

# Salem Flood Map Revisions



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# Some Useful Definitions

- *Wave Setup* – water level increase along a shoreline due to wave breaking in the surf zone
- *Wave Run Up* - uprush of water from wave action on a shore barrier
- *Wave Overtopping* – flow of water over a shore barrier from waves
- *Storm Surge* – Increase in water level due to meteorological effects (winds and barometric pressure)
- *100-year Storm* – an event with a 1% chance of occurring or being exceeded in any given year

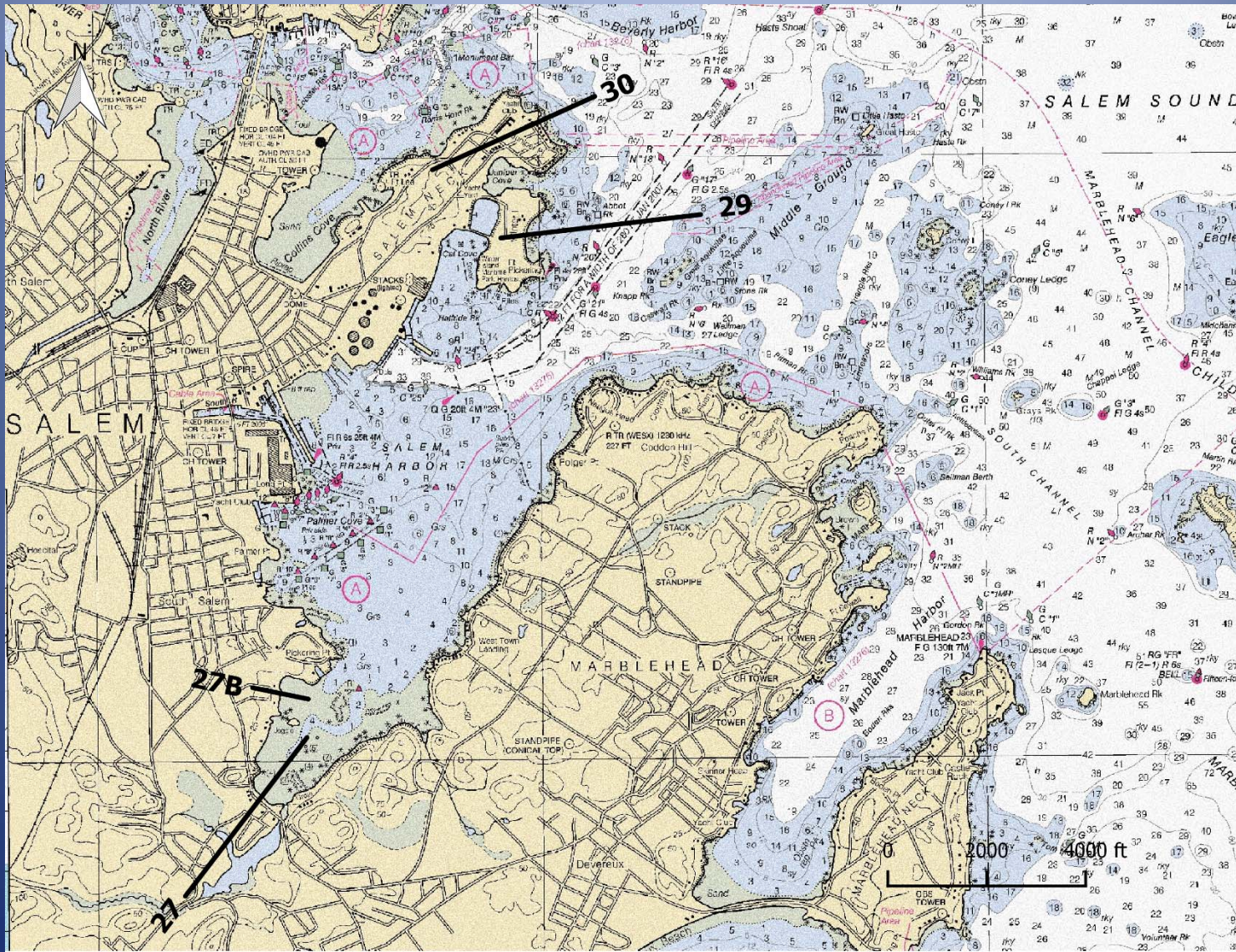
# Some More Useful Definitions

- *Flood Insurance Study* (FIS) – FEMA analysis that is the basis of the flood map delineation
- *LOMR* – Letter of Map Revision
- *Base Flood Elevation* (BFE) – total hazard area elevation which includes all effects from storm surge, setup, run up and overtopping
- *Zone VE* – Coastal flood zone with velocity hazard from waves greater than 3 feet
- *Zone AE* – Coastal flood zone with waves component less than 3 feet
- *Zone AO* – Flood Depths of 1 to 3 feet from sheet flow on sloping terrain

