

Portsmouth Historic District and Adaptation to Sea Level Rise and Storm Surge

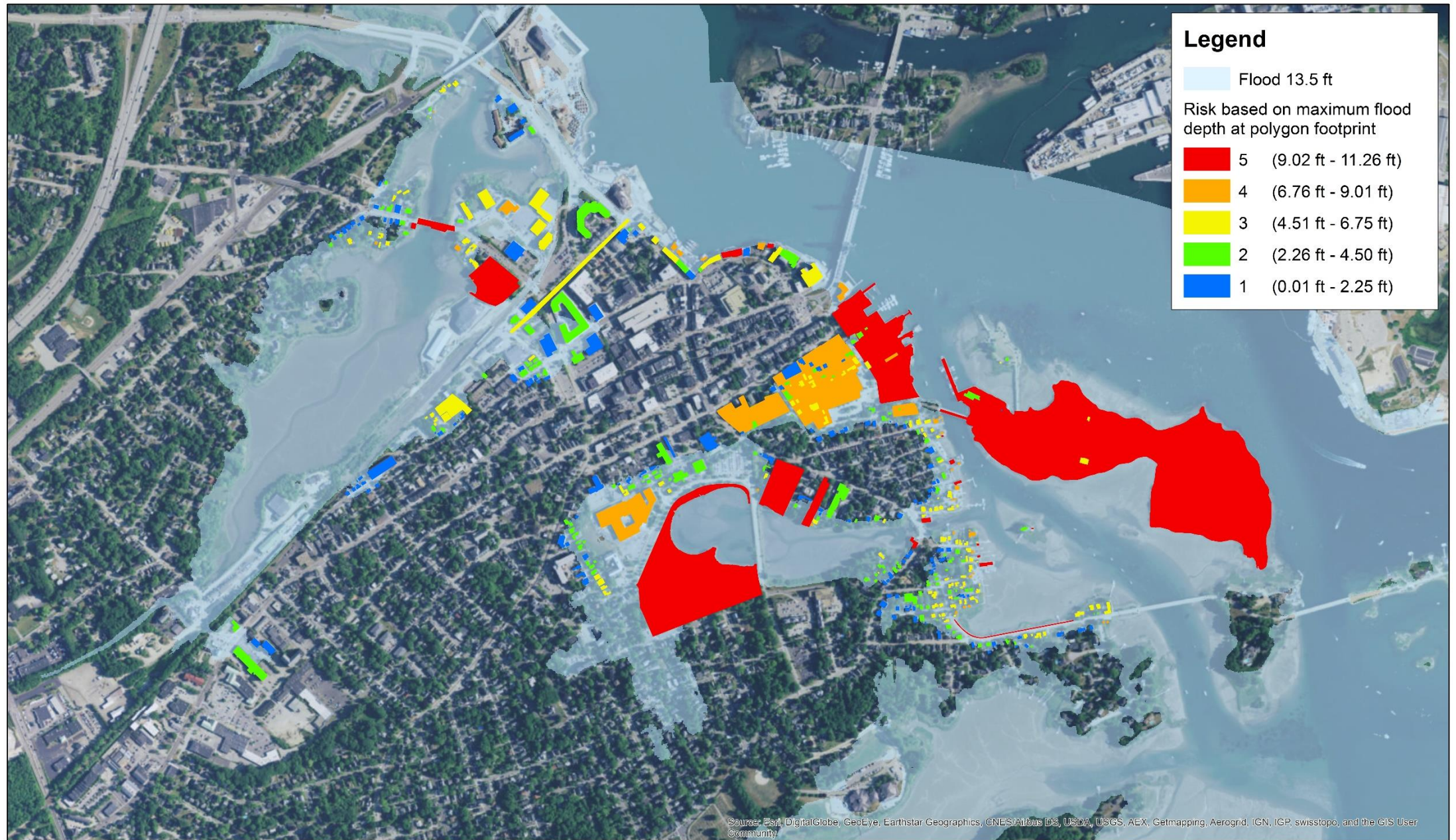
Local Adaptation Committee Meeting #5

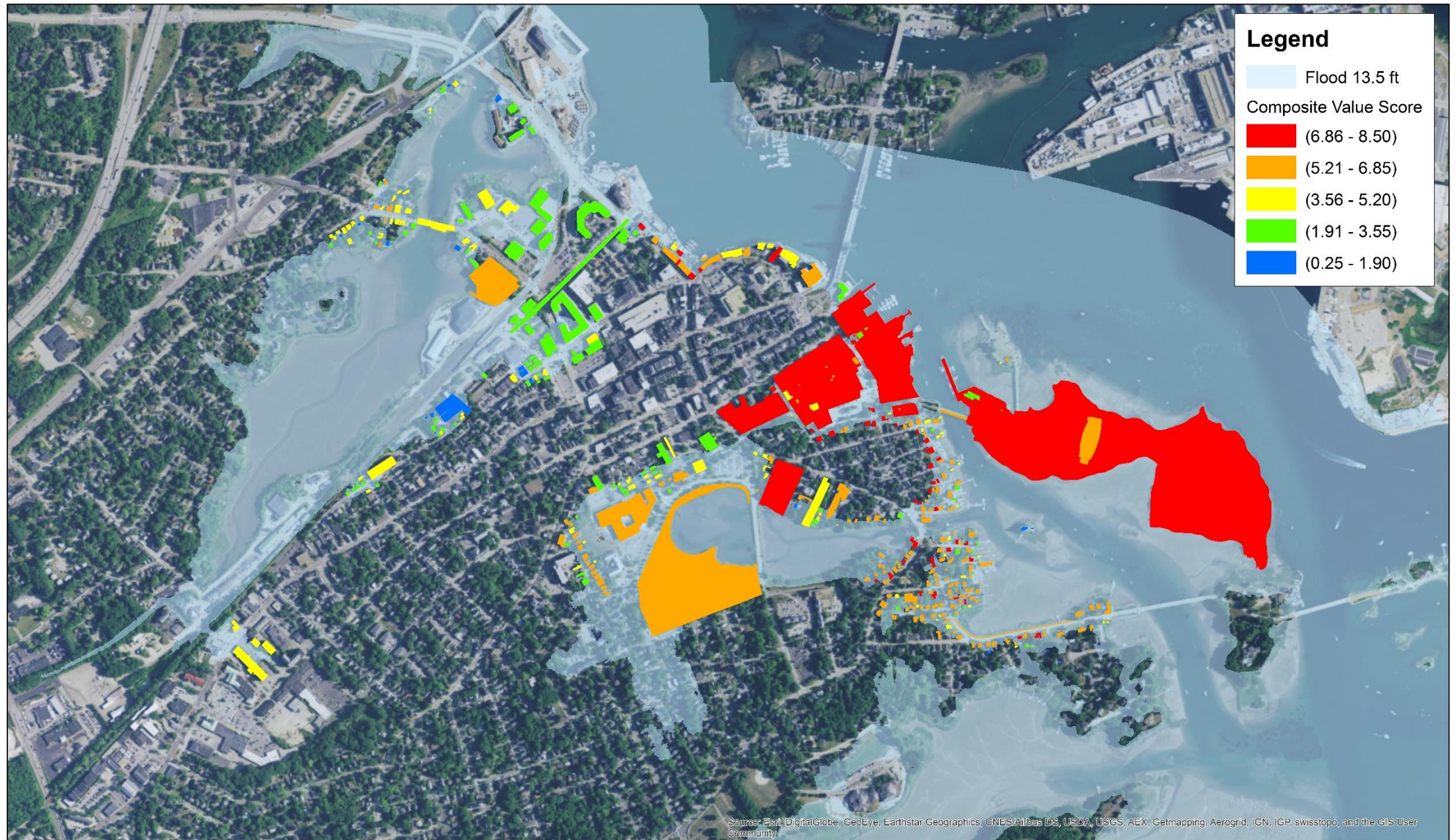
Wednesday 11/29, 10:00 – 12:00 am, the Island Club at New Castle

