RIGIS User Group Meeting

June 24, 2014

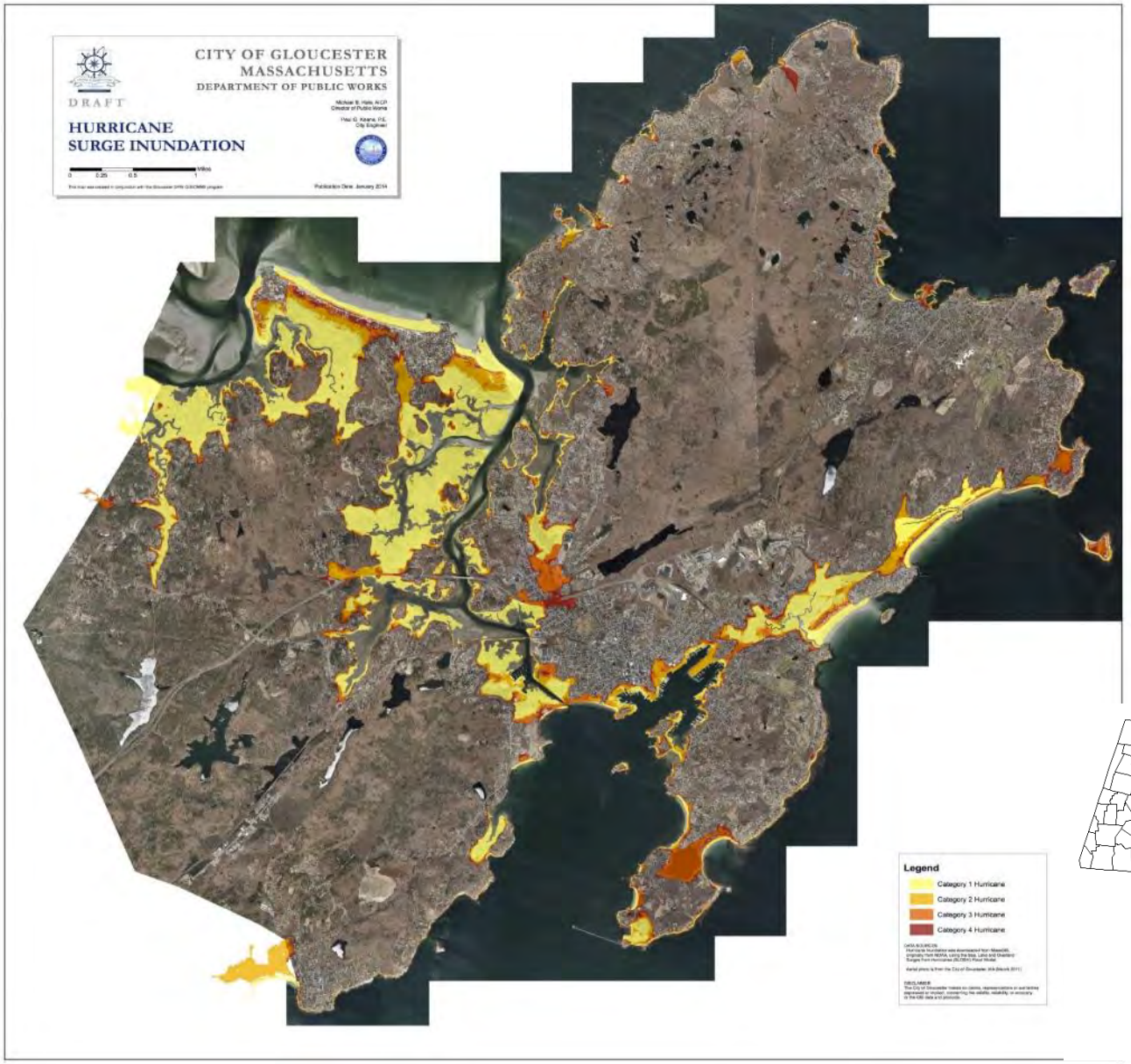
The Road Not Taken - Route Finding Help for Emergency Responders and Evacuees

Michele Giorgianni, GISP
Asst. Director Of Local Govt. Services

Case Studies

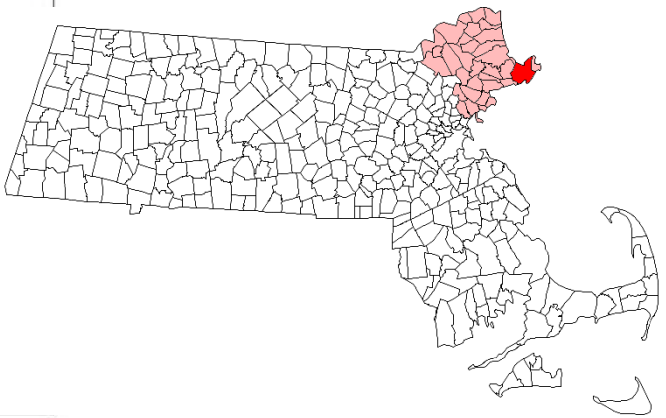
- Gloucester, MA
  - Hurricane Evacuation Zones Re-evaluation
- Texas DOT
  - Road Conditions website development