# Opportunities for Mapping Improvements

- **Site specific analysis of offshore waves**
  - Directional analysis of waves
  - Determine impact of wave sheltering by islands, ledges and shoals that bound Salem Sound
  - Alternate Setup determination
- **Reanalysis of offshore storm surge levels**
- **Improve resolution of FIS analysis**
  - Account for variable nature of shoreline
  - Add new analysis transects

# Where Improvements are Possible



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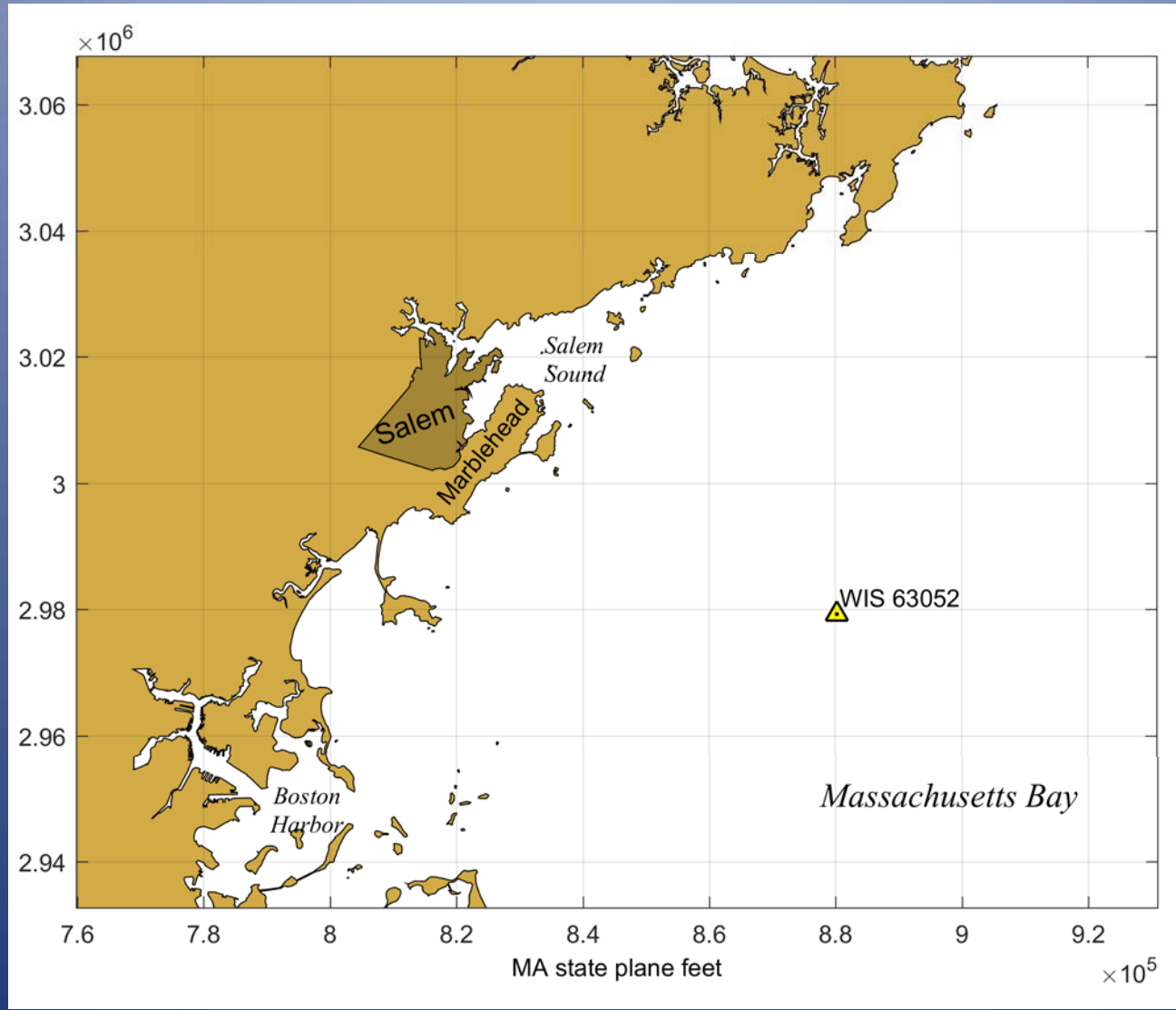
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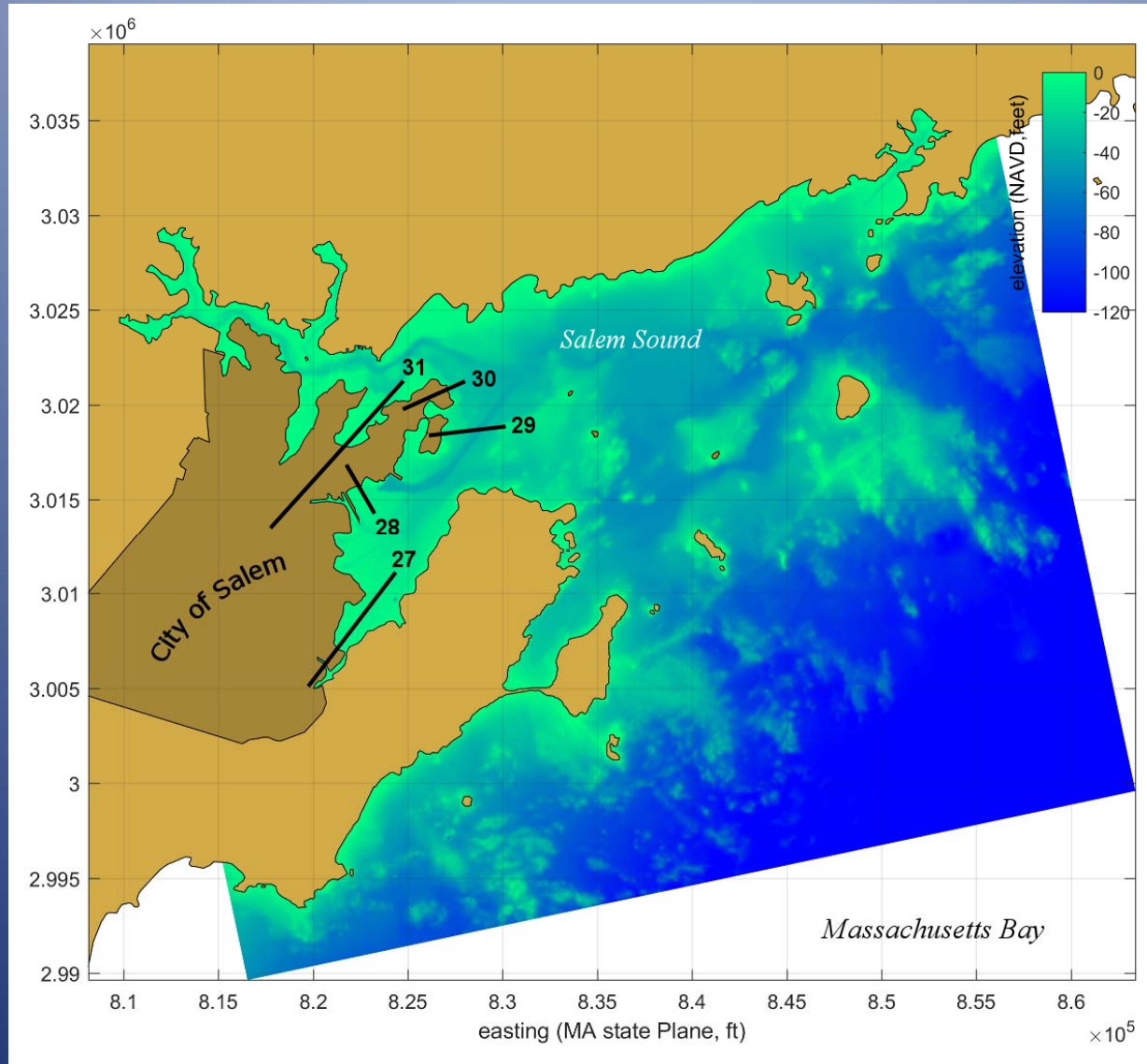
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# Analysis of Waves

