

Utilizing GIS in Emergency Management

Jess Stimson

RI Municipal GIS User Group Meeting

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GIS in Emergency Response

- Emergency management has three main objectives: protecting life, property and the environment.
- GIS is useful in all aspects of disaster management including planning, mitigation, preparedness, response and recovery stages.
- Offers valuable spatial data to emergency management response units before, during and following an event.



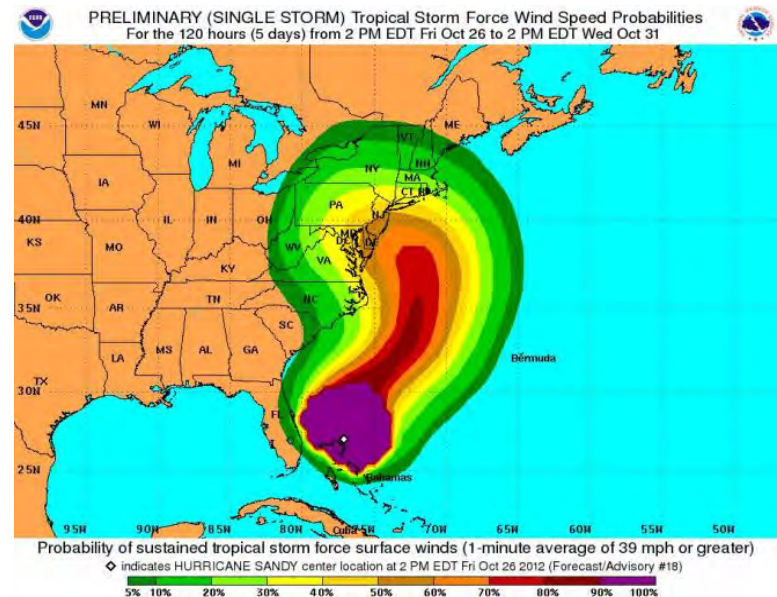
The Sandy Experience

- 400 miles of coastline
- 21 out of 39 communities are coastal
- First Federal Disaster Declaration for a coastal event since Hurricane Bob in 1991



Preparations and Roles

- RIEMA coordinated with each municipality to ensure all preparatory measures were taken.
- Reviewed databases for gaps
- Maintained dual roles activated as GIS Specialist under Command System (ICS).



Impacted Areas

- The southwestern coast was devastated.
- Four hardest hit communities were:
 - Town of Charlestown
 - Town of Narragansett
 - Town of South Kingstown
 - Town of Westerly



Response

- Gauged damage and needs with all coastal communities the morning after.
- Urban Search and Rescue/Architects and Engineers Taskforce activated with State of Emergency.
- Initial damage assessments conducted by field teams.



Placarding and Rapid Assessments

- Field teams utilized ATC-45 Rapid Assessment Forms (RAF)
- Placards were used to signify level of structural damage

ATC-45 Rapid Evaluation Safety Assessment Form

Inspection
 Inspector ID: _____ Inspection date: _____
 Affiliation: _____ Inspection time: _____ AM PM
 Areas inspected: Exterior only Exterior and interior

Building Description
 Building name: _____ Type of Building: Mid-rise or high-rise Pre-fabricated
 Address: _____ Low-rise multi-family One or two-family dwelling
 Low-rise commercial
 Building contact/phone: _____ Primary Occupancy: Dwelling Commercial Government
 Number of stories: _____ Other residential Offices Historic
 "Footprint area" (square feet): _____ Public assembly Industrial School
 Number of residential units: _____ Emergency services Other: _____

Evaluation
 Investigate the building for the conditions below and check the appropriate column. Estimated Building Damage (excluding contents)