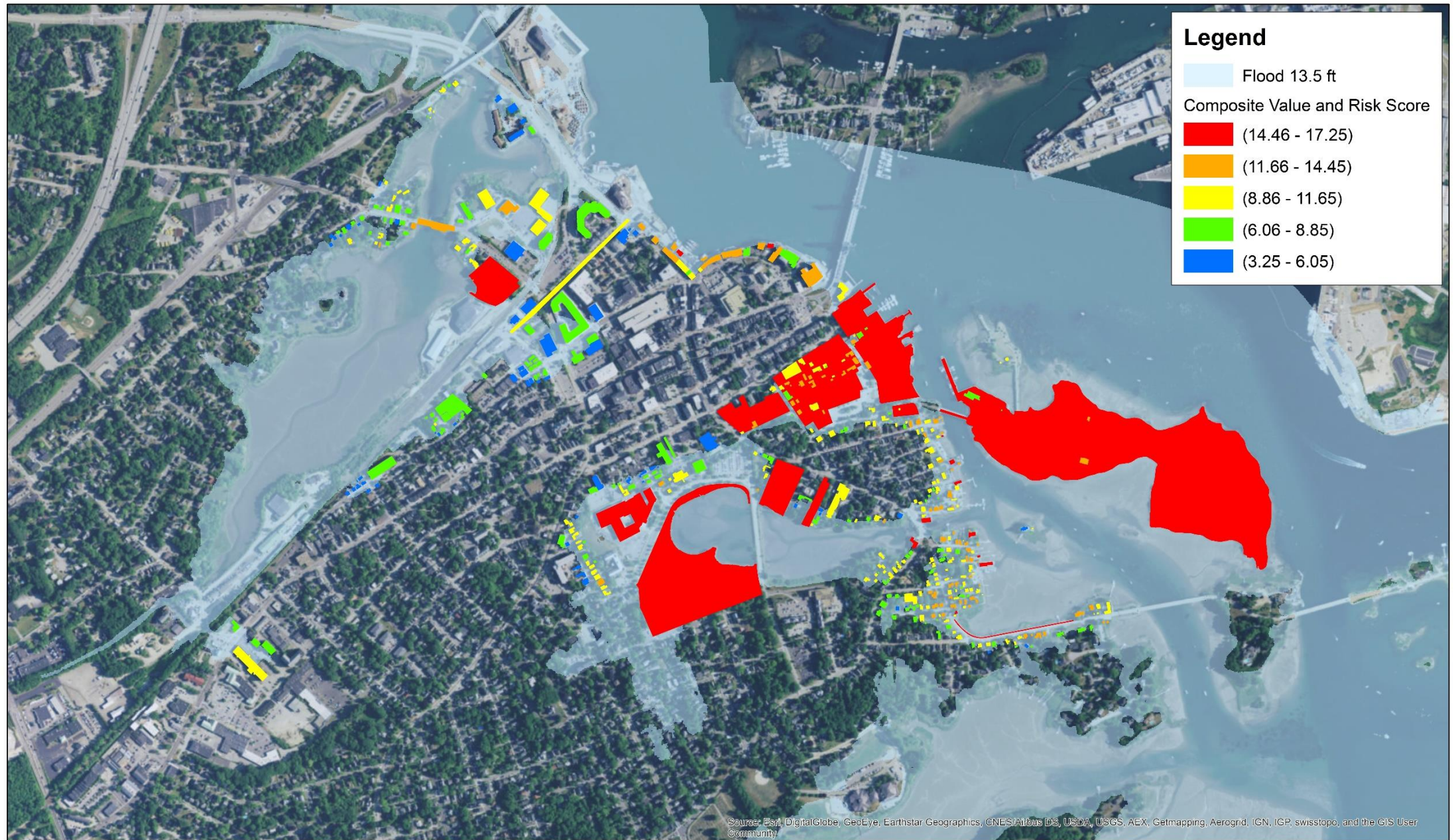
Agenda

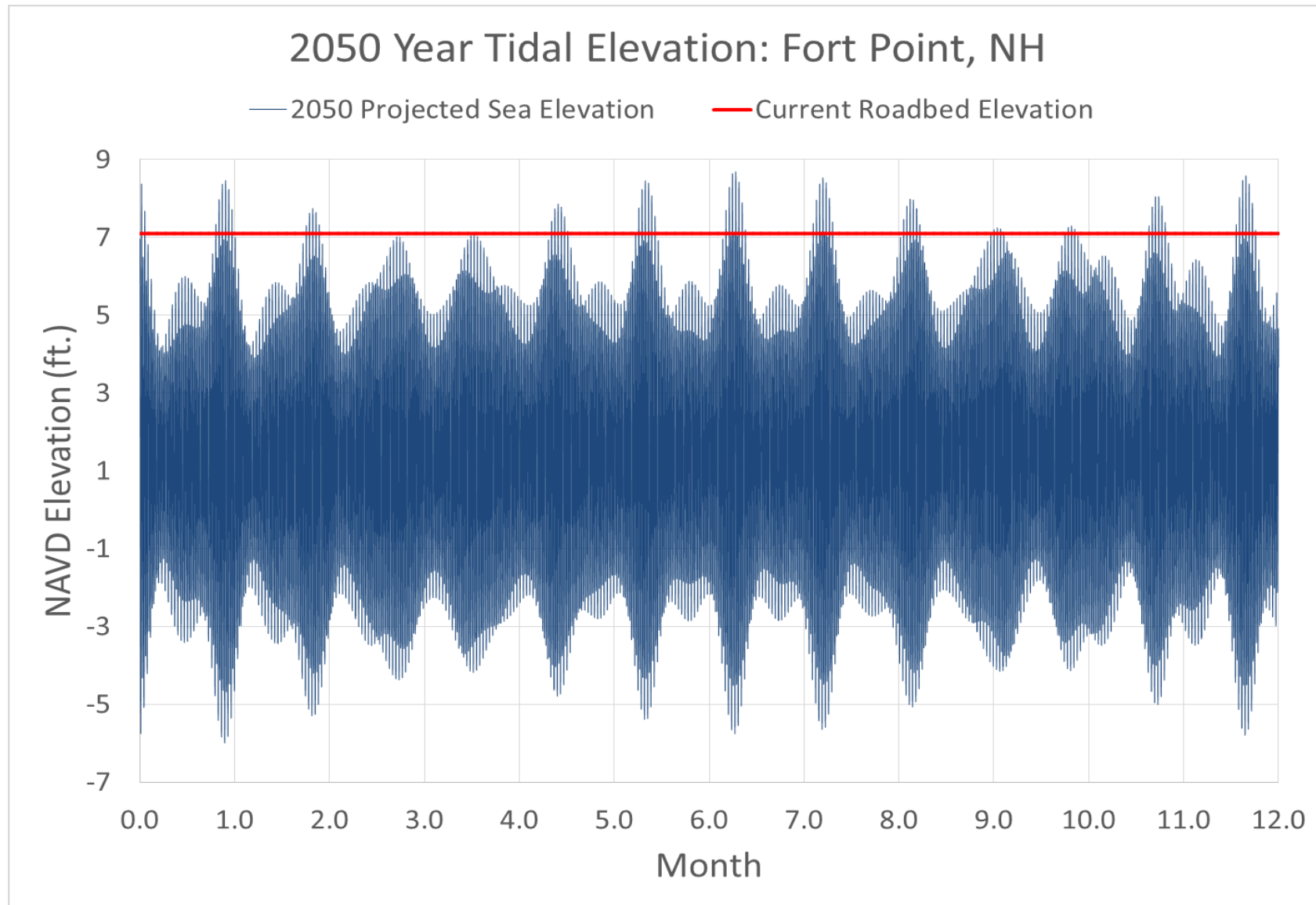
- The 16 sample actions through the Story Map
- Groundwater and collaborative monitoring
- Possible planning actions
- Possible emergency management actions
- January Public Meeting