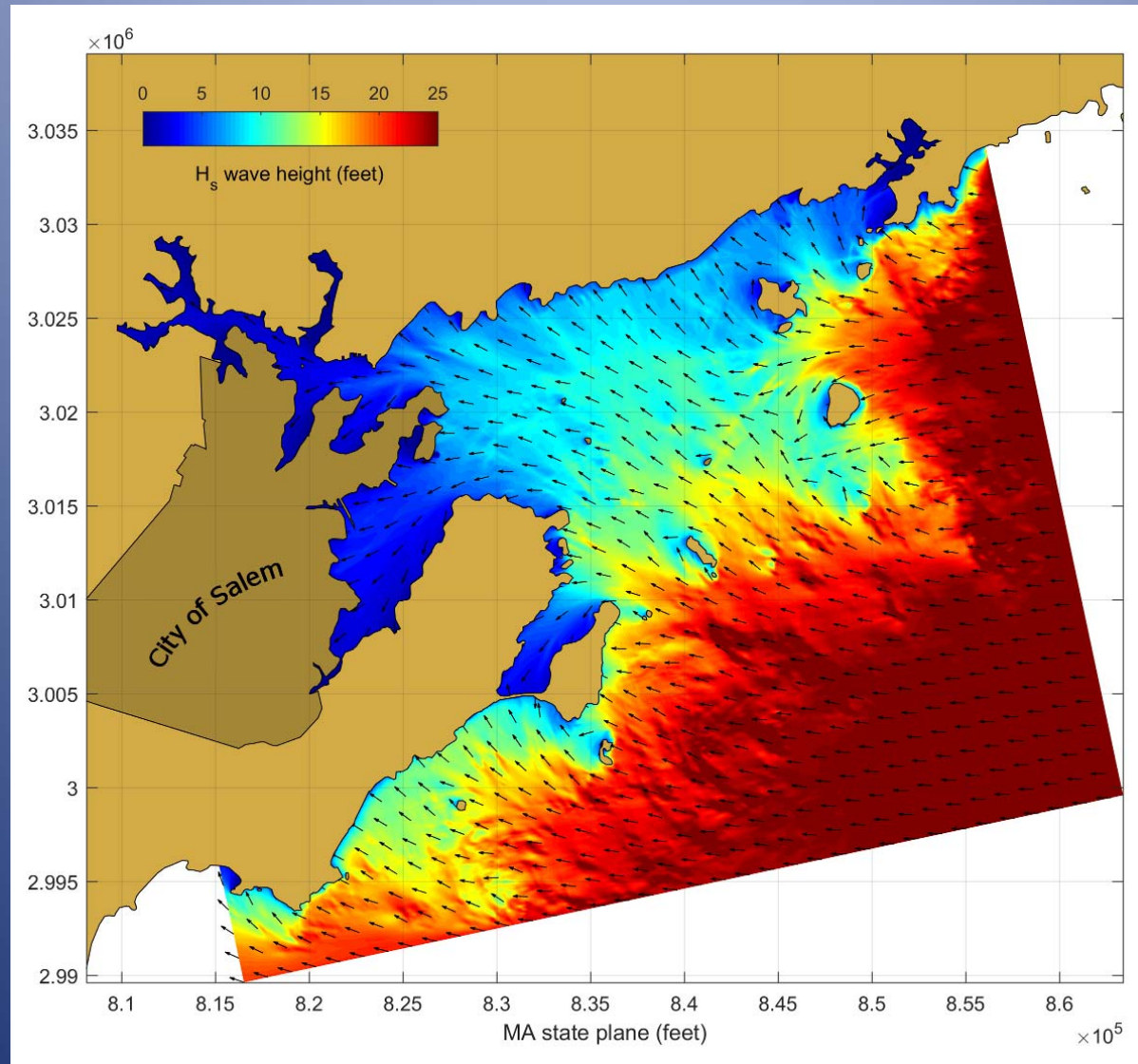




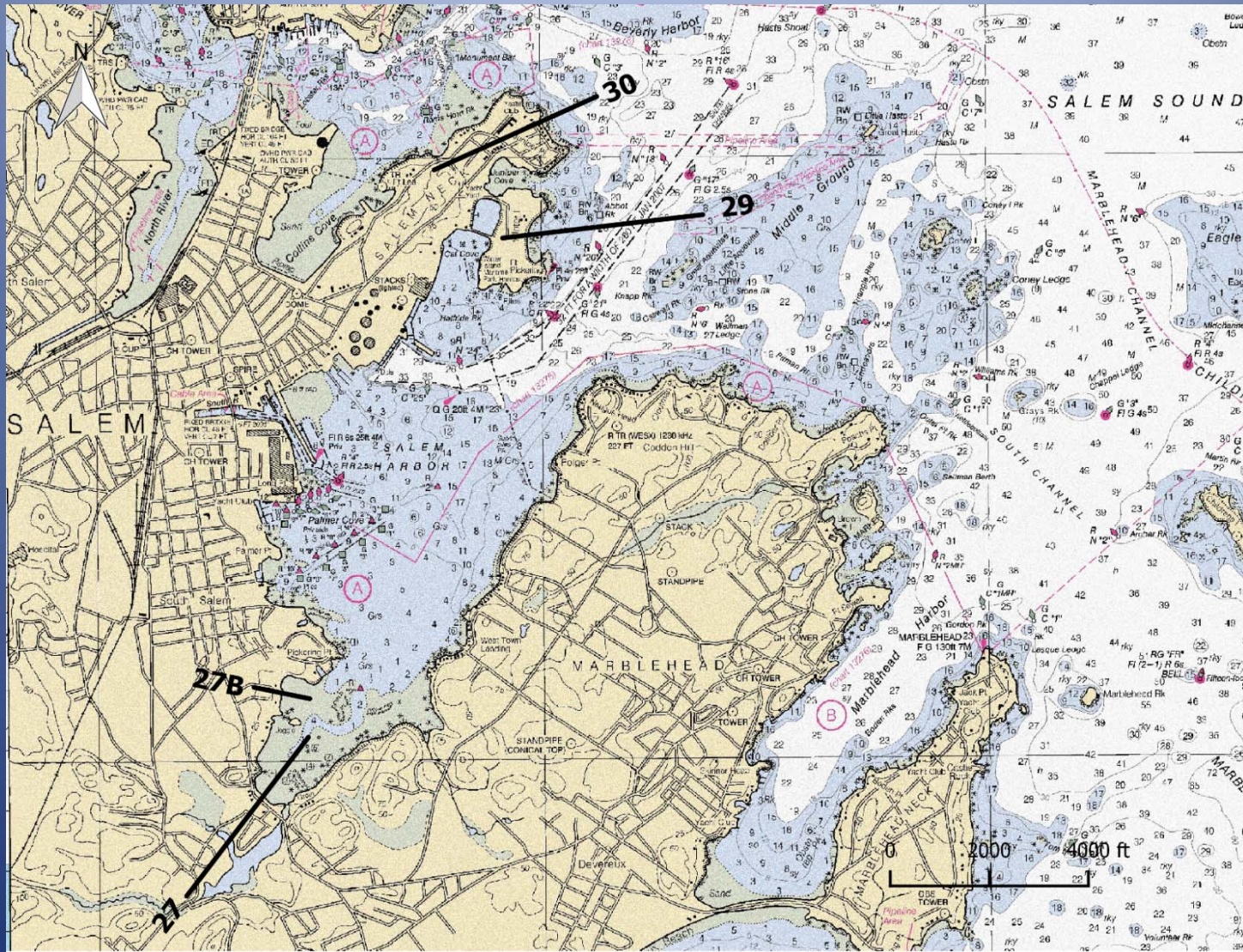
# SWAN Model of Salem Sound



# Simulation of 1% East conditions



# Analysis Transects Used to Delineate Flood Zones



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# Summary of Proposed Changes

- Juniper Point & Winter Island
  - Lower VE zone elev. (21 ft reduced to 16 ft NAVD)
  - Reduce VE zone extent
  - Lower AE zone elev. (14 ft reduced to 11 ft NAVD)
  - Expanded zone X (out of 1% floodplain)
- South Salem & Forest River
  - Lower AE zone elev. (11ft reduced to 10 ft NAVD)
  - Reduced area of AE zone.