Re-evaluating Hurricane Evacuation Zones



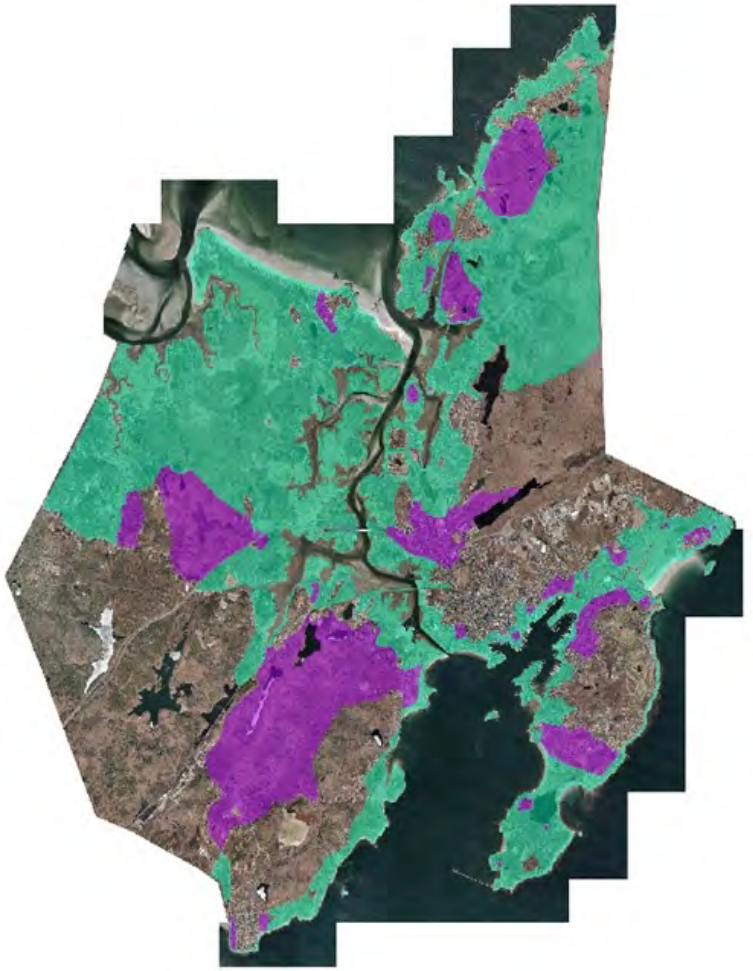
City of Gloucester
Massachusetts

Presented at
Spring NEARC 2014
By Peter Lemack



MEMA's Hurricane Evacuation Zone Assessment

- MEMA utilized NOAA Slosh Model
- Evacuation Zones based on Census Blocks
- Evacuation Zones A and B
- Course – concerned City officials



Re-evaluation of MEMA's Assessment

Our Goals / Objectives

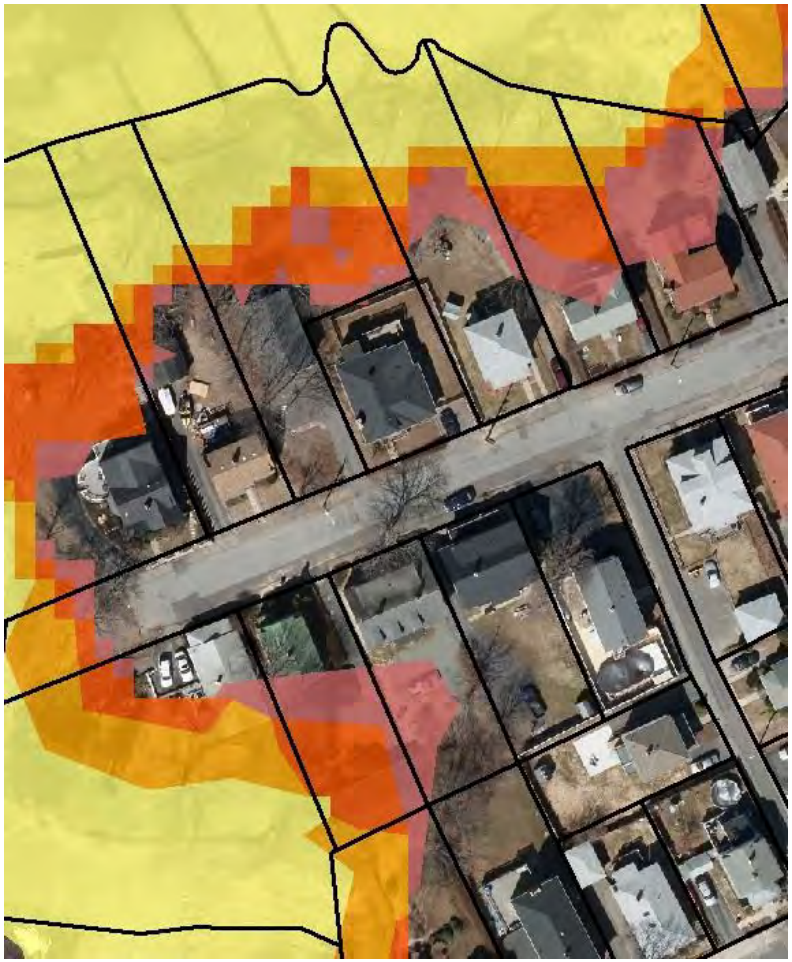
- Determine / Refine Hurricane Evacuation Zones
- How can our analysis benefit Emergency Managers and City Officials?

Project Approach

- Focused on Parcels instead of Census Blocks
- Intersected Parcels with Hurricane Surge Inundation Areas
- Identified Evacuation / Access Compromised Zones
- Collected Local Knowledge to refine final parcel placement into Evacuation Zones

Parcels and Inundation Zones

“A Boolean Approach”



Evacuation / Access Compromised Zones

“Managing Shelter in Place Islands”

- Identification
- Evacuation
- Road / Access Flooding
- Emergency management preparation
- Prevents loss of emergency resources (Trucks, People, Boats)

CITY OF GLOUCESTER
MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

DRAFT

HURRICANE EVACUATION COMPROMISED AREAS

Michael S. Hale, AICP
Director of Public Works

Paul G. Keane, P.E.
City Engineer

0 0.25 0.5 1 Miles

This map was created in conjunction with the Gloucester DPW GIS/GNIS program.