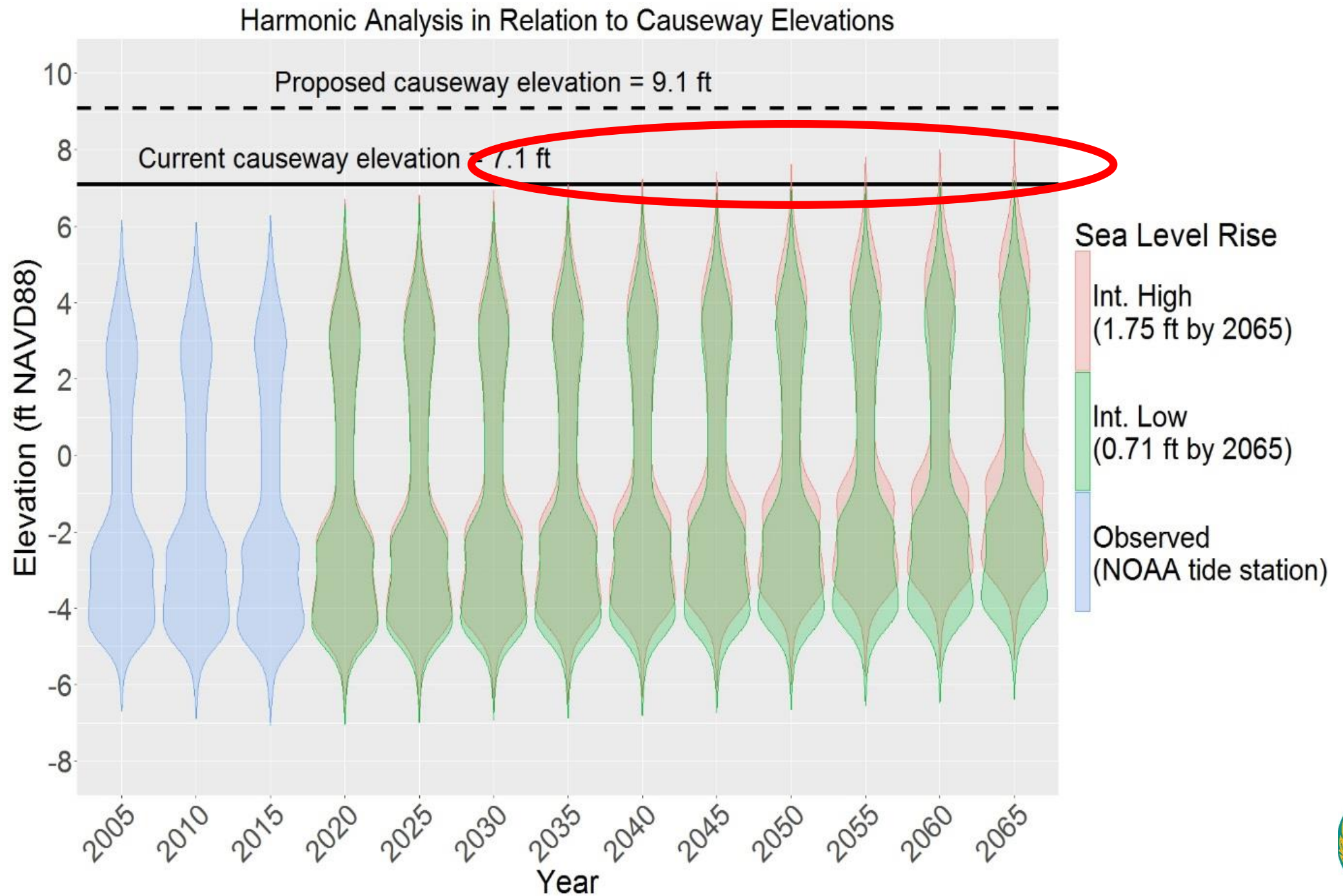




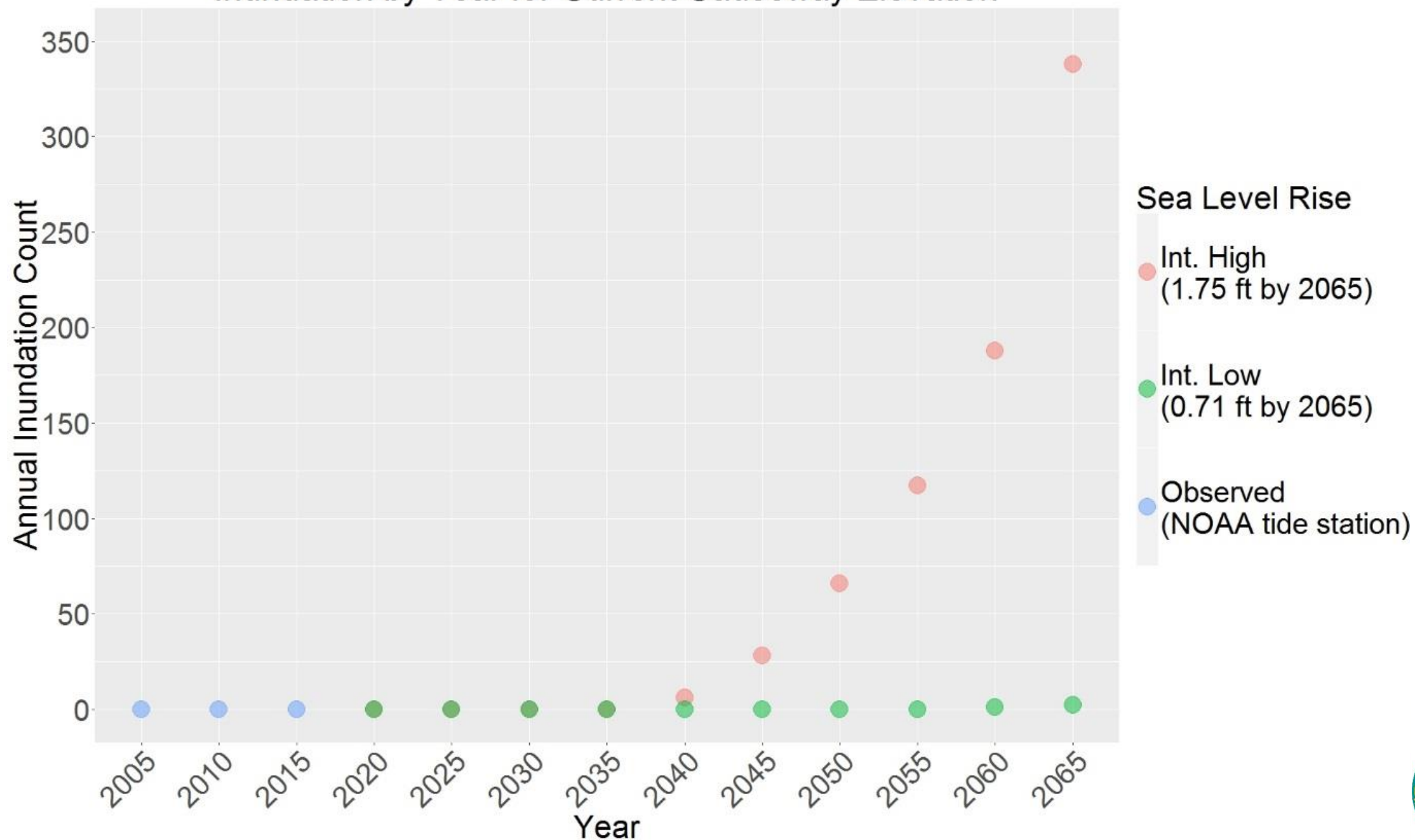


Source: Figueroa et al. 2014





Inundation by Year for Current Causeway Elevation



Agenda

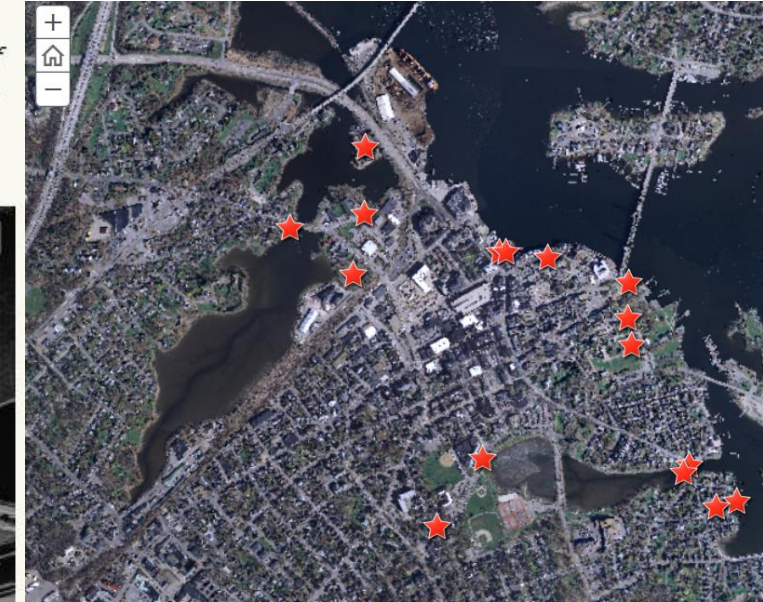
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Portsmouth Historic Vulnerability Assessment

Portsmouth Historic Properties Climate Change Vulnerability Assessment and Adaptation Planning Initiative
Using coastal flooding projections, Historic District studies, and input from the Local Adaptation Committee, a set of adaptation actions has been developed to illustrate a range of approaches that may merit further consideration by the City. For each of 16 actions, this site discusses feasibility, potential effectiveness, cost, and impact on historic character.



