

# RESILIENCY for STORMWATER PROFESSIONALS

## Advances in Protecting Life and Property



Charlotte-Mecklenburg County, NC  
April 26, 2019



# Overview



- Background Charlotte-Mecklenburg
- Potential, Future Advances
  - 1. Real-time flood notification**
    - FINS
    - Low-Cost Flood Sensors
  - 2. Mitigation planning**
    - Risk Scores
    - Response/Recovery
- Questions



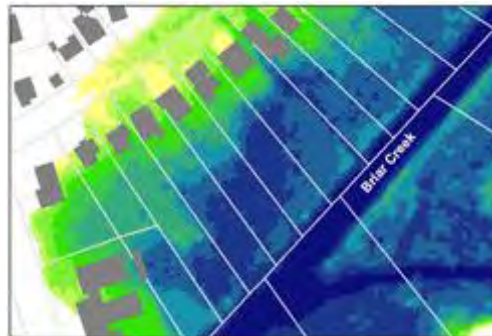
# Background

## Comprehensive Floodplain Management Program

Mapping



Warnings



Buyouts



# Background



- **Removed from the floodplain over:**
  - 750 families
  - 460 buildings
- **Reclaimed more than 180 acres of open space**
- **Invested:**
  - \$60M in State, federal and local funds
  - Cumulative benefits excess of \$300M
  - Actual losses avoided \$25M to date
- **CRS Class 4 - \$430,000 in savings**



# Background



## Flood Apex:

- Reduce Flood Fatalities
- Reduced Uninsured Losses
- Improve Mitigation Investment Decisions
- Enhance Community Resilience
- Improve Management of Flood Support Data
- Improve Predictive Flood Analytics