Publication Date: January 2011

Legend

Access Compromised

EVC

- 1
- 2
- 3
- 4

DATA SOURCES

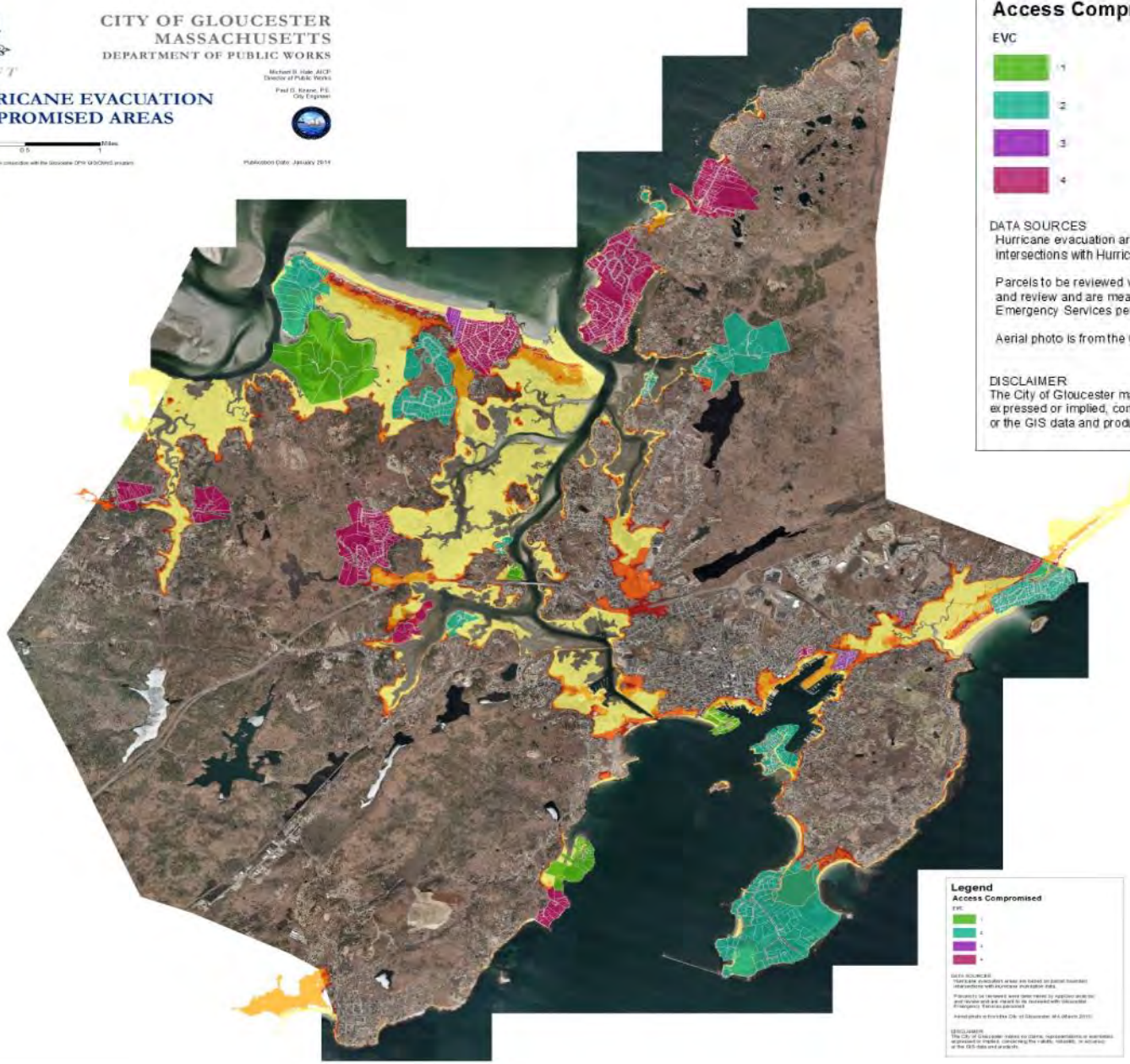
Hurricane evacuation areas are based on parcel boundary intersections with Hurricane Inundation data.

Parcels to be reviewed were determined by AppGeo analysis and review and are meant to be reviewed with Gloucester Emergency Services personell.

Aerial photo is from the City of Gloucester, MA (March 2011).

DISCLAIMER

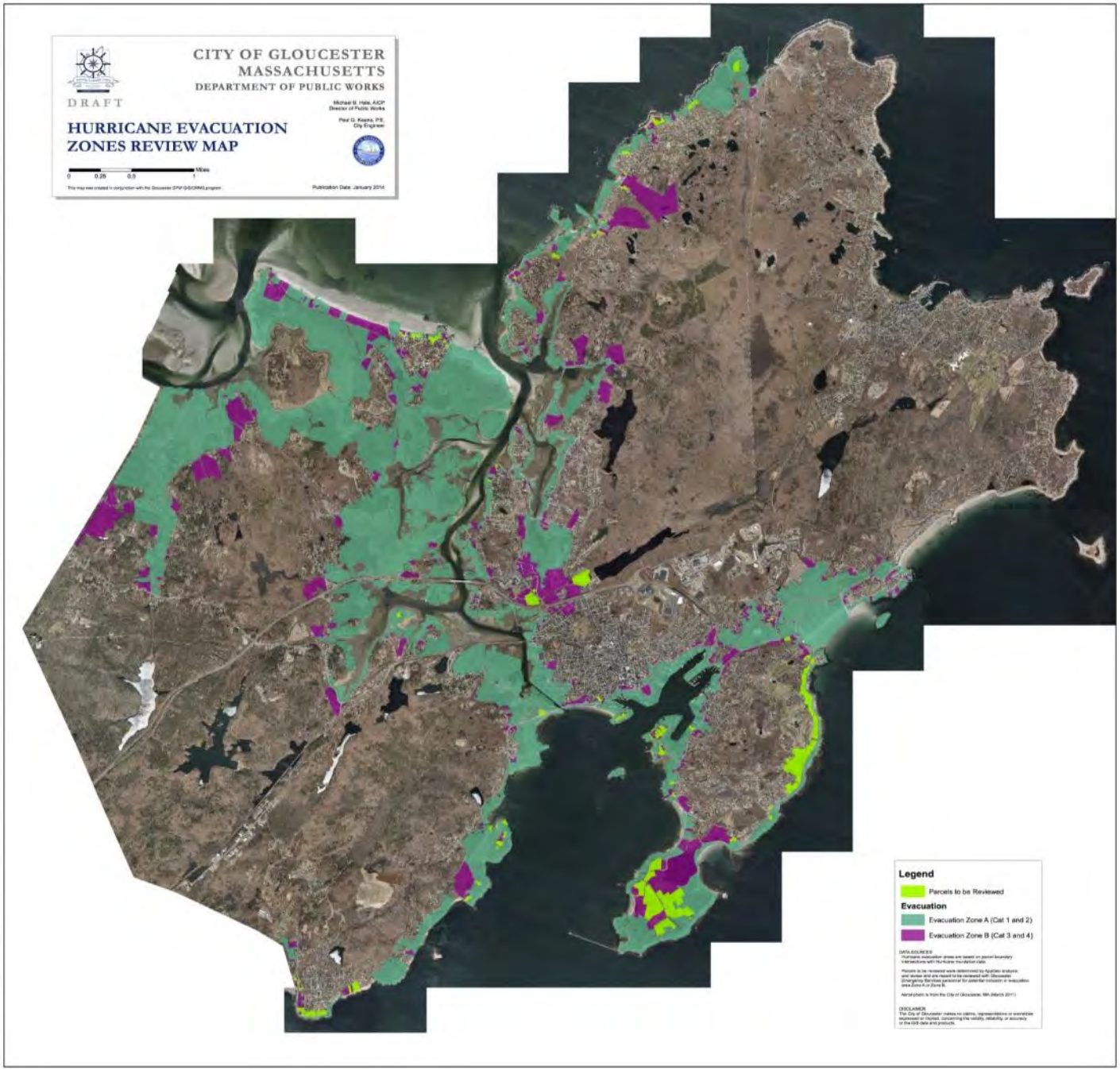
The City of Gloucester makes no claims, representations or warranties expressed or implied, concerning the validity, reliability, or accuracy or the GIS data and products.



