreline retreat exposing local development.

- Portions of the measured erosion occurred prior to Harvey's impacts, but it was apparent the erosion was exacerbated during the storm and the communities have the potential to experience increased coastal flood risk in post-Harvey condition.
Erosion Hot Spot Assessment Results
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Questions?