Salem Panel 4 - Juniper Point  
Proposed FIRM Changes  
Sept 16, 2016

Proposed zone changes (as labeled)  
Effective zone delineation

300 Feet



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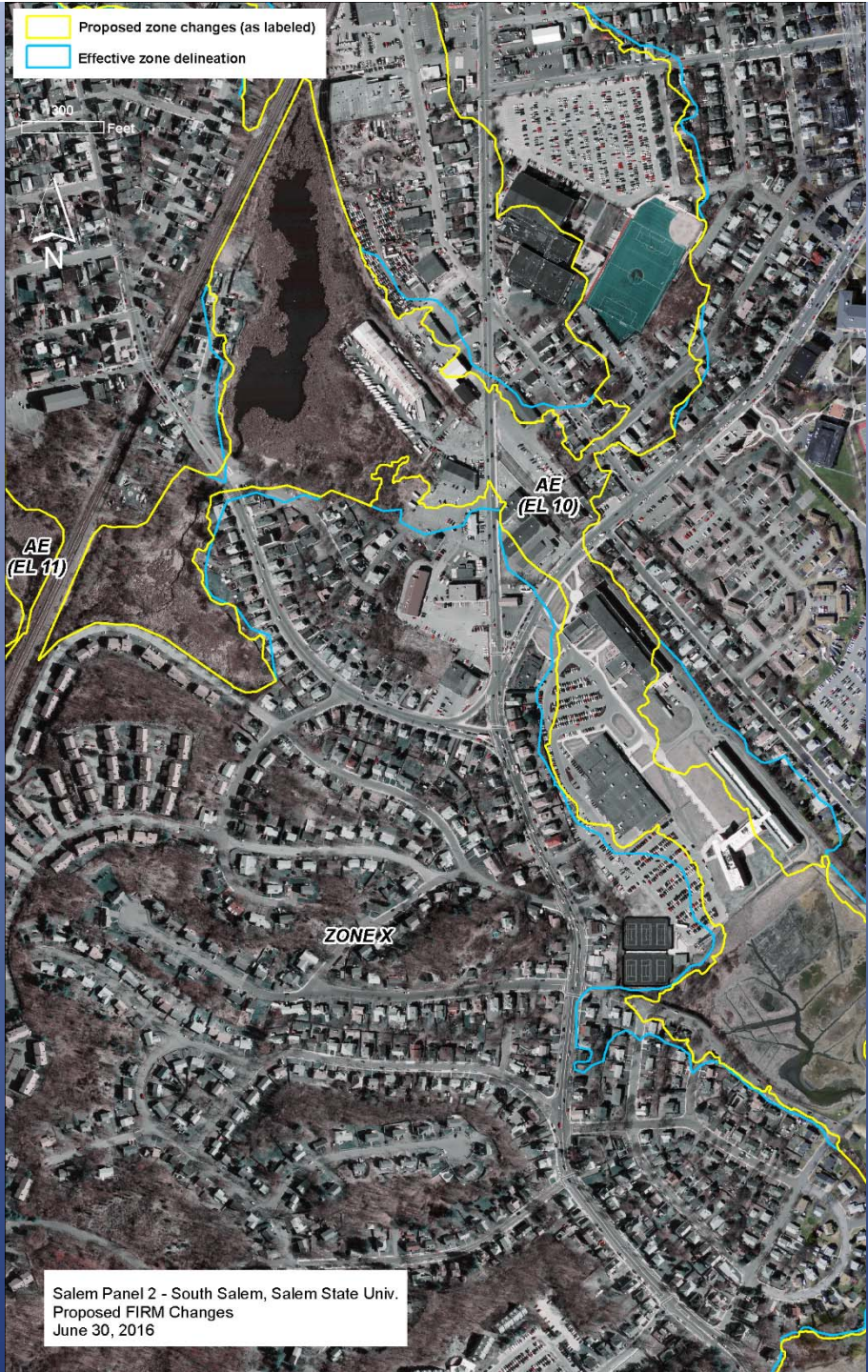
Salem Panel 5 - Winter Island  
Proposed FIRM Changes  
June 30, 2016



Sept 19, 2016

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Proposed zone changes (as labeled)  
Effective zone delineation

200 Feet

AE  
(EL 11)

AE  
(EL 10)

ZONE X

Salem Panel 2 - South Salem, Salem State Univ.  
Proposed FIRM Changes  
June 30, 2016