Local Knowledge

Additional support from City Leaders, DPW, Emergency Management Department, Fire and Police Departments, Local Residents

- Mother's Day Flood 2006
- Babson Reservoir
- Atlantic Ave and Coastal Roads



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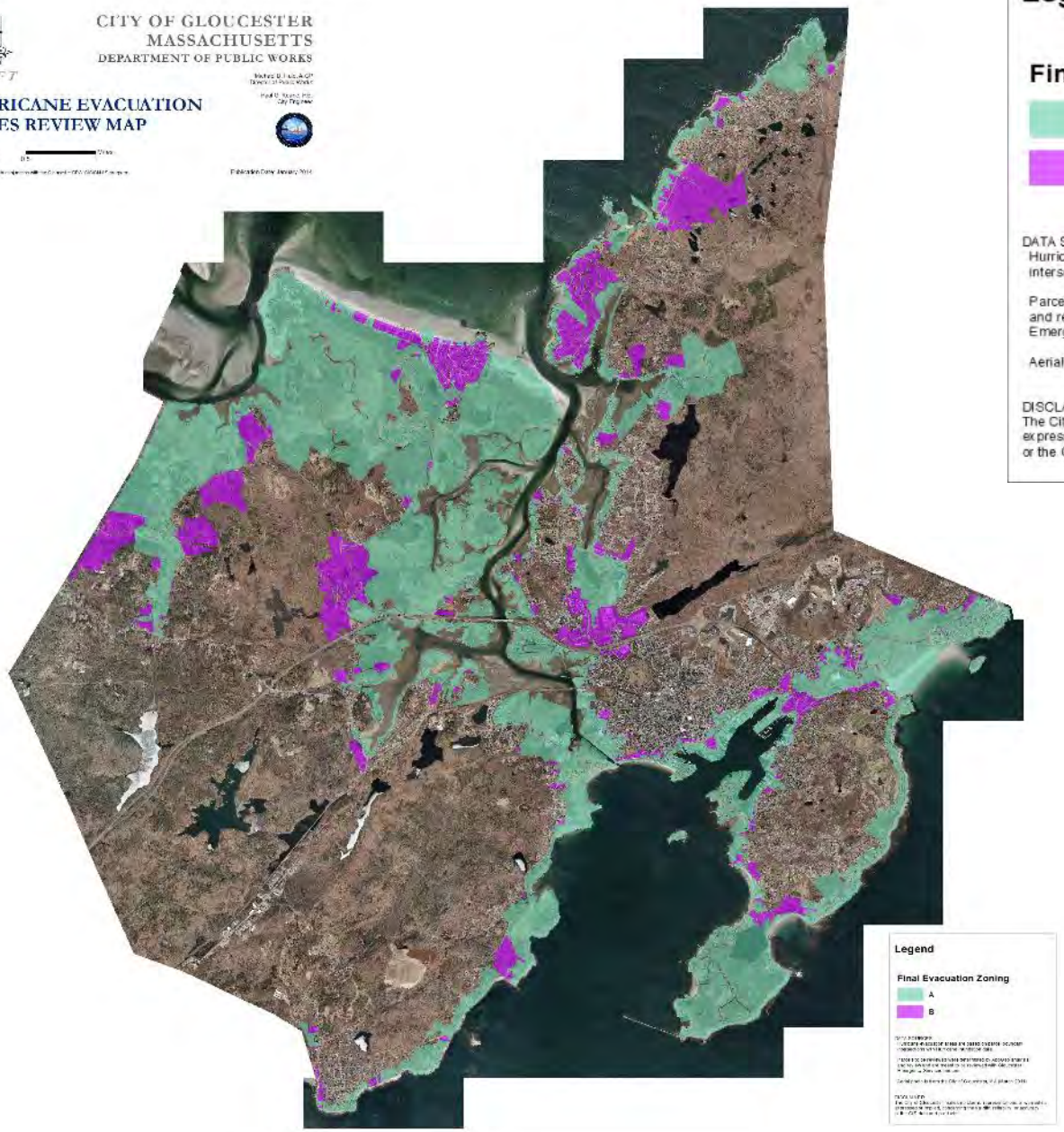
HURRICANE EVACUATION ZONES REVIEW MAP