**South End Neighborhood/
Strawberry Banke/Working Waterfront (11)**
Salter-Pray-Partridge Street area



Candidate Action

Voluntary buyout program

Potential Feasibility

Voluntary buyout programs are growing in popularity around the coastal US as a means to help property owners get out of harm's way without a financial loss. They usually use combinations of federal, state, and local funds to purchase all or parts of coastal parcels and the structures on them, relocate and/or demolish the structures, and allow the exposed real estate to convert to marsh and eventually open water. Because finances for these programs can be challenging to arrange, potential feasibility is somewhat determined by the ability to work proactively to integrate multiple sources of funds. Ability to develop local willingness to allocate funds is also a strong determinant of feasibility. A program of this type may be feasible in the Salter-Pray-Partridge Street area, but further evaluation is required, including an initial survey of residents and business owners to determine likelihood of participation. Results may indicate that for the time being local desire to relocate to less vulnerable areas is not strong enough to justify substantial investment in a program.

Potential Effectiveness

Successful programs of this type are growing in number (one example is Oakwood Beach, NY: <http://www.wnyc.org/story/sandy-devastated-neighborhood-returns-nature/>). They can help people move to less vulnerable land and help strategically guide conversion of shoreline to water over time. Some municipalities like East Hampton, NY now have a real estate transfer tax, a portion of which revenue is being used toward buyouts of vulnerable parcels. A program of this type either in the Salter-Pray-Partridge Street area or more broadly in Portsmouth has reasonable potential to effectively remove vulnerable assets from the threats of sea level rise and storm surge over time.

Preliminary Cost Estimate

Cost of a possible voluntary buyout of houses in the district would be determined by how many properties the City wishes to assist in this manner, the portion of the value of the structure the program would be intended to cover, and market values at the time.

Potential Impact on Historic Character

A buyout program where a building is relocated would result in a loss of integrity of location, and possibly feeling and association. If a building contributing to the Portsmouth Downtown Historic District were removed from the district, it would likely no longer be a part of the district, resulting in a loss of National Register eligibility.



Agenda

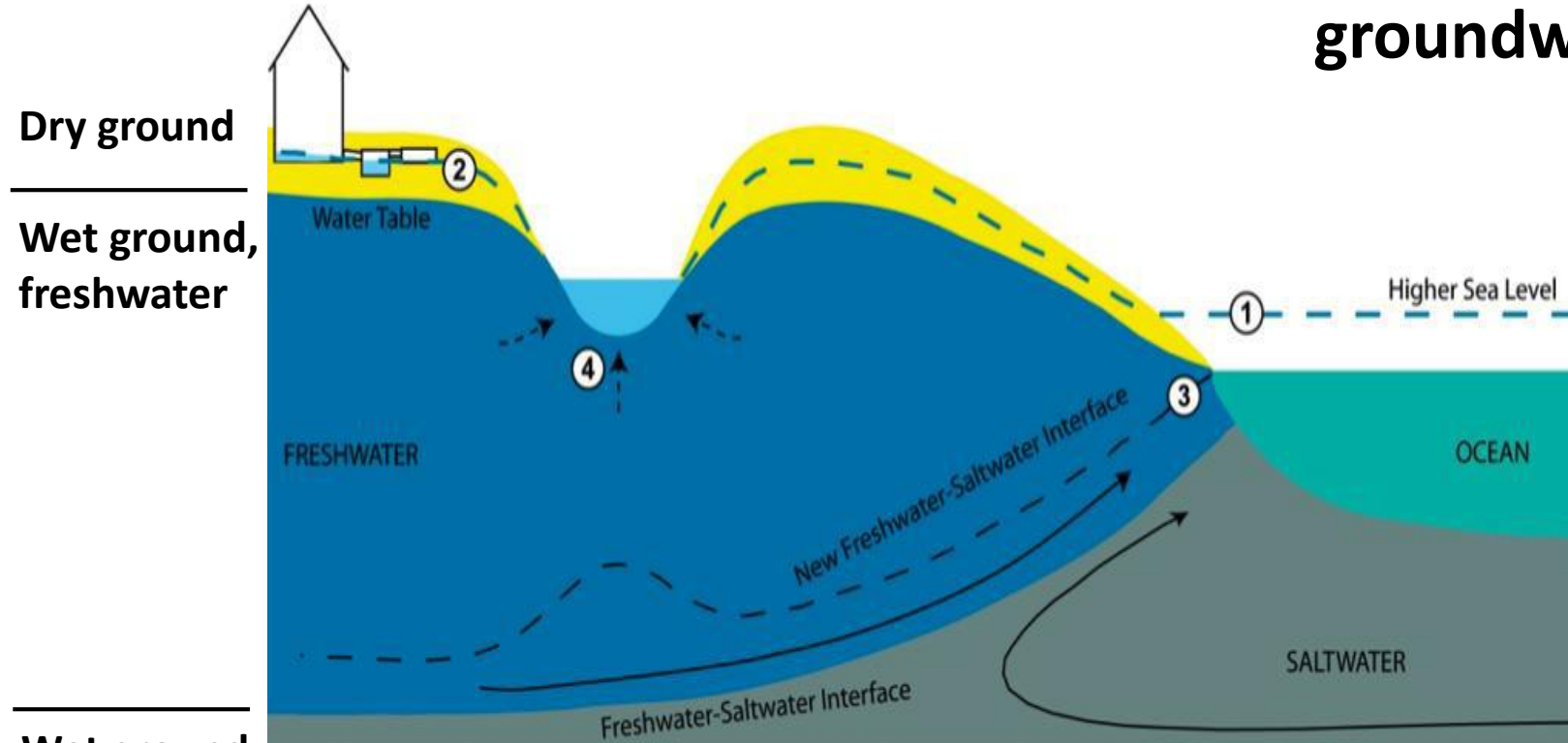
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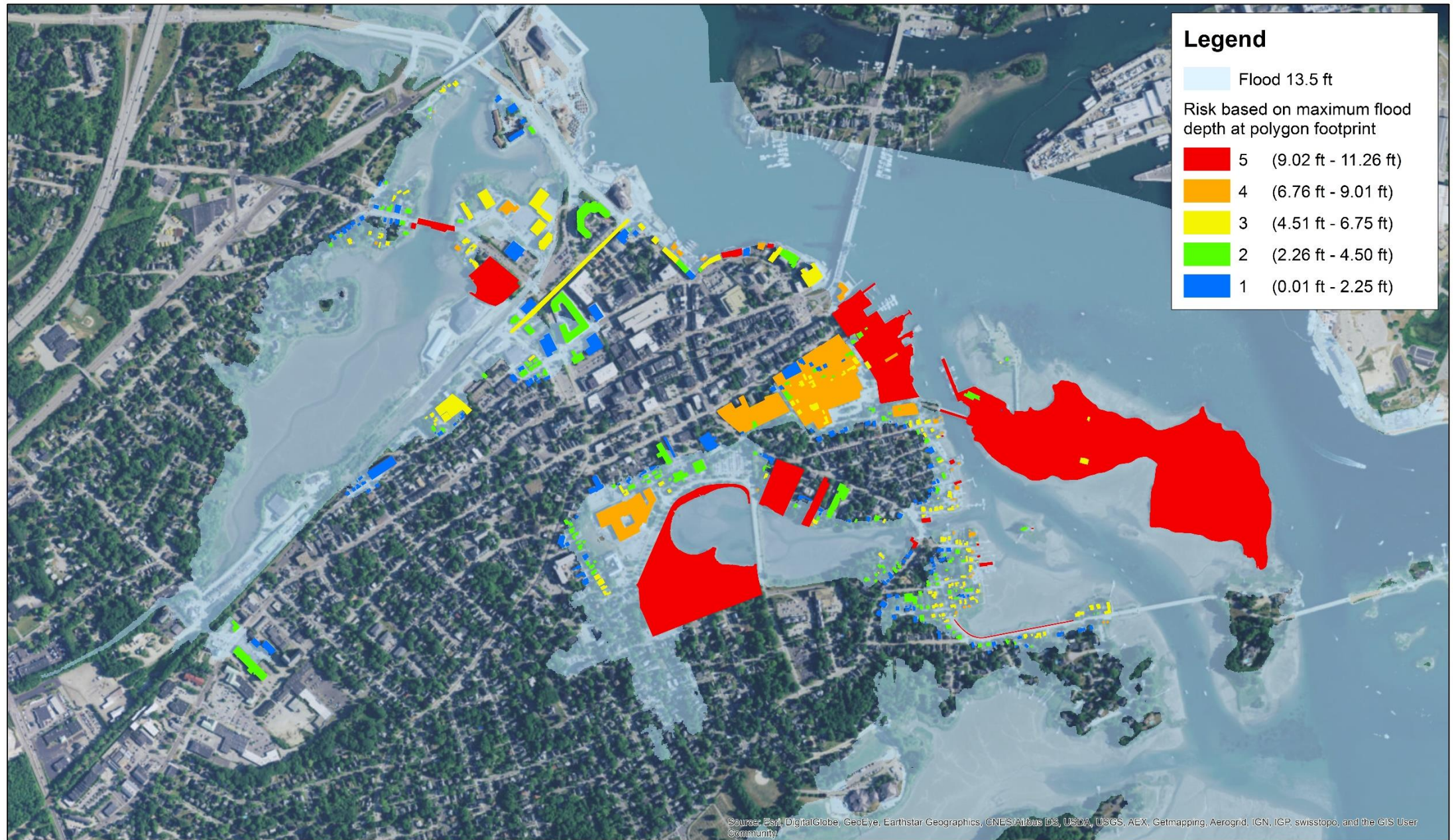
Hydraulic Head