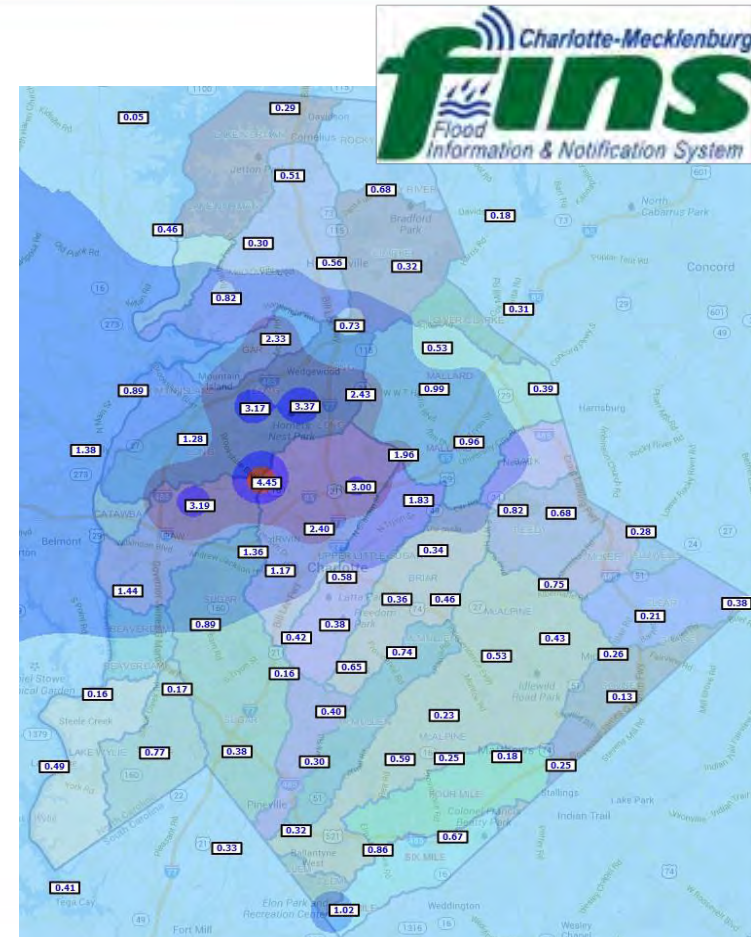
Science and Technology



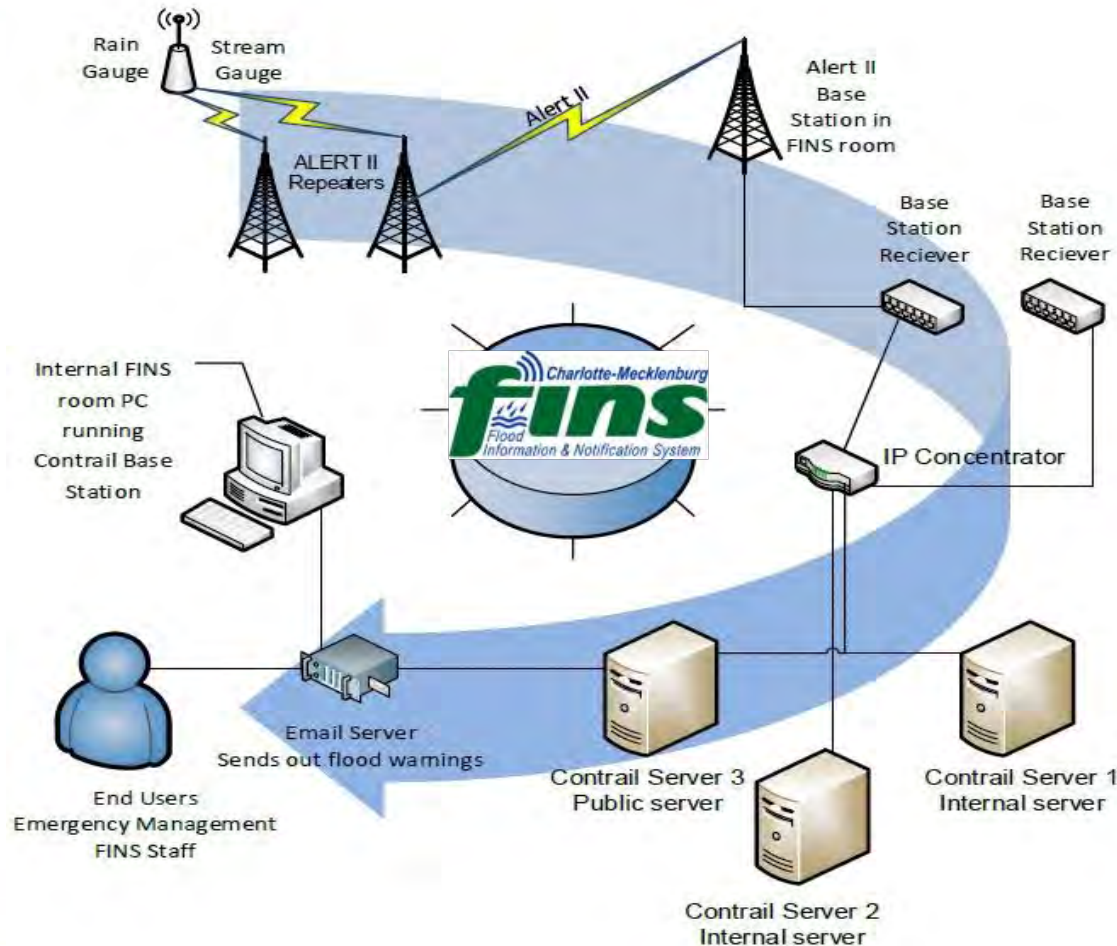
# Purpose of FINS



- Smoke Detectors in Creeks
- Get people and property to high ground
- 911 vs Advance Notification
- Built on USGS gages
- Coordination with Charlotte Fire & EM