Legend

Final Evacuation Zoning

A

B

DATA SOURCES

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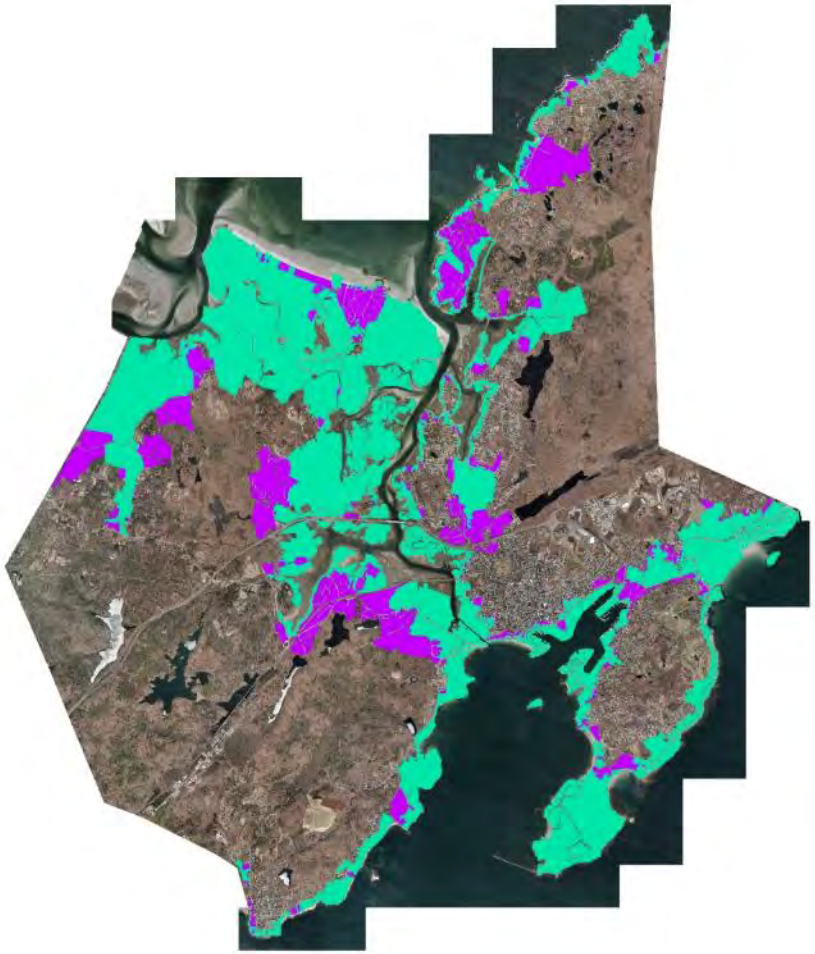
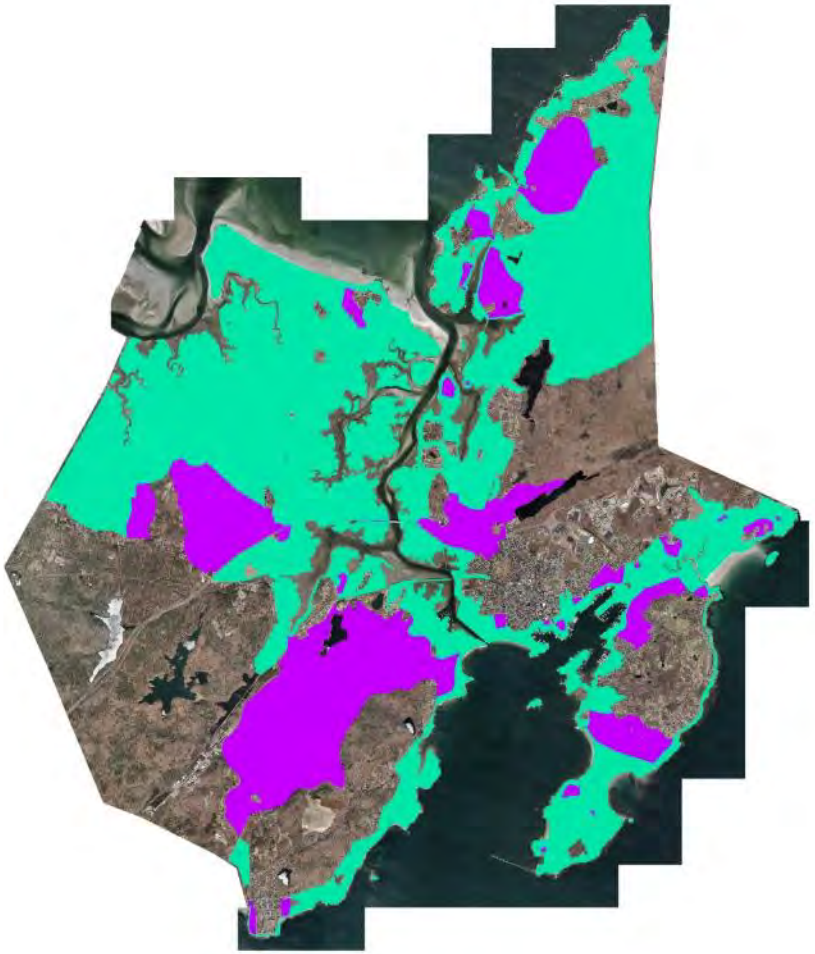
AppGeo Results