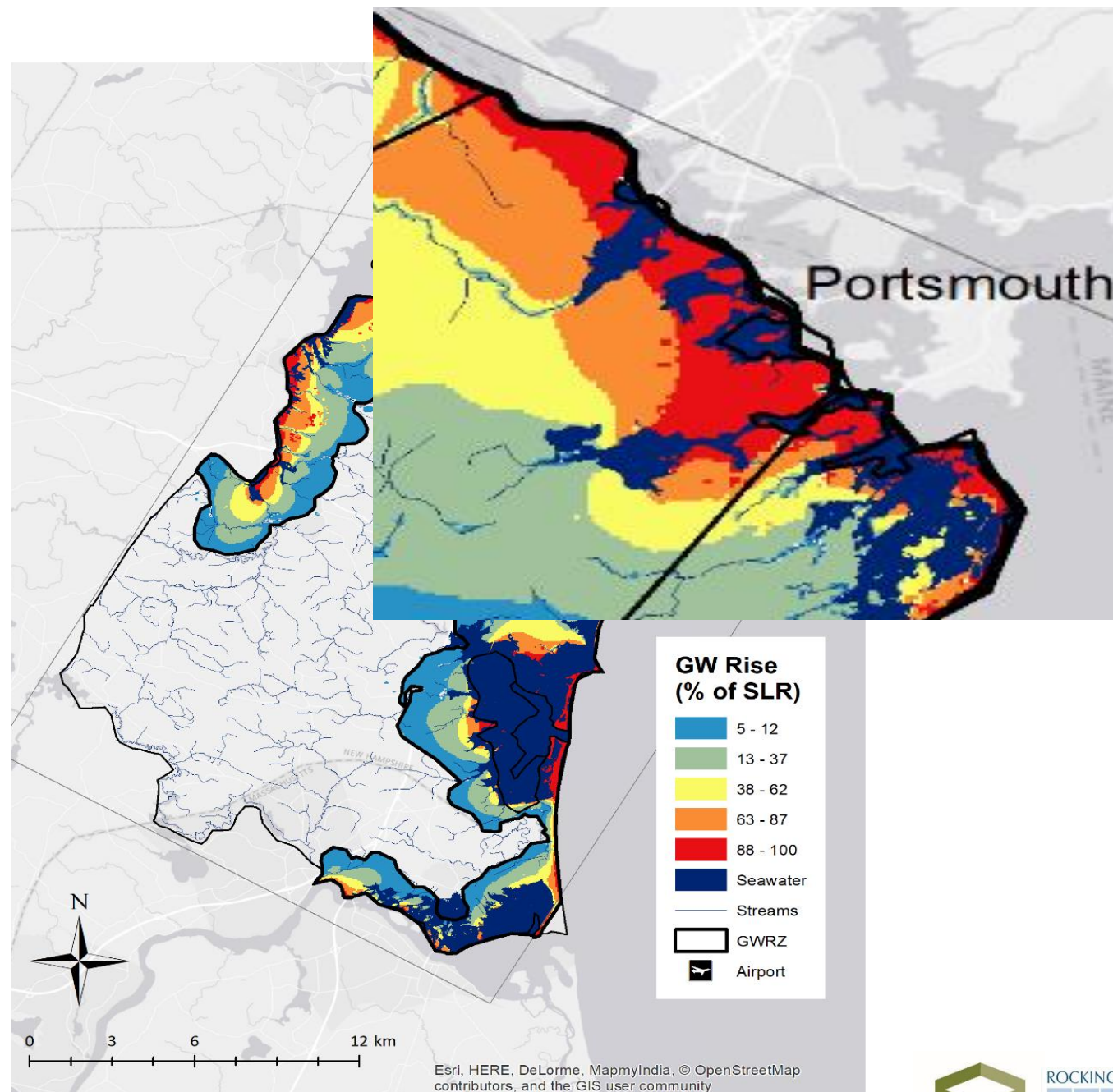


As sea level rises, groundwater also rises



Source: water.usgs.gov

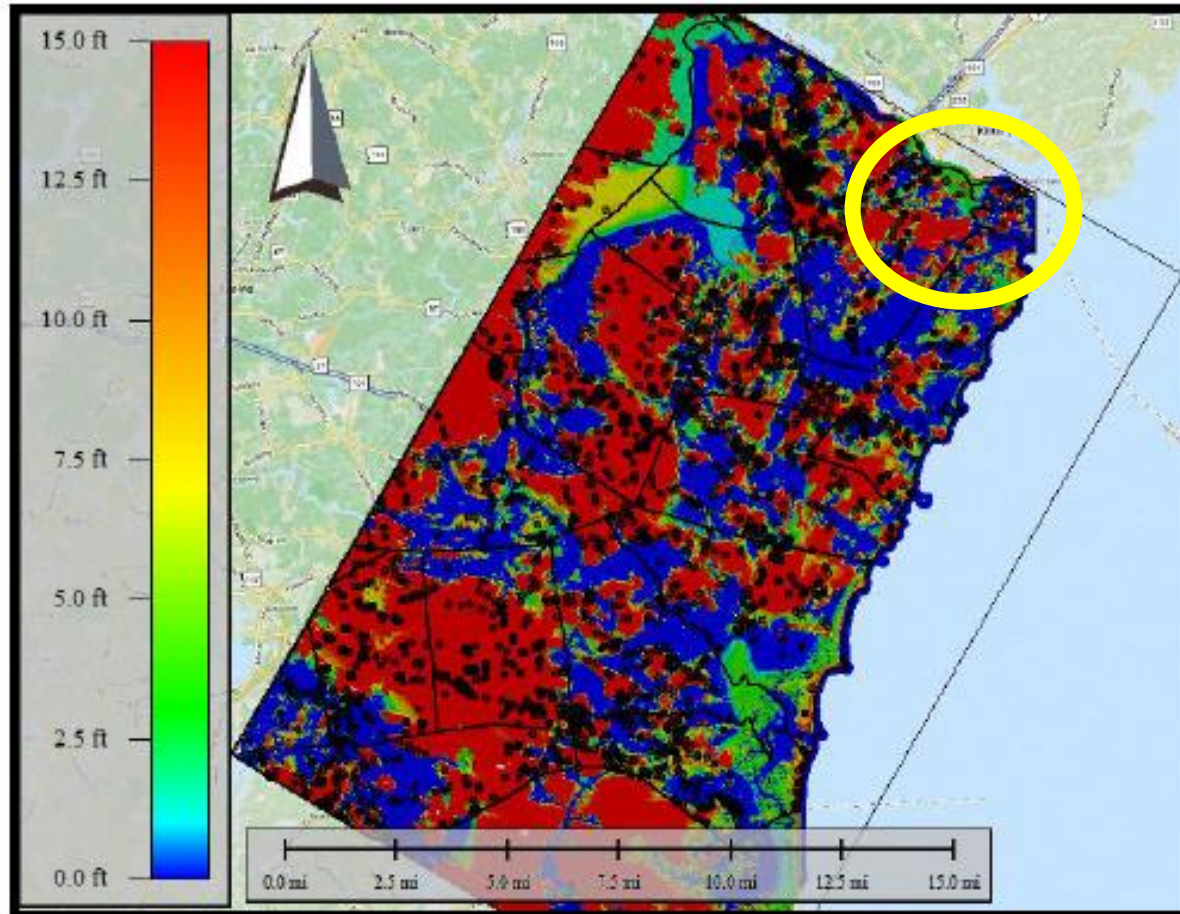







Source: Jacobs et al. 2017



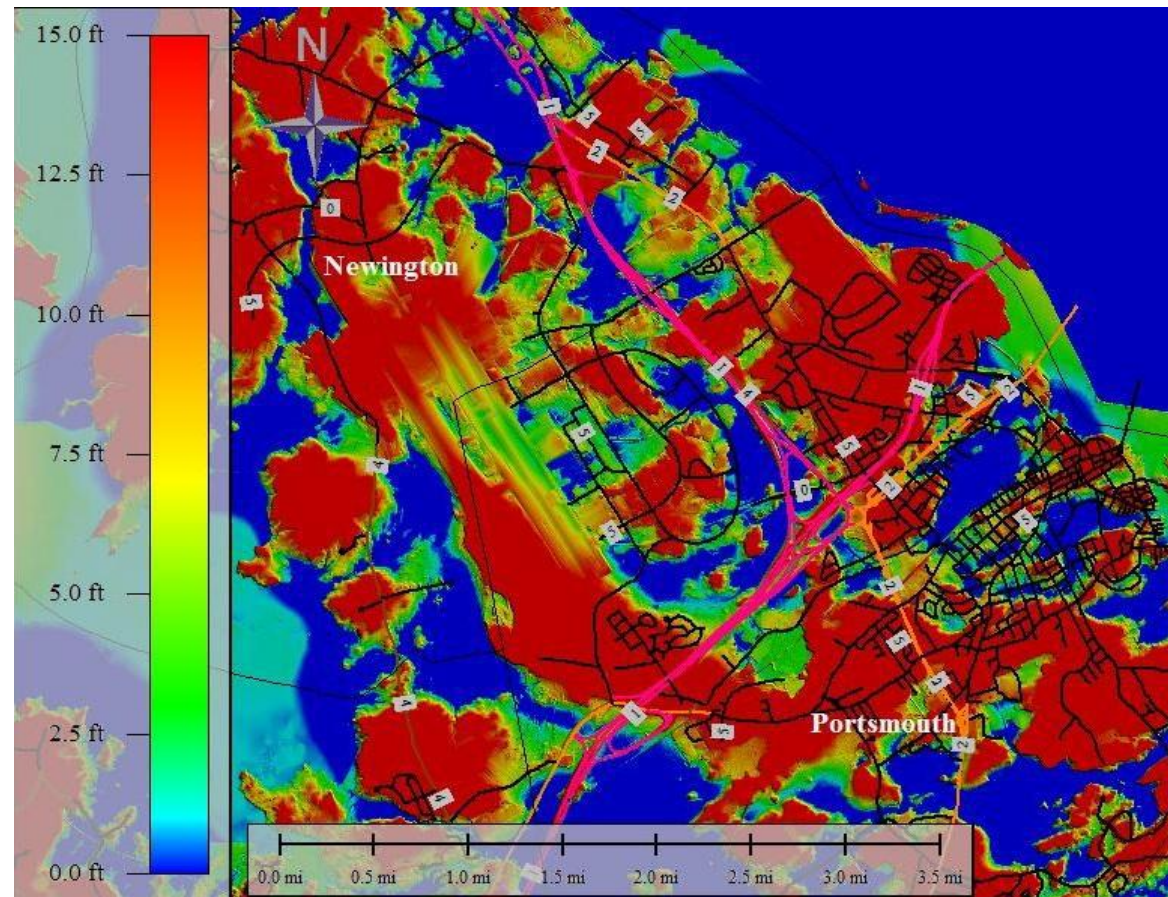