# FINS Network Concept



# Low-Cost Flood Sensors

## Supplement FINS and USGS Network

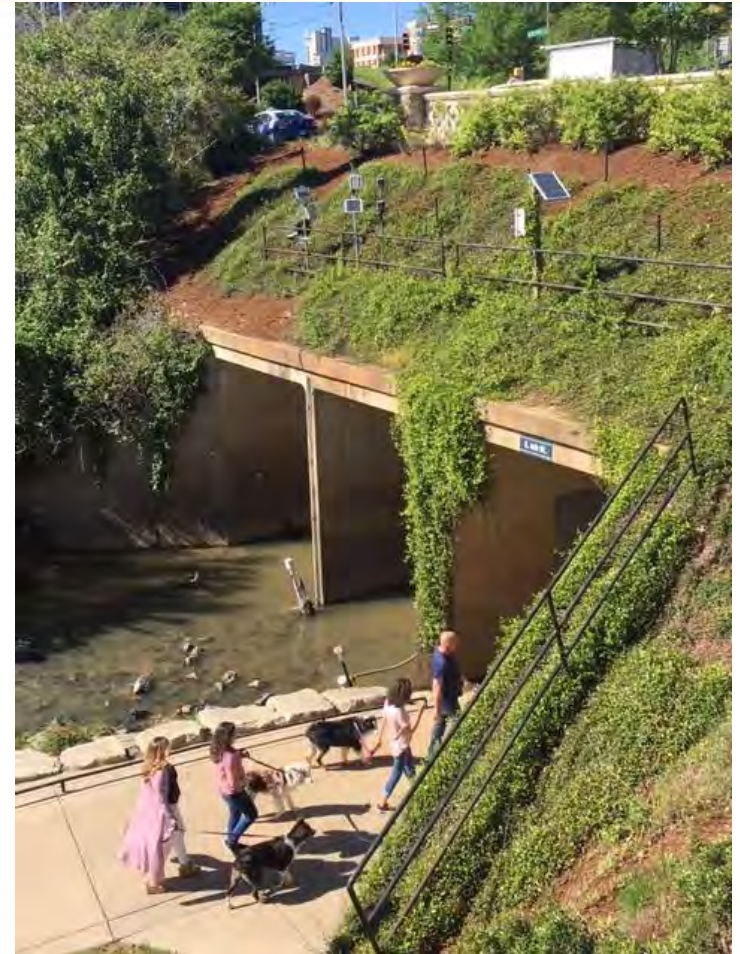