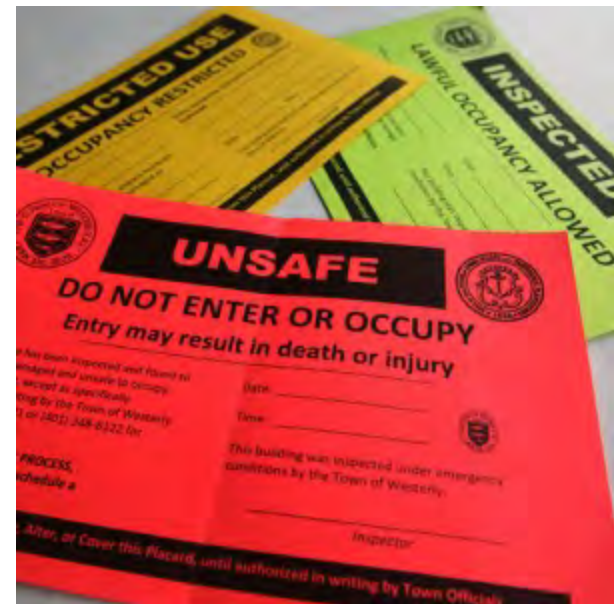
Observed Conditions:	Minor/None	Moderate	Severe	Estimated Building Damage (excluding contents)
Collapses, partial collapses, or bulging of foundation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> None
Building significantly out of plumb or in danger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> > 0 to < 1%
Damage to primary structural members, racking of walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 to < 10%
Falling hazard due to structural damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 10 to < 30%
Geotechnical hazard, scum, erosion, slope failure, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 30 to < 70%
Electrical lines (wires submerged / leaning trees)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 70 to < 100%
Other (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 100%

See back of form for further comments.

Posting
 Cleanse a posting based on the evaluation and team judgment. Severe conditions endangering the overall building are grounds for an Unsafe posting. Localized Severe and overall Moderate conditions may allow a Restricted Use posting.
 INSPECTED (Green placard) RESTRICTED USE (Yellow placard) UNSAFE (Red placard)
 Record any use and entry restrictions exactly as written on placard: _____

Number of residential units vacated: _____

Further Actions Check the boxes below only if further actions are needed.
 Barricades needed in the following areas: _____
 Detailed Evaluation recommended: Structural Geotechnical Other: _____
 Substantial Damage determination recommended
 Other recommendations: _____
 See back of form for further comments.



Data Collection

- Coordinated with GIS officials for reporting
- Damage data for impacted structures
- Used a minimum of 30% damage on RAF's
- Data used for Federal Disaster Declaration Request

