Making the Transition: Assessment to Action in Broward County, FL

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Broward County Characteristics

- Nearly 2 million residents
- Dense coastal development
- 24 miles of beaches
- 300 +miles seawalls
- 1800 miles canals
- Porous geology
- Active flood management
- Unique natural resources
Early Initiatives

- Tools and Assessment
- Local and Regional
- Policy and Planning
  - Climate Change Element
  - Priority Planning Areas
  - Land use/water/LMS
  - Capital budget planning
From Planning to Action:

- Maximize use of county authority
- Land use and water regulations
- Future conditions map series – code of ordinances (established May 2017)

3-year timeline
- Drainage infrastructure (2017)
- Coastal flood barriers (2018)
- Flood elevations (2019)

Tools
- Groundwater Models
- Coastal Study
- Updated FEMA Flood Model
Future Condition Average Wet Season Groundwater Table Map

- 2060-2069 average groundwater conditions
- USACE high = 2 feet SLR
- CCSM model = 9% increase in rainfall
- Extensive stakeholder engagement
- Effective July 1, 2017
SURFACE WATER MANAGEMENT

DESIGN EXAMPLE 1

PARKING LOT ON BOTTOM OF BUILDING
### Permitted Conditions

**WSWT:** 1.5’ NAVD  
**WATER QUALITY VOLUME**  
Required: 0.08 acre-feet  
Provided  
0.08 acre-feet  
By 70 LF exfiltration trench  
100-YR, 3-DAY PRE-POST MAX  
Required: 9.38’ NAVD  
Provided  
9.38’ NAVD  
By 1 gravity drainage well  

$15,225*  

$72,500**

### SLR Scenario

**WSWT:** 3.5’ NAVD  
**WATER QUALITY VOLUME**  
Required: 0.08 acre-feet  
Provided  
0.05 acre-feet  
By 70 LF exfiltration trench  
100-YR, 3-DAY PRE-POST MAX  
Provided  
9.65’ NAVD  
By 1 gravity drainage well  

$23,925*  

$290,000**

### SLR Adjusted Design

**WSWT:** 3.5’ NAVD  
**WATER QUALITY VOLUME**  
Required: 0.08 acre-feet  
Provided  
0.08 acre-feet  
By 110 LF exfiltration trench  
100-YR, 3-DAY PRE-POST MAX  
Provided  
9.38’ NAVD  
By 1 pumped drainage well  

$23,925*  

$290,000**

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* Costs estimate assuming 18” French Drain. ** Cost estimate assuming deep well, casing 24”, up to 100’ drilling. Cost estimate varies based on project location, complexity, bid quantity and contractors availability.

1.6% Increase in Total Construction Costs

40 LF additional exfiltration trench

Added pump to drainage well
USACE-Broward Resiliency Study

- Resilient Sea Wall Top Elevations
- Calibrated hydrodynamic model
  - 2 feet sea level rise
  - High tides
  - 25-yr storm surge
- Economic study
  - Damage loss reduction
  - Analysis by sector
Broward 100-Year Community Flood Map

- One of 3 tools used to set finished floor elevations
- Amended map will:
  - Integrate sea level rise
  - Capture changes in groundwater
  - Provide flood elevation with rainfall (non-stationarity analysis)
  - Address CRS creditable criteria
  - NOT be used for the FEMA FIRM
- Developed with partner cost share
Resiliency planning in Broward has relied heavily on informed use of science to guide policy recommendations and planning decisions.

Scenario-based assessments offer options and foster community-based decision-making.

Multiagency collaborations and robust partnerships have been vital to building support.

Economic analyses were a necessary condition but did not alter outcome.

Priority next steps include sustained engagement and development of a resilient infrastructure improvement plan.
Questions?

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