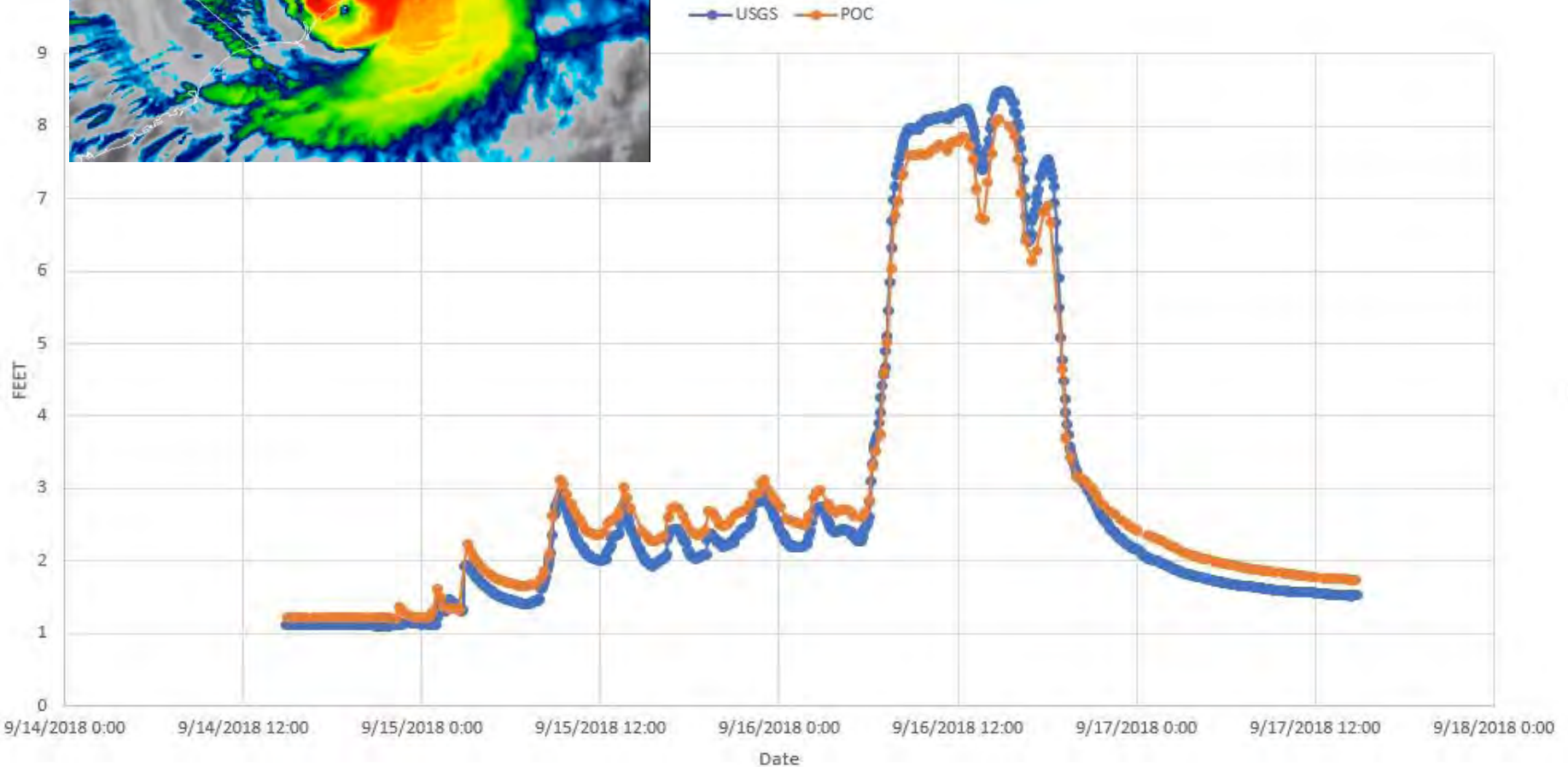
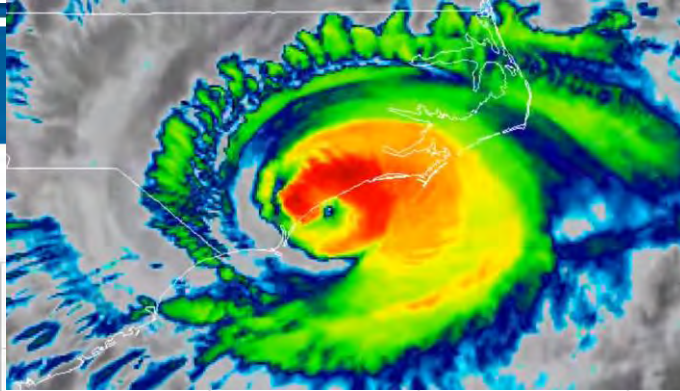
# Low-Cost Flood Sensors