MEMA Results

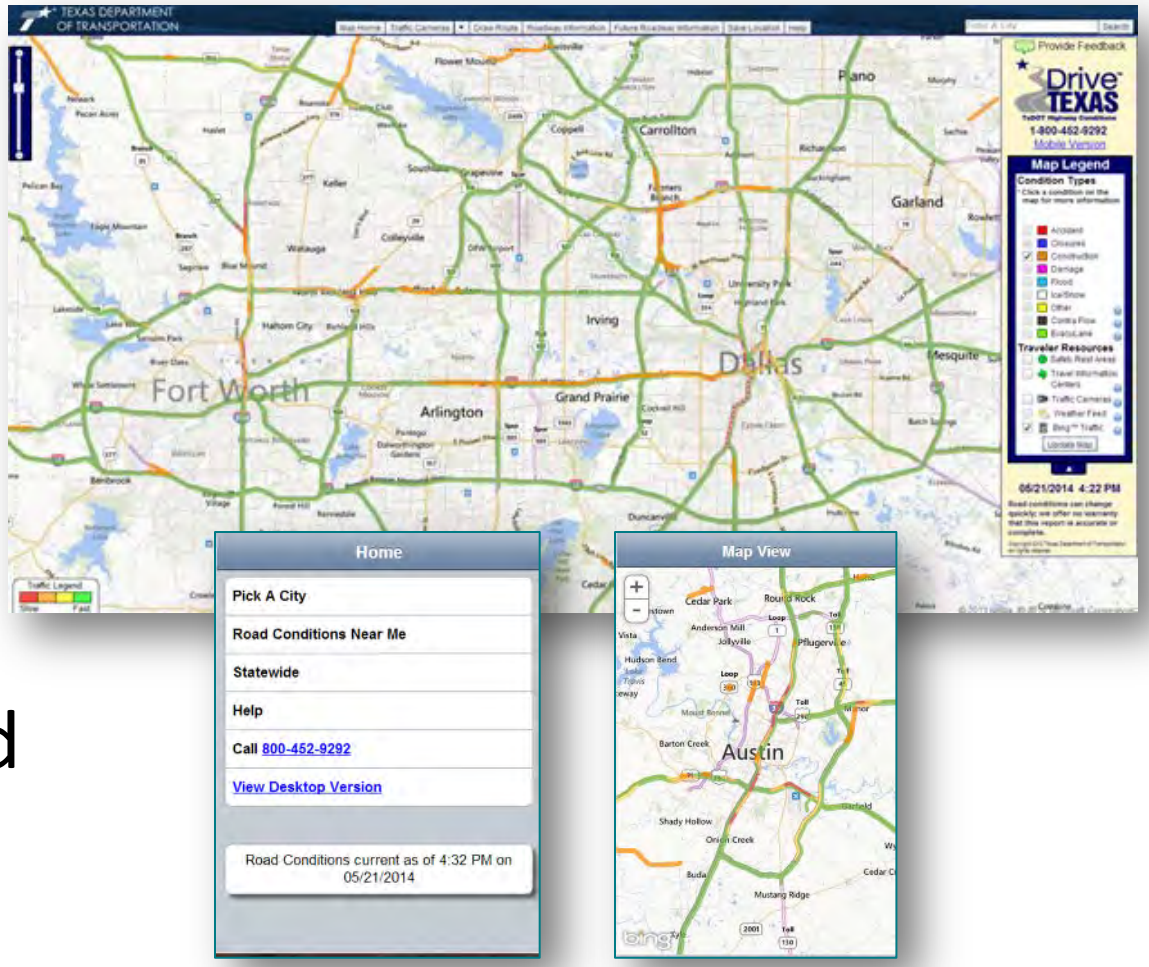


Benefits to Emergency Managers

- Local Input
- Resident Information
- Emergency Resources Focus

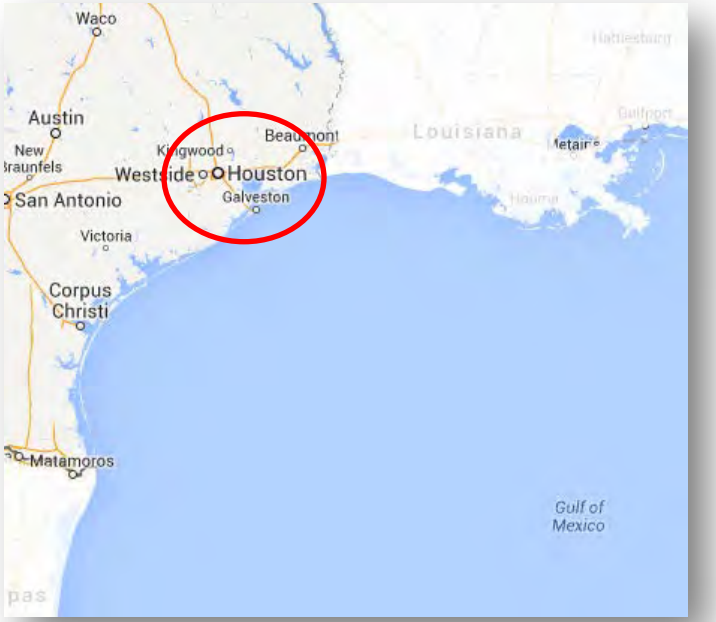
Texas DOT – Highway Conditions

- Travel information to the public
  - Construction
  - Road Closures
  - Flooded roads
  - Events, Etc…
- Existing ArcGIS Server Website and Mobile



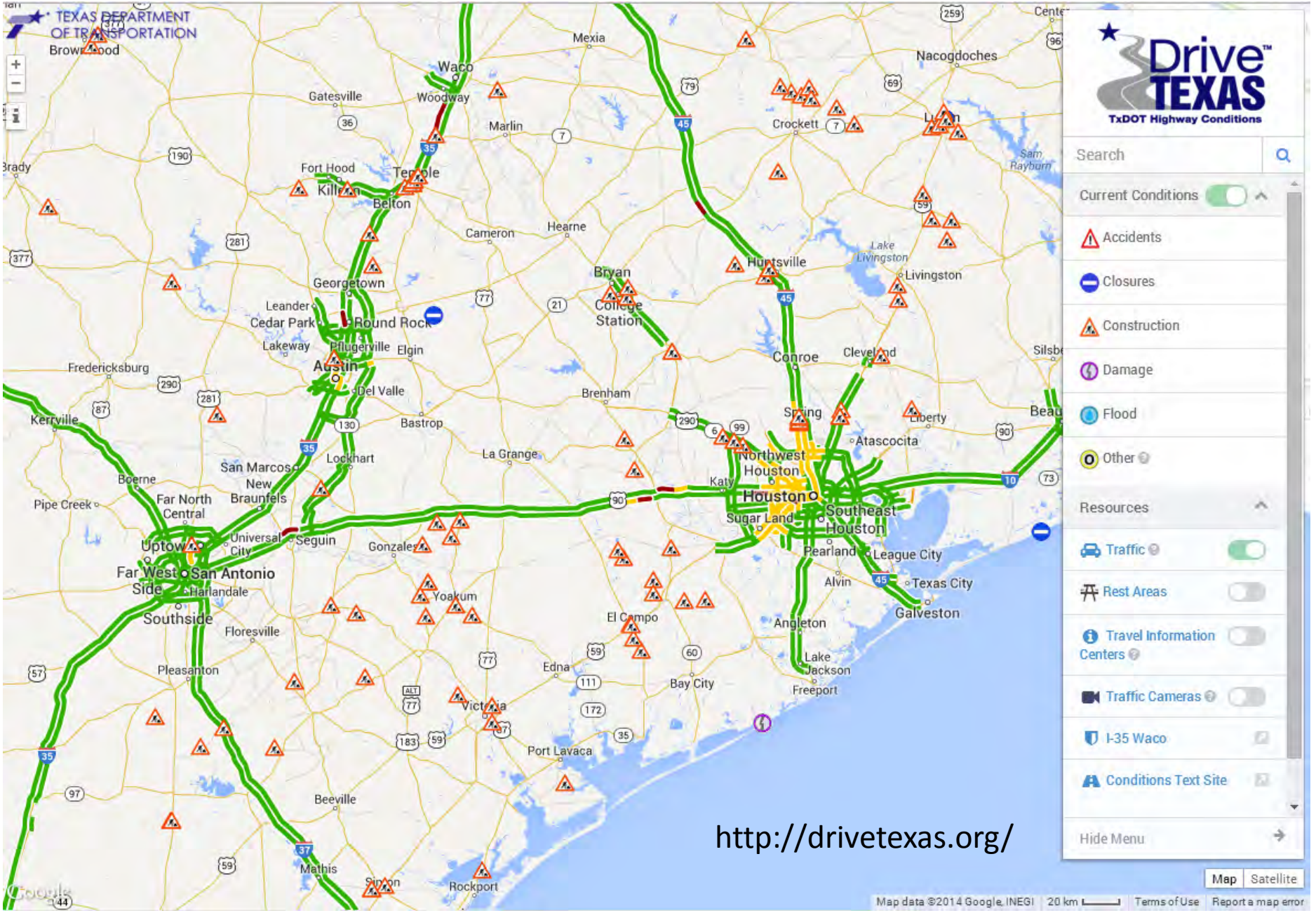
Driving Demand: Scalability

- Winter Storm in NW
  - Demand on website
  - ~1,000 simultaneous users
- Nightmare scenario: Hurricane in the Gulf of Mexico
- "Contraflow"
  - Evacuation with both sides of highway one-way