Portsmouth



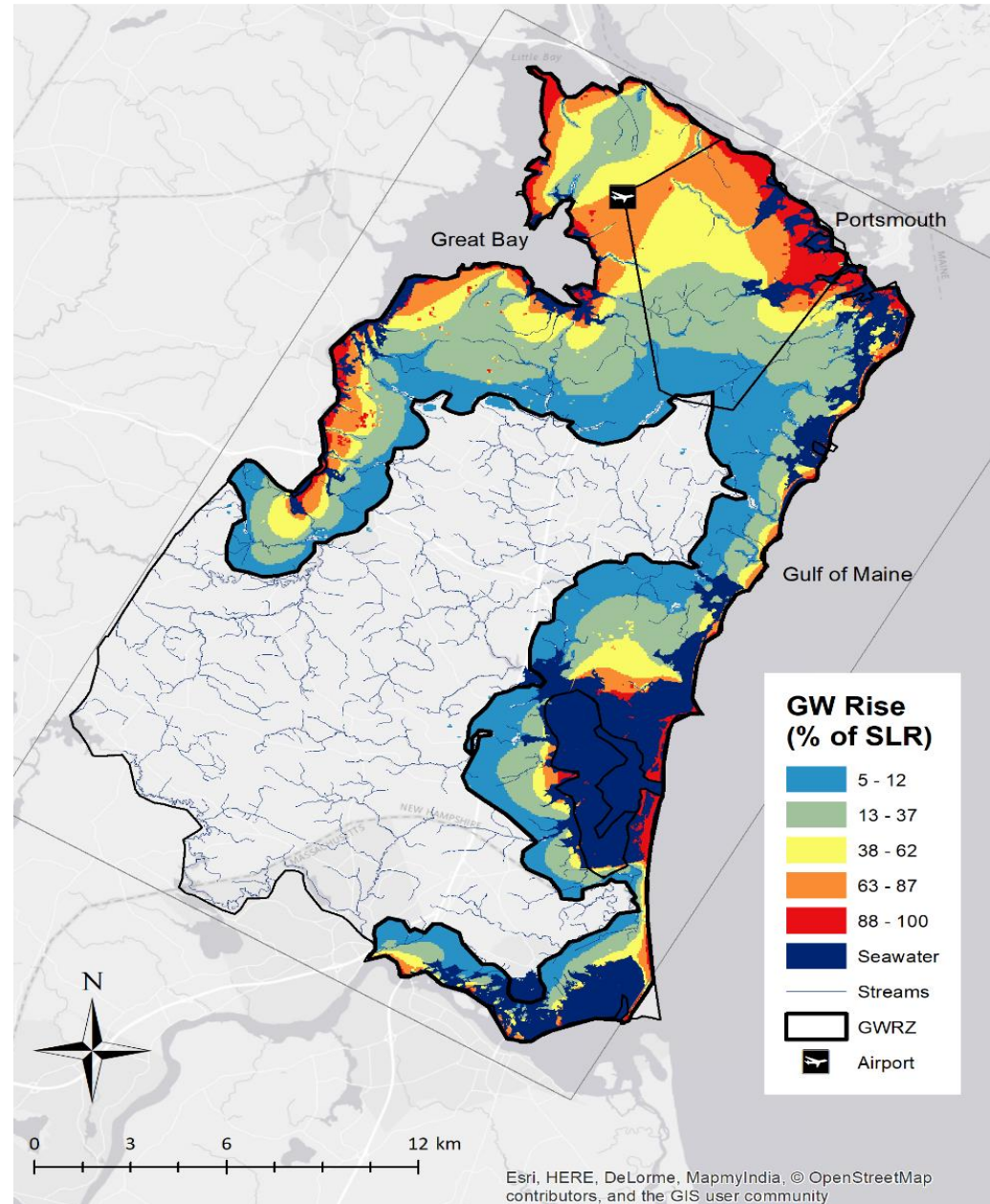
-  GW table is greater than or equal to 15-ft. below the ground surface.
-  GW table is very close to the ground surface
-  Observation wells