## Project Plan:

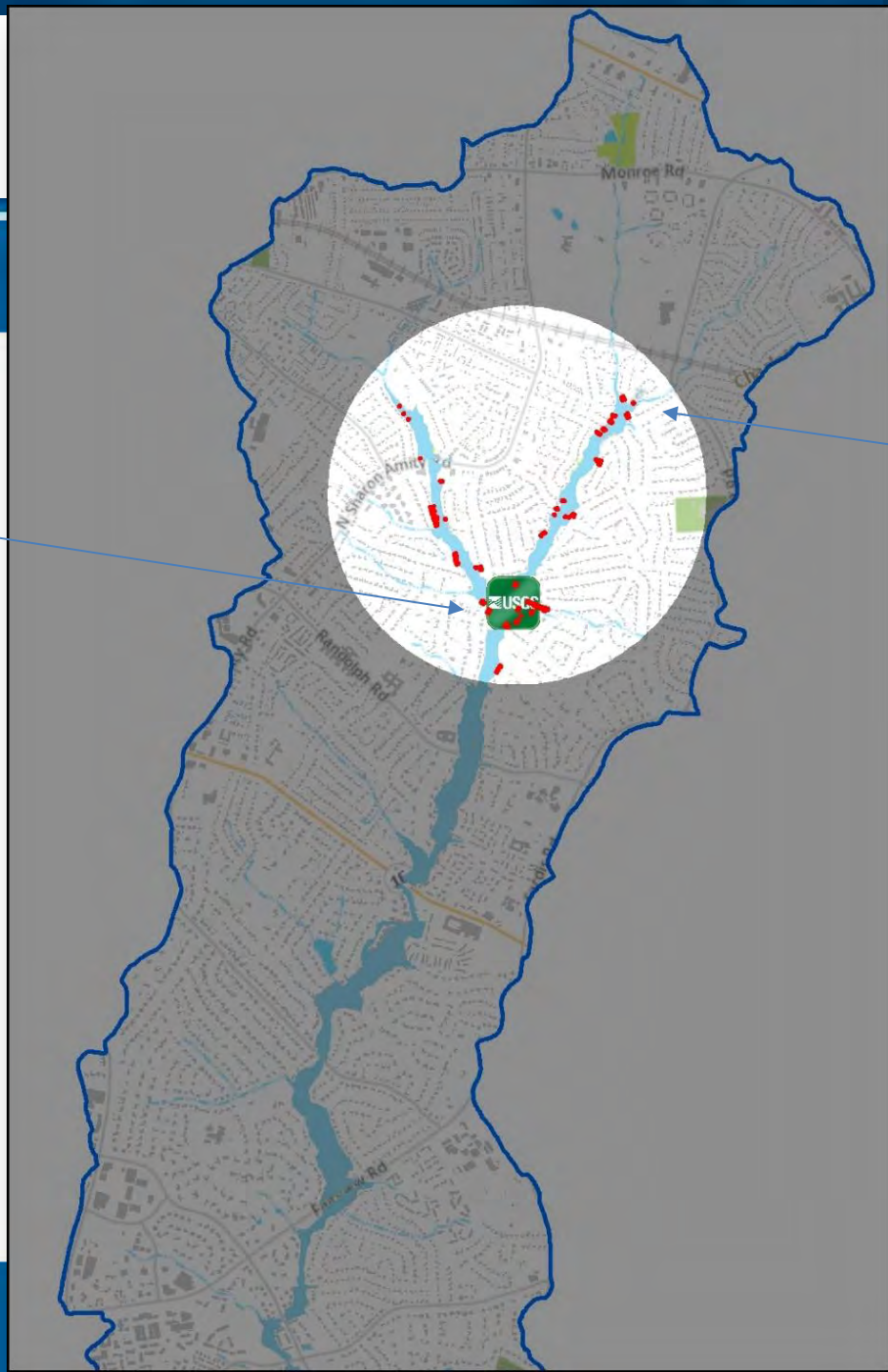
- Pre-Deployment Planning
- Field Deploy Alpha's
- Assessment
- Lessons Learned
- Field Deploy Beta's