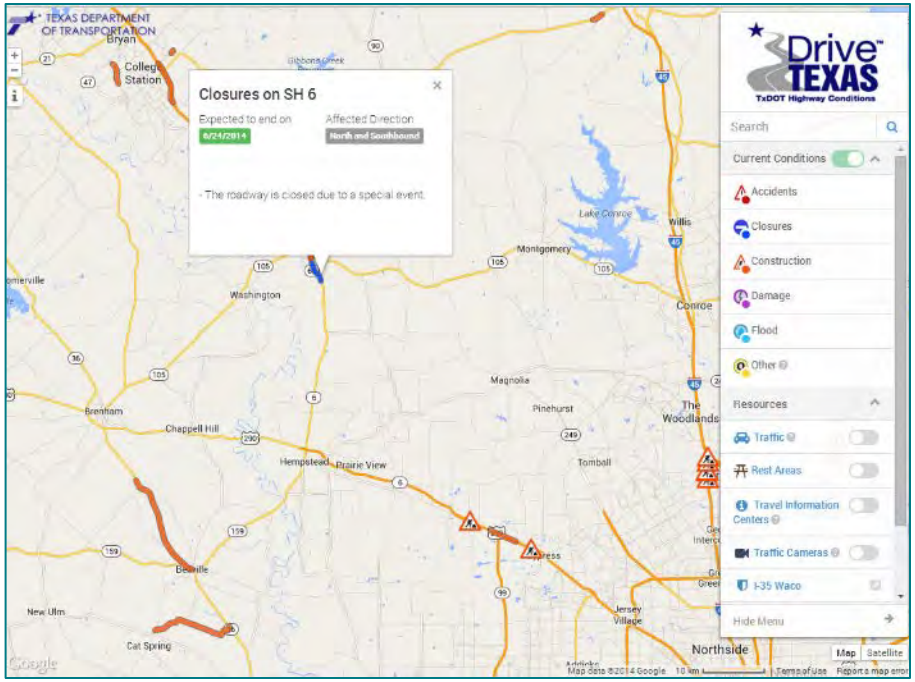


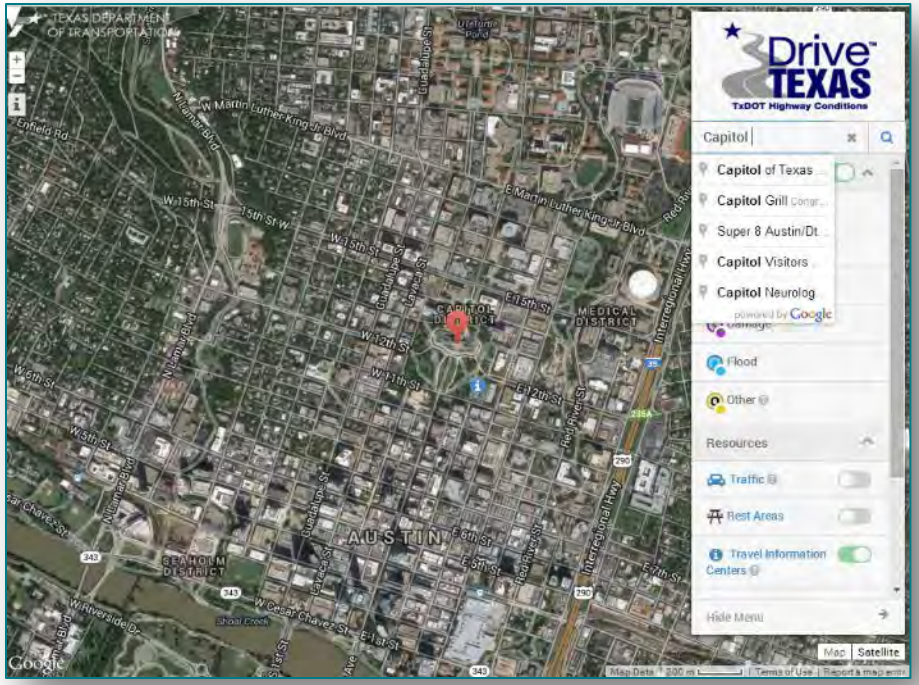
Enter AppGeo & Google

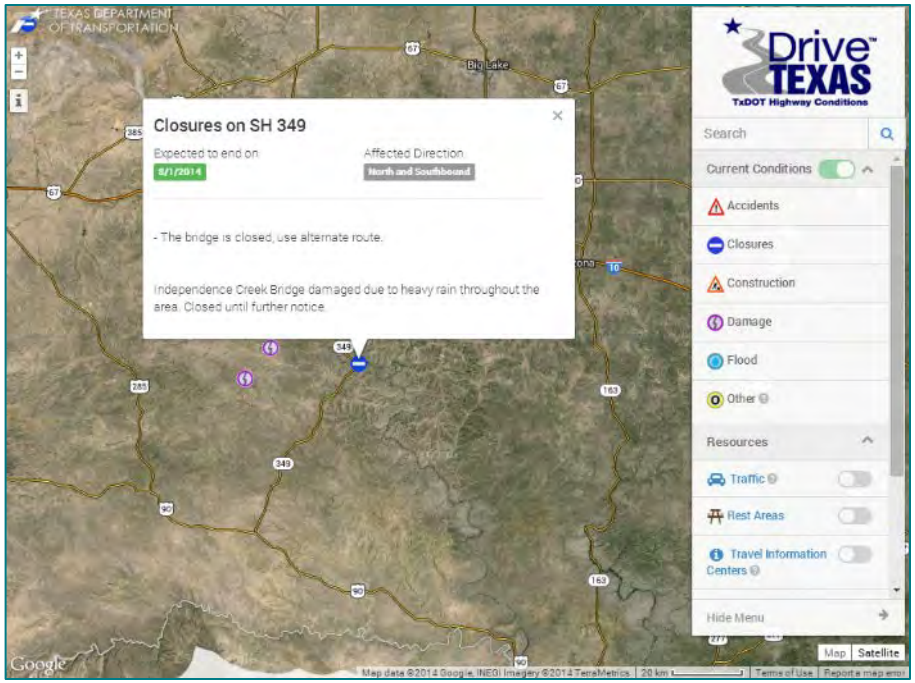
- New Requirements
  - Similar site with
  - Modern UI
  - Robust platform
  - 10,000+ simultaneous users
- Rebuilt site with Google Maps Engine (GME)
  - Massive infrastructure and auto-scaling in the cloud
  - Load tests passed 100,000 users
- TxDOT internally updates data in ArcGIS
  - Updated to GME every 10 mins