Source: Jacobs et al. 2017

Portsmouth

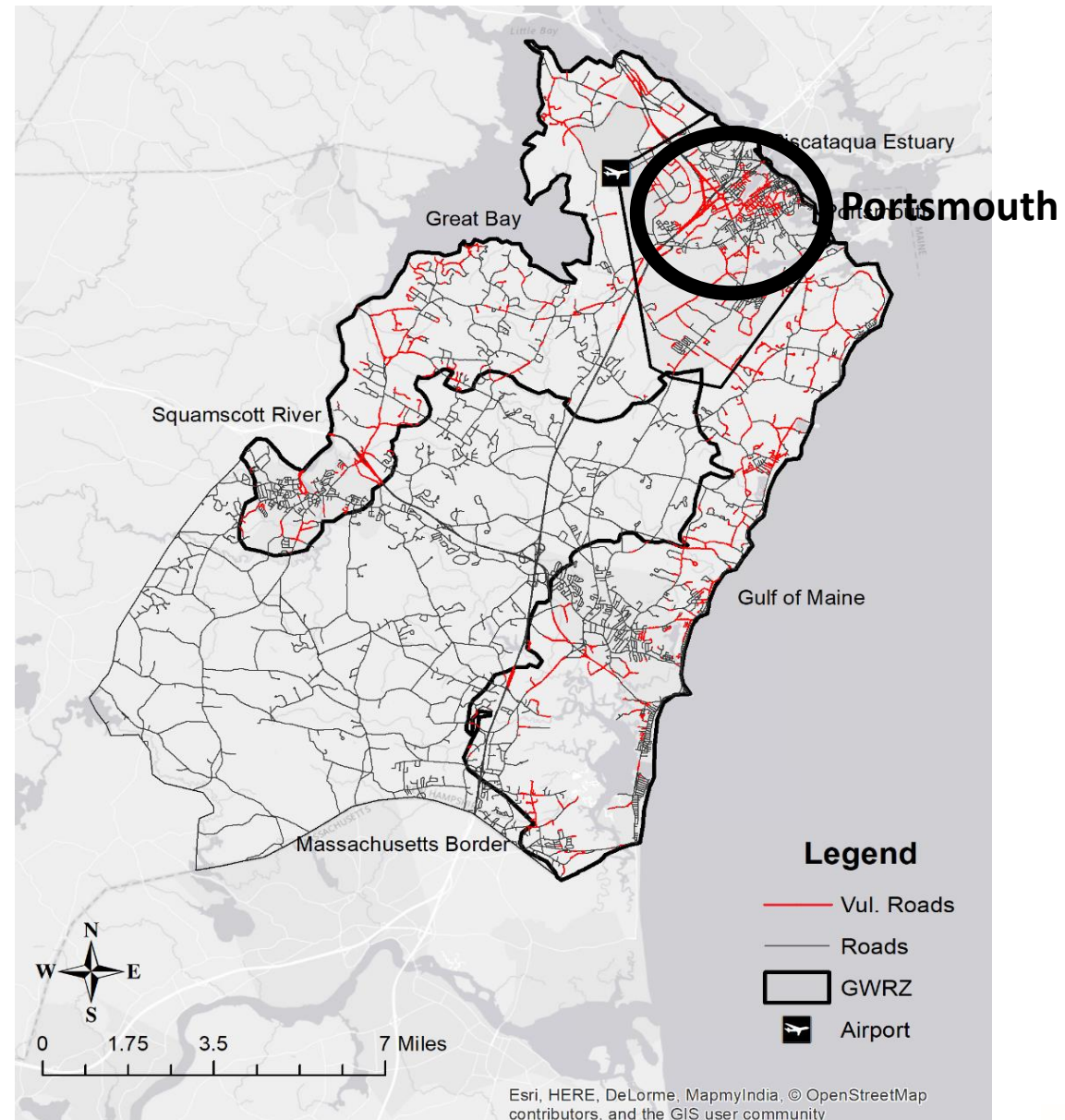


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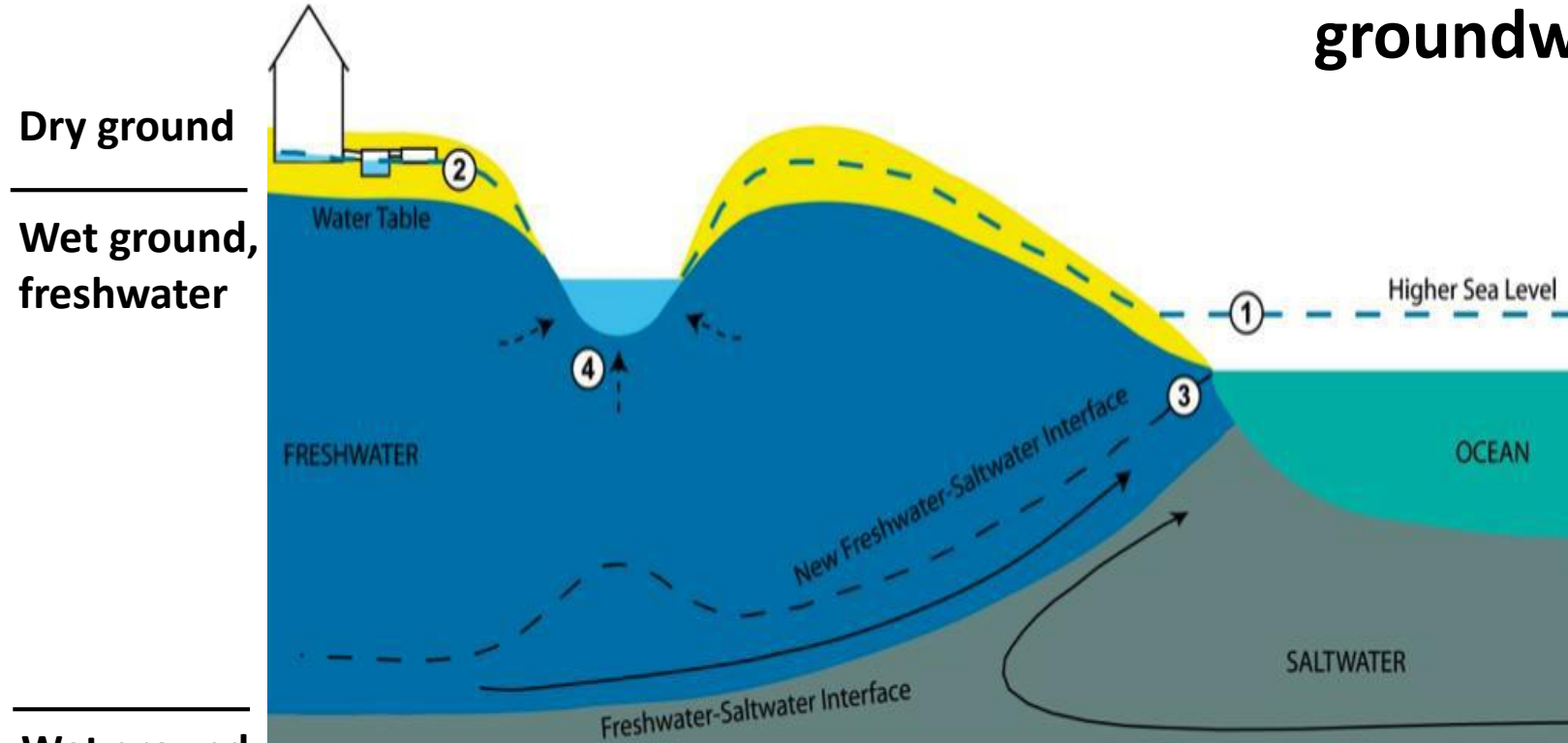




Source: Jacobs et al. 2017



As sea level rises, groundwater also rises



Source: water.usgs.gov

Collaborative Monitoring



Collaborative Monitoring

- Steps taken to track changes that could trigger actions in policy, finance, or other adaptation action.
- They prepare Portsmouth to have programs in place and structures adapted before significant damage has occurred.

Collaborative Monitoring

- Steps taken to track changes that could trigger actions in policy, finance, or other adaptation action. E.g.,
 - Checking basements for humidity and standing water, possibly through checklists provided to homeowners with request for data submission.
 - Data sheets posted next to the electrical panel and filled out annually.

Collaborative Monitoring

- Involved parties are any stakeholders interested in preserving historic assets in Portsmouth – e.g., City staff, HDC members, property owners, or Strawberry Banke or other managers.
- Monitoring would be conducted not just on individual properties but also in the public sphere – on historically important infrastructure, monuments, and parks.