# Hurricane Florence



**Coverage Area**



Coverage Area

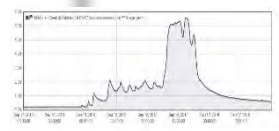
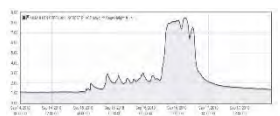
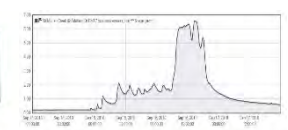
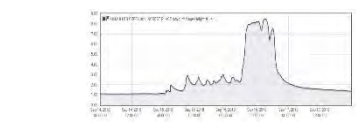


Node

Gateway

Node

Node



# Low-Cost Flood Sensors

## Better Response = Reduced Property Losses



# Low-Cost Flood Sensors

**Better Response = Reduced Flood Fatalities**

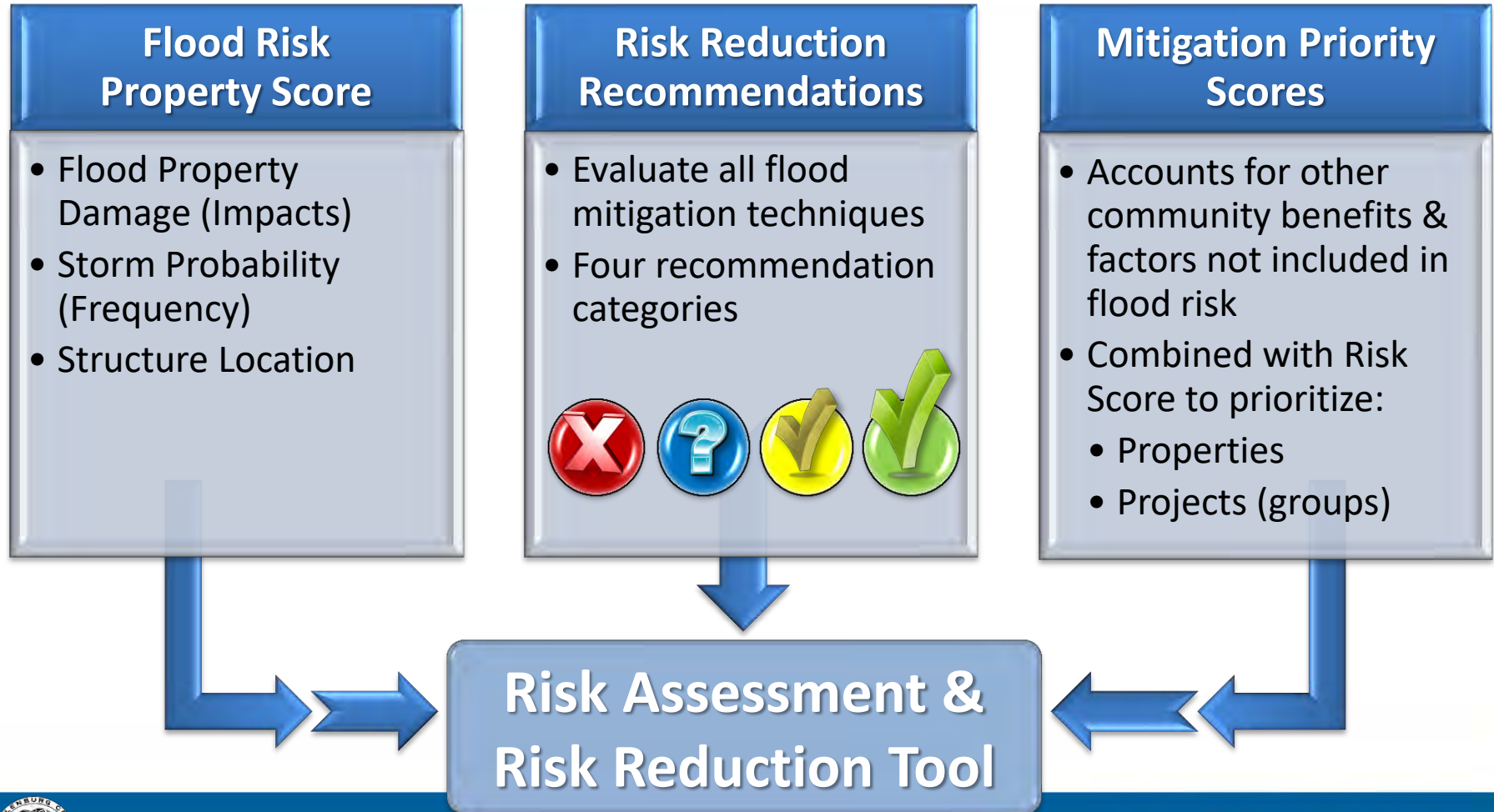