Washington County

Total Structures - 81

Total Structure Value - \$15,260,100

Town of Charlestown

- Total Structures - 10

- Total Structure Value - \$1,035,100

Town of Narragansett

- Total Structures - 6

- Total Structure Value - \$1,406,300

Town of South Kingstown

- Total Structures - 13

- Total Structure Value - \$1,091,800

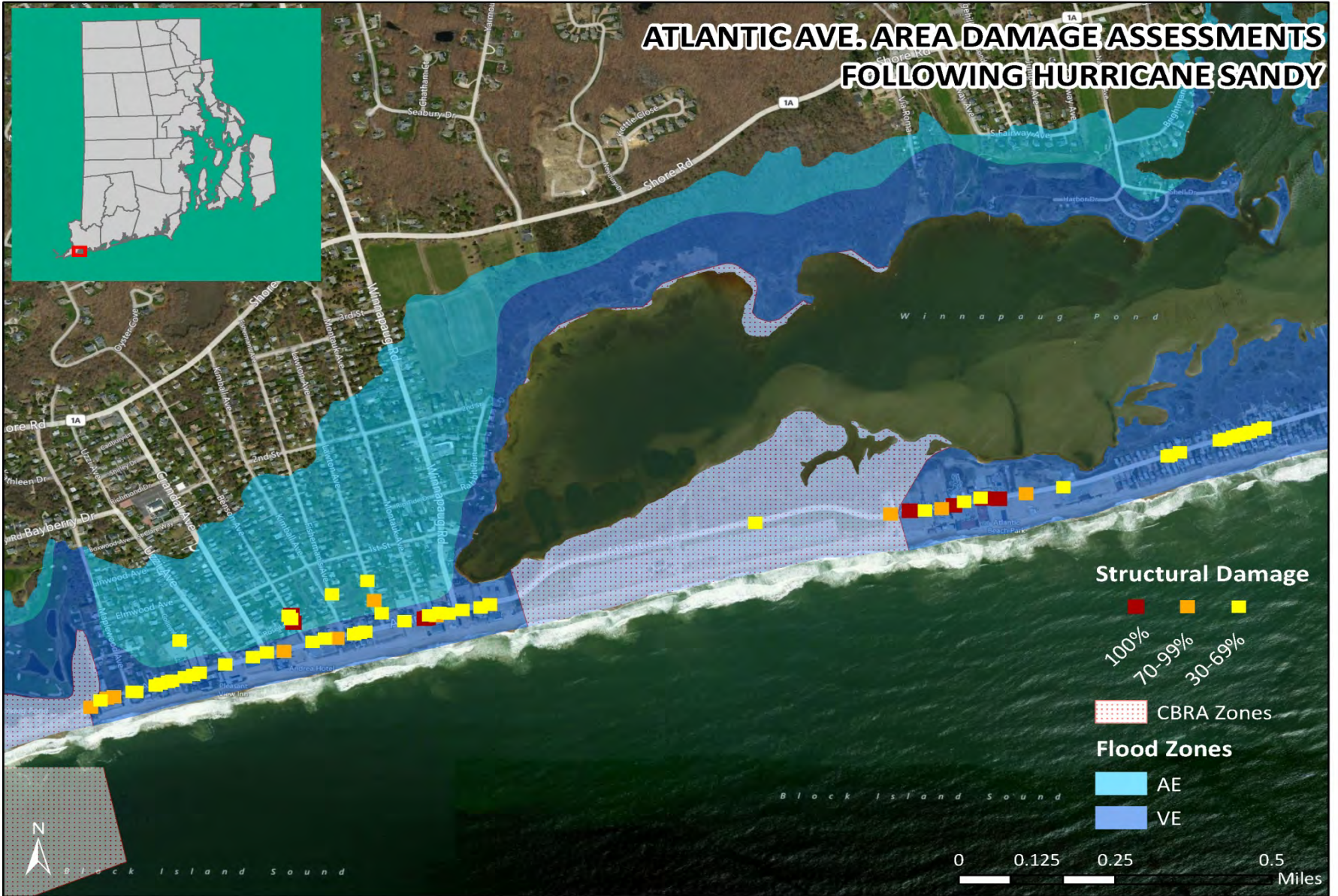
Town of Westerly

- Total Structures - 52

- Total Structure Value - \$11,726,900



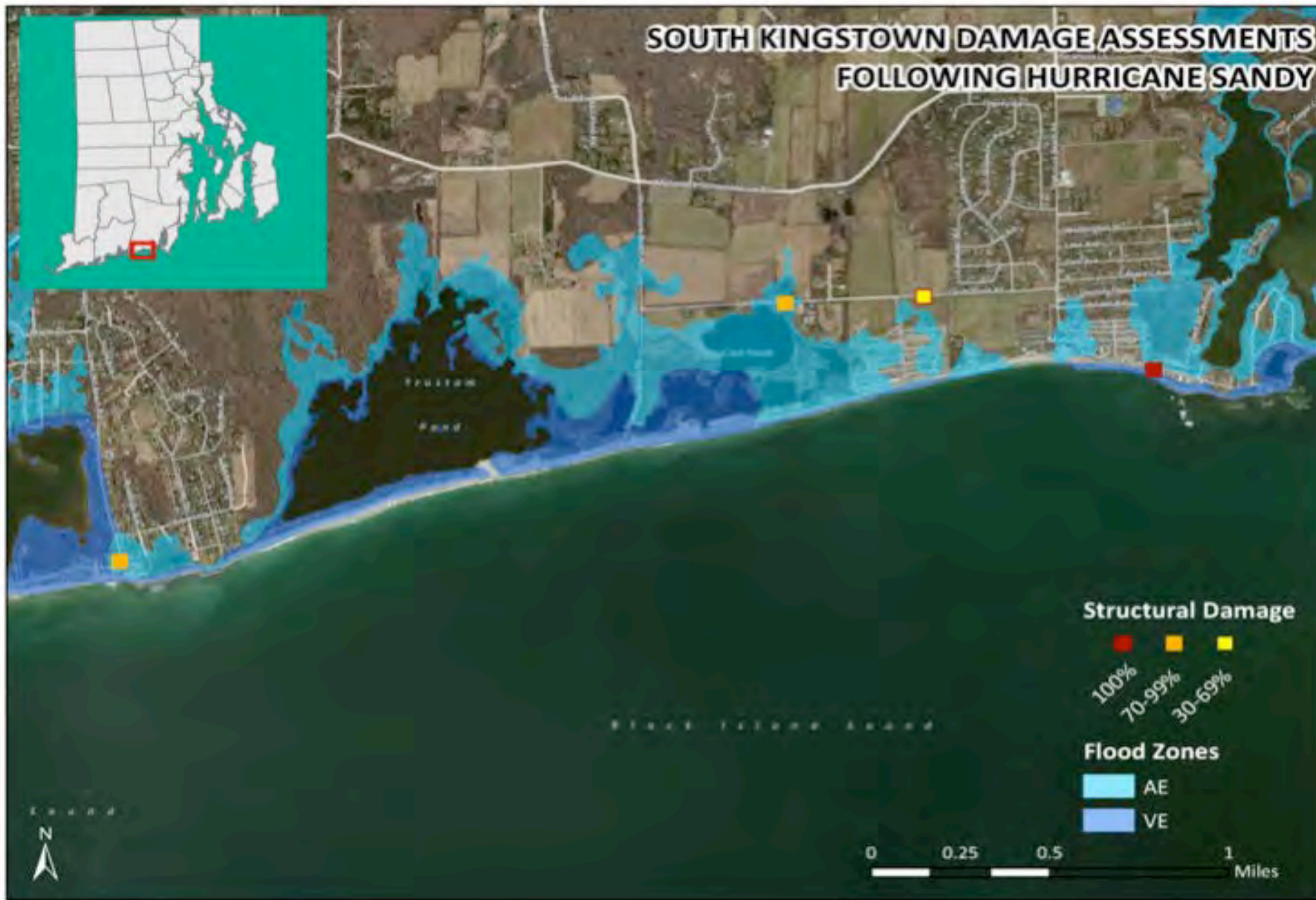
ATLANTIC AVE. AREA DAMAGE ASSESSMENTS FOLLOWING HURRICANE SANDY



CHARLESTOWN DAMAGE ASSESSMENTS FOLLOWING HURRICANE SANDY



SOUTH KINGSTOWN DAMAGE ASSESSMENTS FOLLOWING HURRICANE SANDY



Recovery: Structural

- 29 Substantially Damaged structures
 - Town of Westerly: 18
 - Town of Charlestown: 8
 - Town of South Kingstown: 3
 - Town of Narragansett: 0



Lessons Learned

- Need to identify easier way to compile information efficiently.
- Multiple meetings with partners post-disaster to establish “best practices”.
- Identified deficiency in building stock data.