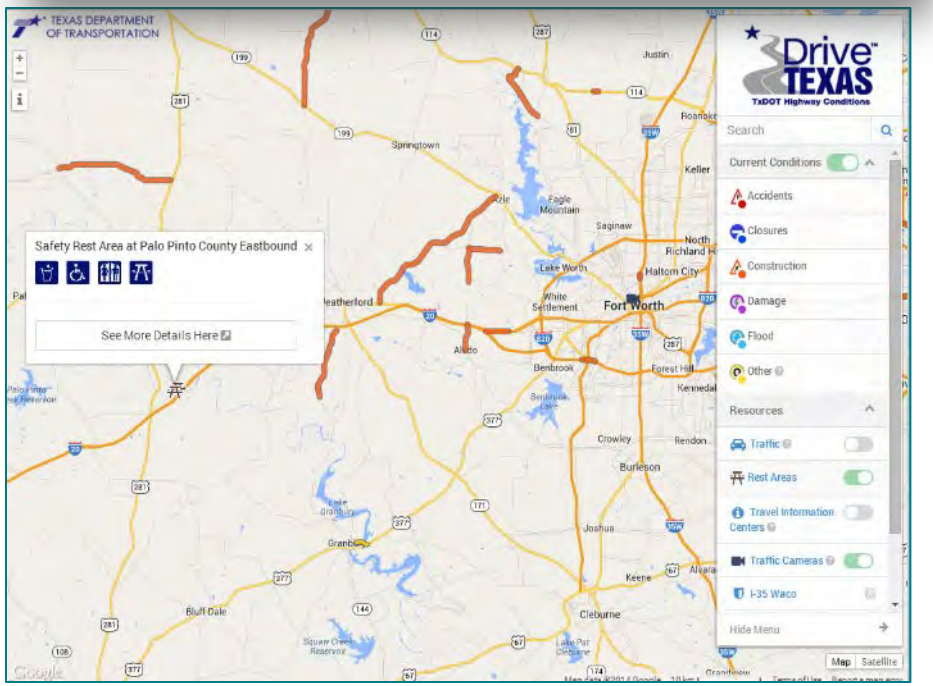


http://drivetexas.org/



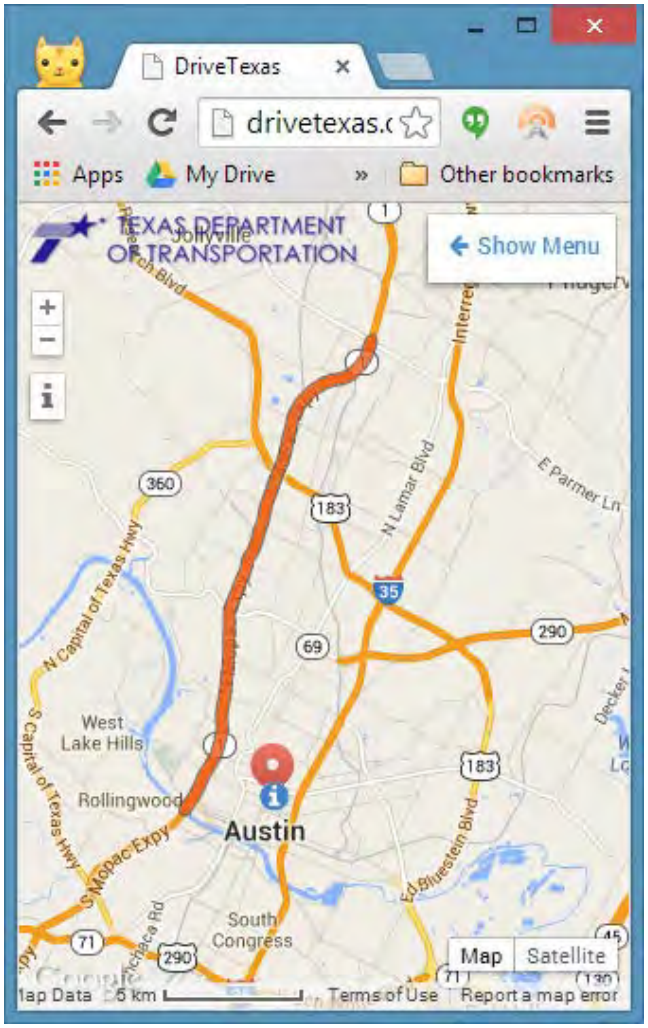




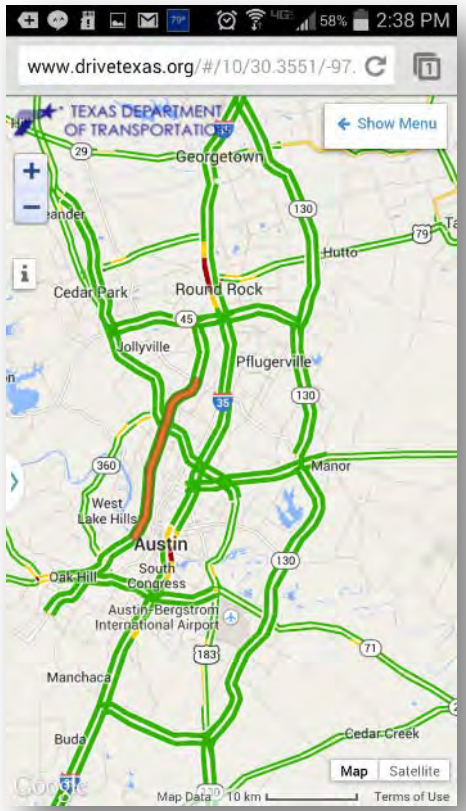


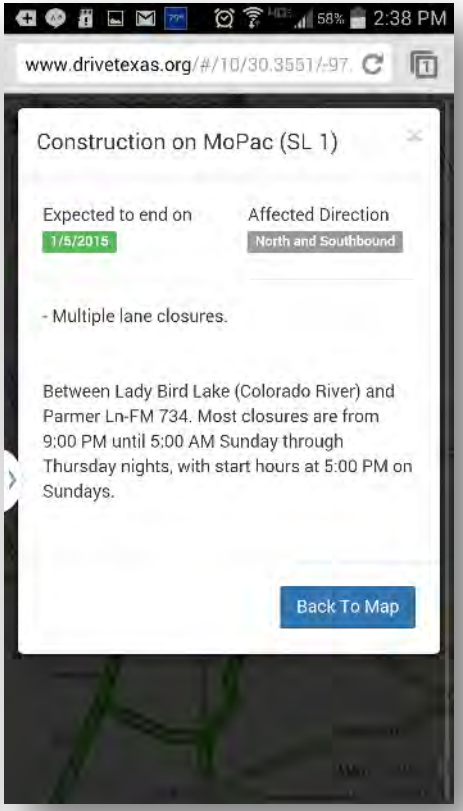
Mobile

Browser – Dynamically Resizes



Mobile Device Browser





Questions?

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NOAA Sea, Lake and Overland Surges from Hurricane Model

- MEMA and AppGeo utilized model results
- Hurricane Surge Inundation
- Created by the National Weather Service
- Estimates storm surge heights
- Models wind speeds and direction, which drive storm surges
- Incorporates
  - Physical features
  - Water depths
  - Coastal configurations
  - Roads and other anthropogenic features

Refining our Approach

- A broader approach with additional criteria
  - Contours / DEMs
  - Proximity Analysis
  - Home location
  - Software