# Low-Cost Flood Sensors

**Better Response = Reduced Property Losses**



# Improved Flood Analytics

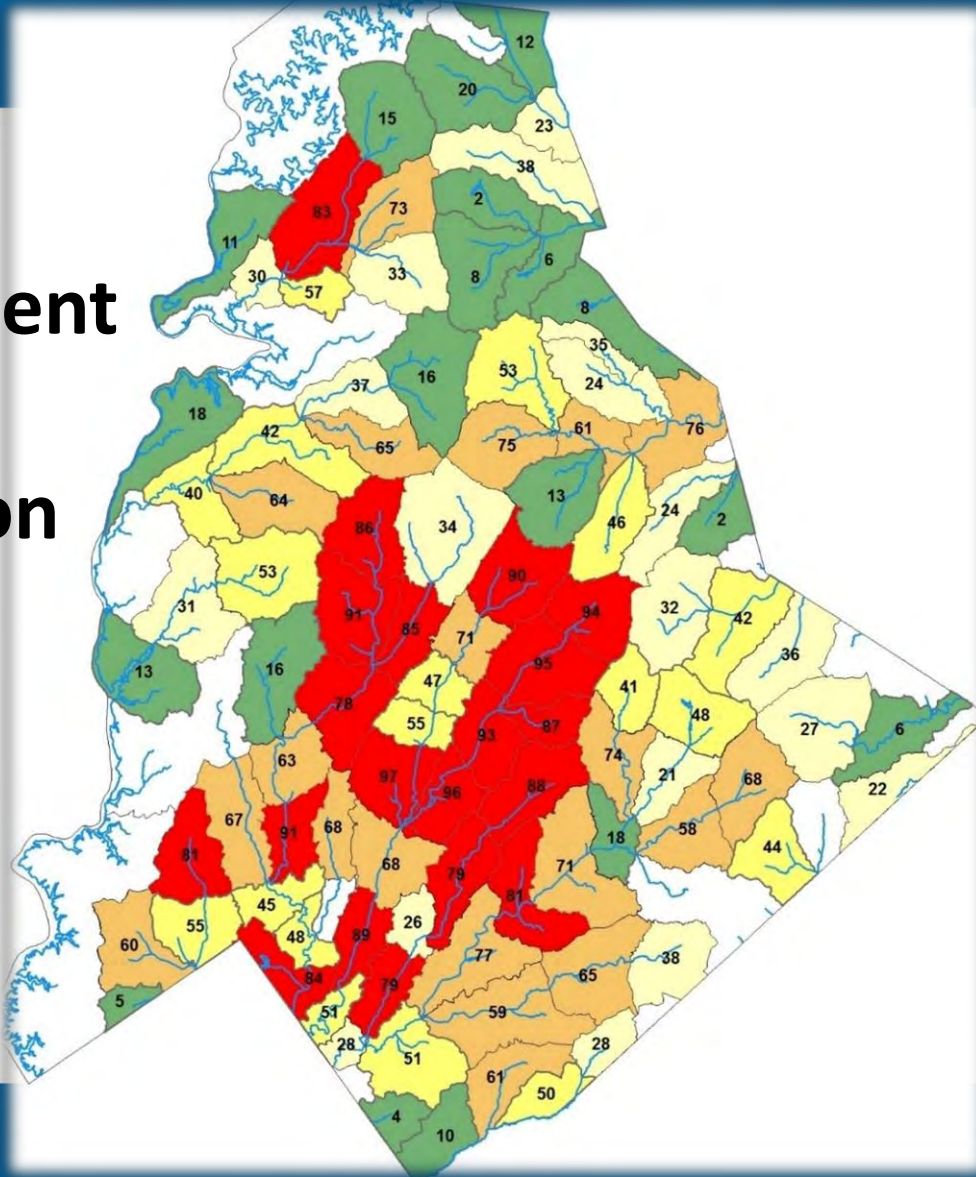




# Improved Flood Analytics



**Risk  
Assessment  
Risk  
Reduction  
Tool**



# Improved Flood Analytics



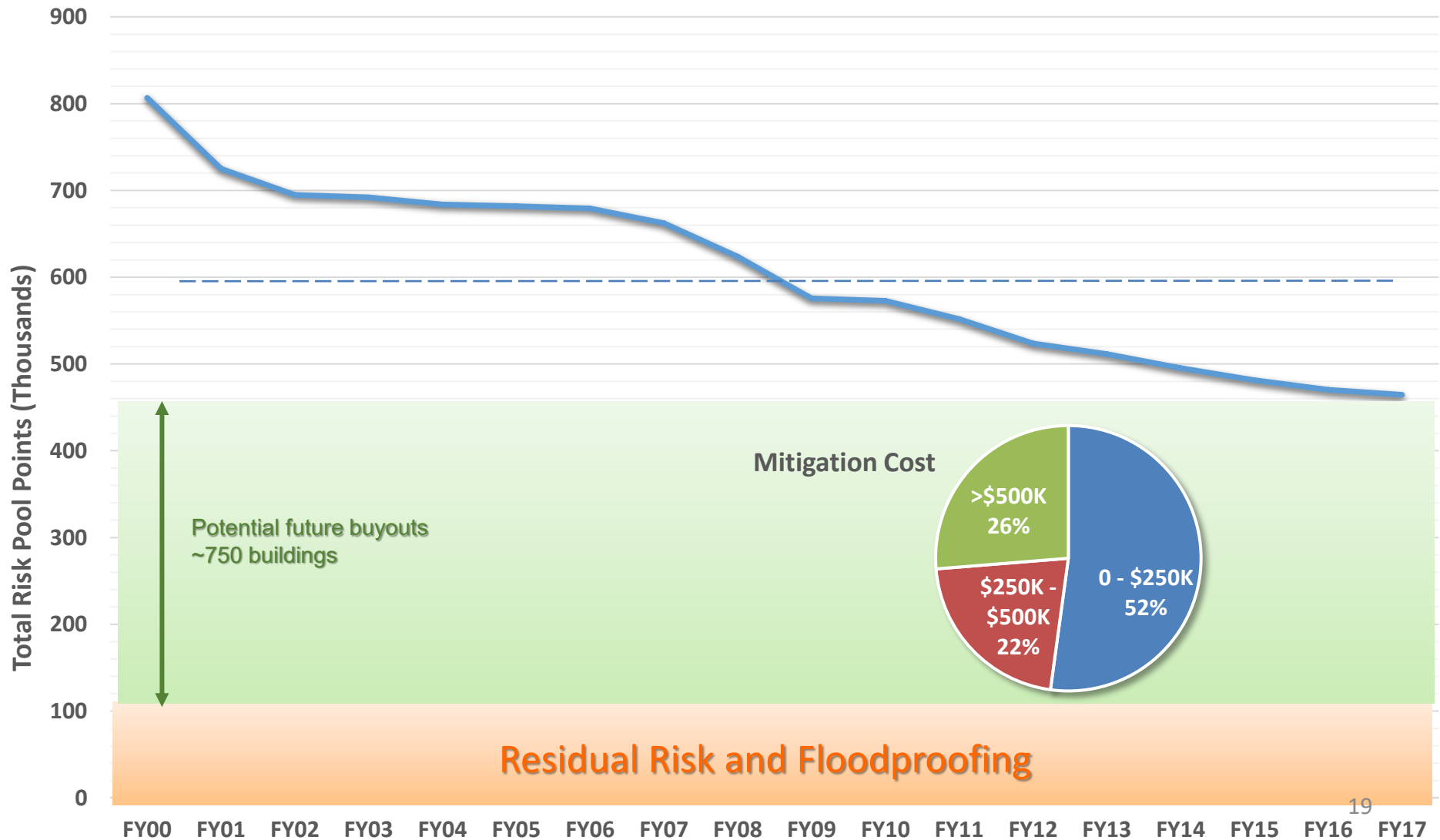
**Risk Assessment  
Risk Reduction Tool**



# Driving Down Cost of Flooding



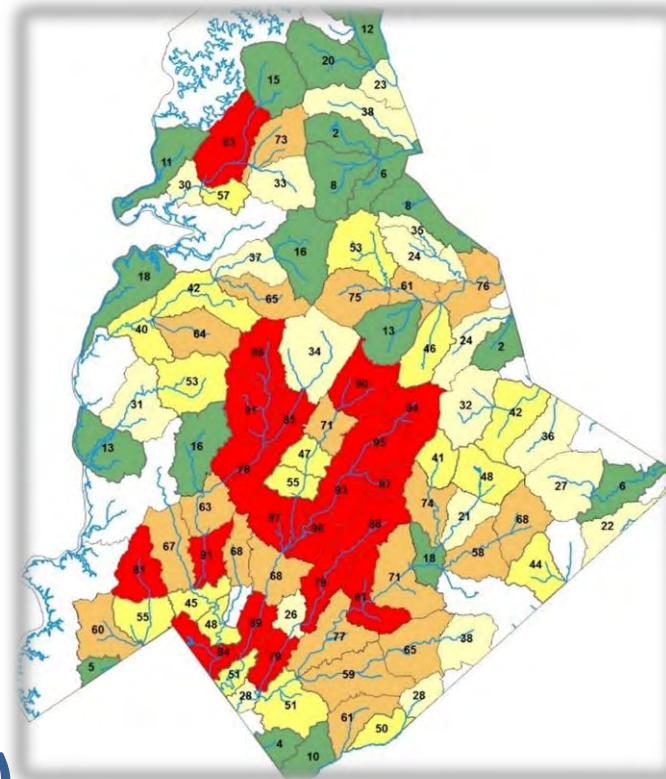
Floodplain Properties - Flood Risk Score Pool



# Improved Flood Response



- **Prioritization of Sensor Locations**
- **Inundation Mapping**
- **Deployment of Resources**
- **Real-time Flood Mitigation**
  - Techniques
  - Costs
  - Verifications (not assessments)



# Comprehensive Program



**Bridge the Divide between Water Quality and Water Quantity**

# THANK YOU



## Questions



**W. Dave Canaan**  
Charlotte-Mecklenburg  
Storm Water Services