- Nurture relationships with RI GIS professionals.



Developments Since Sandy



RHODE ISLAND EMERGENCY MANAGEMENT AGENCY

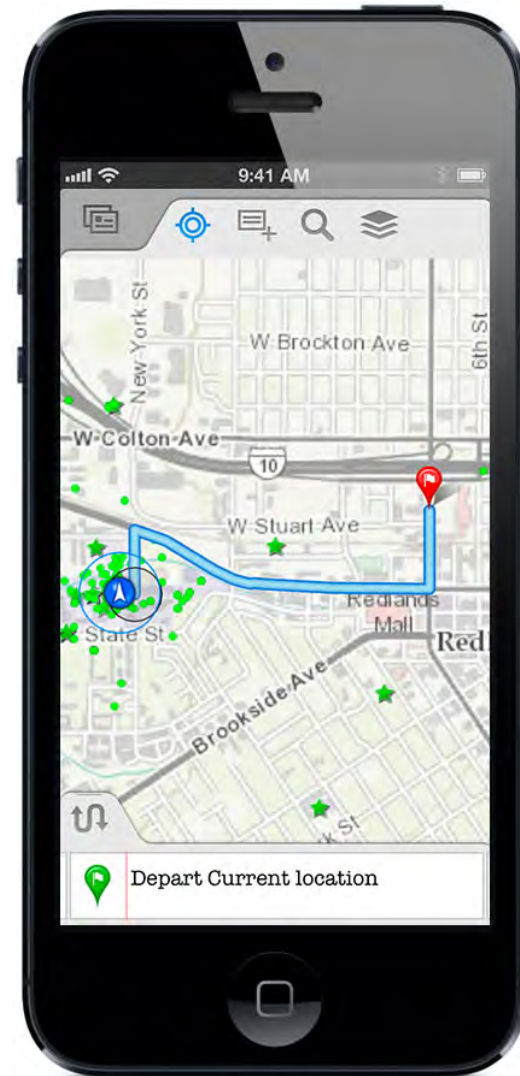
Rhode Island Flooplain Mapping Tool

- Designed to provide users with an easily accessible online resource by which to make informed decisions about the flood risk for a specific area or property.
- The floodplains shown on this Tool are delineated on the FEMA historic, preliminary, or effective Flood Insurance Rate Maps.
- Reference tool available at www.riema.ri.gov



ESRI Collector Application

- ESRI product with direct emergency management benefits.
- Coordinating with State partners and ESRI specialists to convert modified RAF to mobile application.



Statewide Parcel Dataset

- Currently preparing an application for CDBG-DR funding opportunity to develop a seamless statewide dataset.
- Data will be provided to State and Local partners upon completion.
- Interested in municipal GIS users input.



Contact Information

Jess Stimson

State Hazard Mitigation Officer/ Floodplain Mapping
Coordinator

jessica.stimson@ema.ri.gov

401-462-7115