Portsmouth Historic Vulnerability Assessment

Strategy #15



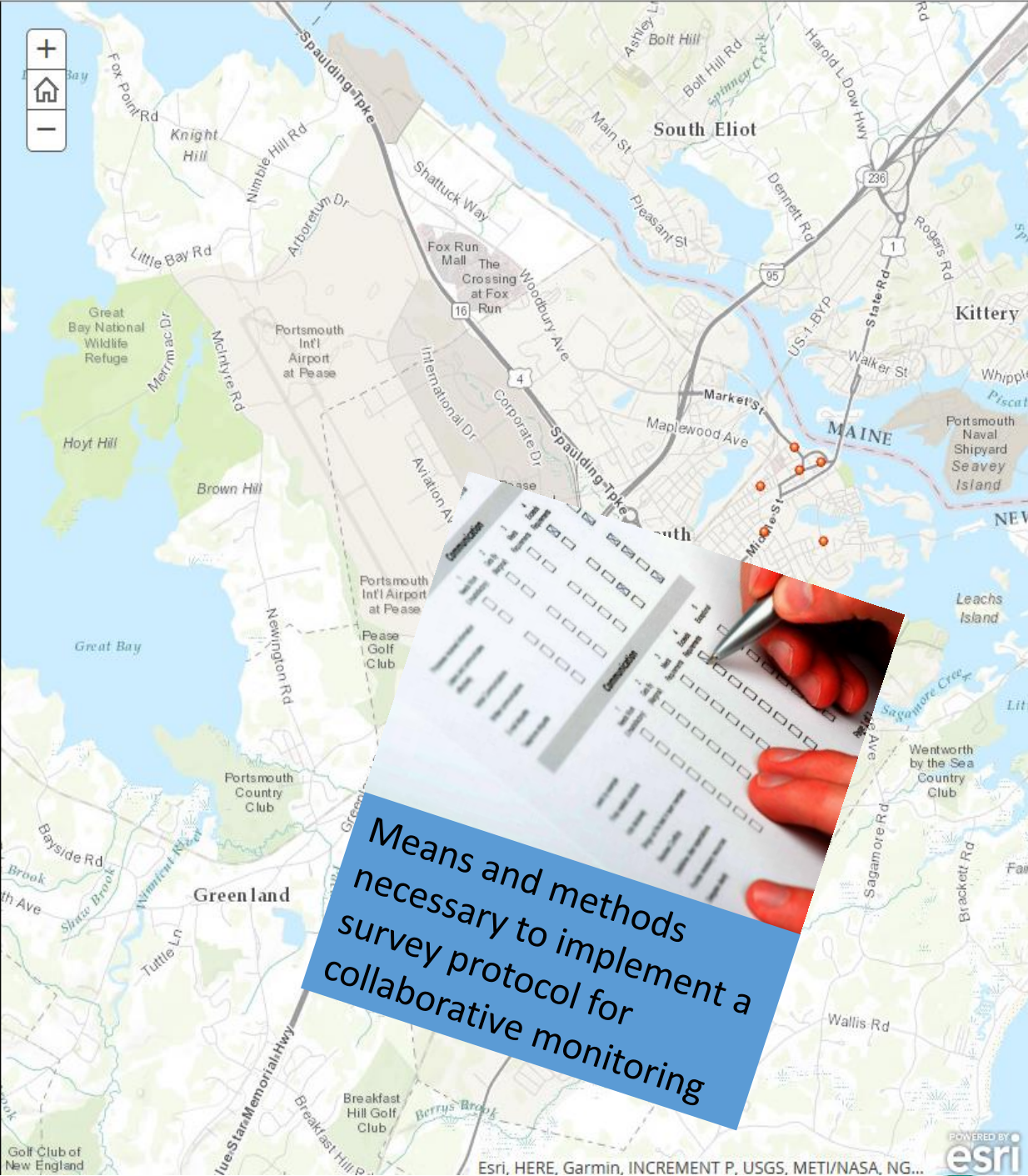
Market and Ceres Streets/Warehouses

Candidate Actions

Dry floodproof, abandon below grade space

Potential Feasibility

Dry floodproofing is a standard approach used in many commercial and residential coastal settings that involves keeping water out of the structure and away from its contents. It comprises a diverse set of possible activities including sealing exterior brick and concrete, closing basement openings, and arranging for immediate availability of temporary flood barriers over doors and windows. These buildings of masonry construction are good candidates for dry floodproofing. Openings around the perimeter of the buildings can be protected with removable flood coverings over doors and windows, which can be stored when flood conditions are not present. The first several feet of brick can be sealed with impermeable coating and recovered with false brick covering to eliminate the appearance of a modified structure. An additional strategy to consider is providing incentives to encourage abandonment of below grade space, including providing incentives for termination of all business activity there and moving objects to higher floors. Feasibility of these actions is often determined by cost, who would pay, and public or private acceptance of both the possible aesthetic changes and the reduction in business activity that might accompany abandonment of commercial space currently in use. Although these actions may be feasible in this location, firm conclusions would need to be further evaluated through additional engineering, and conversations with property



Collaborative Monitoring

- Currently seeking input on how such an effort would be structured.
 - What are the trigger points?
 - Wet basements? How many? What would be launched when they are found?
 - Standing water on important sites? How much? What would be launched when they are found?
 - How is data collection organized? Where does responsibility for tracking and responding to it reside? How would participants be engaged and communicated with over time?

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Possible Planning Actions

Section 10.620 - Portsmouth's Flood Plain District

Height Limits. Amend the Flood Plain District and/or Historic District overlay(s) to accommodate the elevation of historic structures as a flood risk reduction measure.

Variances. When a variance is requested for a historic structure, require that the mechanical, electrical and plumbing systems be relocated to appropriate elevations (may be determined on a case by case based on flood depth maps) when interior renovations are being made.

Variances. When a variance is requested for a historic structure for which exterior renovations are being made, require floodproofing to the extent practicable while preserving the exterior of the historic structure. Flood depths may be determined on a case by case based on flood depth maps.



Possible Planning Actions

Section 10.630 - Portsmouth's Historic District

Section 10.635.70 Review Criteria. Add new criteria #5 To the extent possible, implement Flood Risk Reduction Measures: accommodate (wet floodproofing), fortify (barriers, dry floodproofing), and relocate. Add a definition of Flood Risk Reduction Measures to the ordinance.

Section 10.633.20 Exemptions from Certificate of Approval. A number of exempted construction activities might benefit from flood risk reduction measures. Require implementation of flood risk reduction measures when these improvements to architectural elements, features and utilities are proposed.

Temporary Measures. Amend the Historic District overlay to include language that addresses the installation of temporary storm protective measures (e.g. temporary floodwalls, storm shutters, and barriers).



Possible Planning Actions

Other Regulatory Standards

RSA 79-E:4-a Coastal Resilience Incentive Zone. Enables municipalities to use storm surge, sea-level rise and extreme precipitation projections in the 2016 NH Coastal Risk and Hazards Commission report to identify potentially impacted structures, delineate a Coastal Resilience Incentive Zone(s), and provide tax-based incentives for property owners to implement flood risk reduction measures.

Expedited Review. Adopt a post-disaster recovery review and permit procedure for expedited review of historic structures damaged during a disaster. This review and permit procedure might incentivize property owners to develop post-disaster recovery plans well in advance of a disaster laying the groundwork for the best possible outcome for historic preservation.



Possible Planning Actions

Other Regulatory Standards

Non-Conforming Structures. Treat existing development in projected high-risk flood areas as non-conforming structures, and prohibit expansion or intensification if their use. Allow ordinary maintenance and repair of damage up to no more than 50 percent of its value. Require removal/relocation of non-conforming structures when damages amount to more than 50 percent of its value.

CRI Recommendation ZLU-1: Evaluate the benefits and costs of adopting an Extended Flood Hazard Overlay District. An extended Flood Hazard Overlay District would regulate these vulnerable areas by imposing special regulations aimed at adaptation and resilience.

CRI Recommendation ZLU-6: Prepare a Historic District Flood Hazard Adaptation Plan which utilizes the results of an inventory to provides a long-term framework for floodproofing of structures, and opportunities for protection or relocation of structures.



Moving Forward with Planning Actions

Items for LAC discussion and input:

1. What are important “triggers” that provide opportunity for adaptation of existing structures? [e.g. exterior modifications, damage, modernization]
2. Can collaborative monitoring provide rationale/evidence for regulatory approaches?
3. What information would incentivize voluntary adaptation actions by property owners?
4. Does property owner education play a role in planning the future of the historic district?
5. How might adaptation modifications impact the status of historic district and designated properties?



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Possible Emergency Management Actions

Recommendation

Prepare an Addendum to the city's Hazard Mitigation Plan (HMP) designating high-risk flood area of the Historic District, as identified in this assessment, as a "special flood mitigation area" for the purpose of protecting against and mitigating flood impacts from sea-level rise and storm surge. Specific flood hazard mitigation strategies should describe specifically what historic resources in the designated area would be saved or protected.

Other Recommendations

Adopt Addendum to HMP and incorporate in 2022 HMP update.

Incorporate HMP adaptation measures into Capital Improvement Plan and DPW work plan.

Convene an annual meeting of the HMP workgroup to evaluate implementation progress.

Explore public/private partnerships for implementation of adaptation measures.

Provide public outreach about the benefits of flood insurance.



Moving Forward with Emergency Planning

Items for LAC discussion and input:

1. What can the city do to help owners of historic structures be better prepared to address flood impacts?
2. In what ways can historic preservation be used as an emergency management tool?
3. Is it feasible for neighborhoods or groups of property owners to pool resources to create emergency preparedness plans or implement collaborative adaptation measures.



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Public Meeting to Present Final Report:
Hosted by Portsmouth Historic District Commission

Tentative Date: January 17, 2018 @ 6:30pm

