

Ocracoke Light Station Rehabilitation Project

Cape Hatteras National Seashore
Ocracoke Island, North Carolina
March 28, 2022



- 1823 Oldest functioning lighthouse in North Carolina
- Second oldest lighthouse still in service in the U.S.
- **Project objective:** How to manage the complex of buildings and exterior of the lighthouse in the face of sea level rise and storms?



Ocracoke Light Station Rehabilitation Project

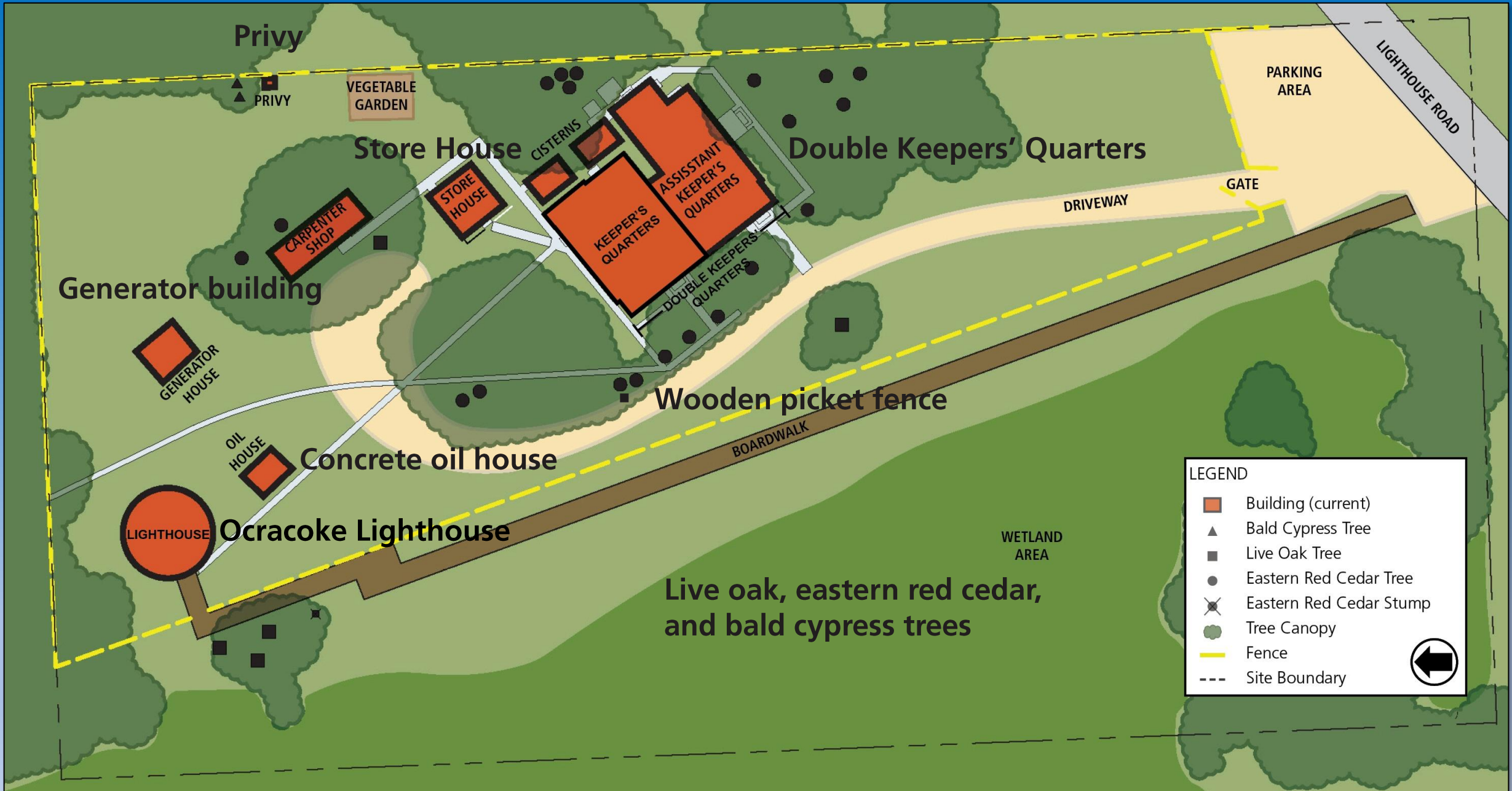
Purpose of the Action

- Sustainably rehabilitate and mitigate reasonably foreseeable flooding impacts in the wake of recent storm damage and flooding.
- Consideration of future impacts exacerbated by climate change and sea level rise.



Need for the Action

- Historic structures have been damaged from recent storms and, if the buildings are left as they are, it is expected they will be damaged further by future storms.
- The site has evolved with the addition, alteration, demolition of structures over the years, and rehabilitation of these structures is needed to assist with storm recovery and preservation.



Then and Now



Ocracoke Light Station 1893

(Earliest known photographs of Ocracoke Light Station date to 1893)



Ocracoke Light Station 2016

Management at sea level

- Hurricanes Matthew (2016), Florence (2018), and Dorian (2019).
- Severely flooded from Hurricane Dorian





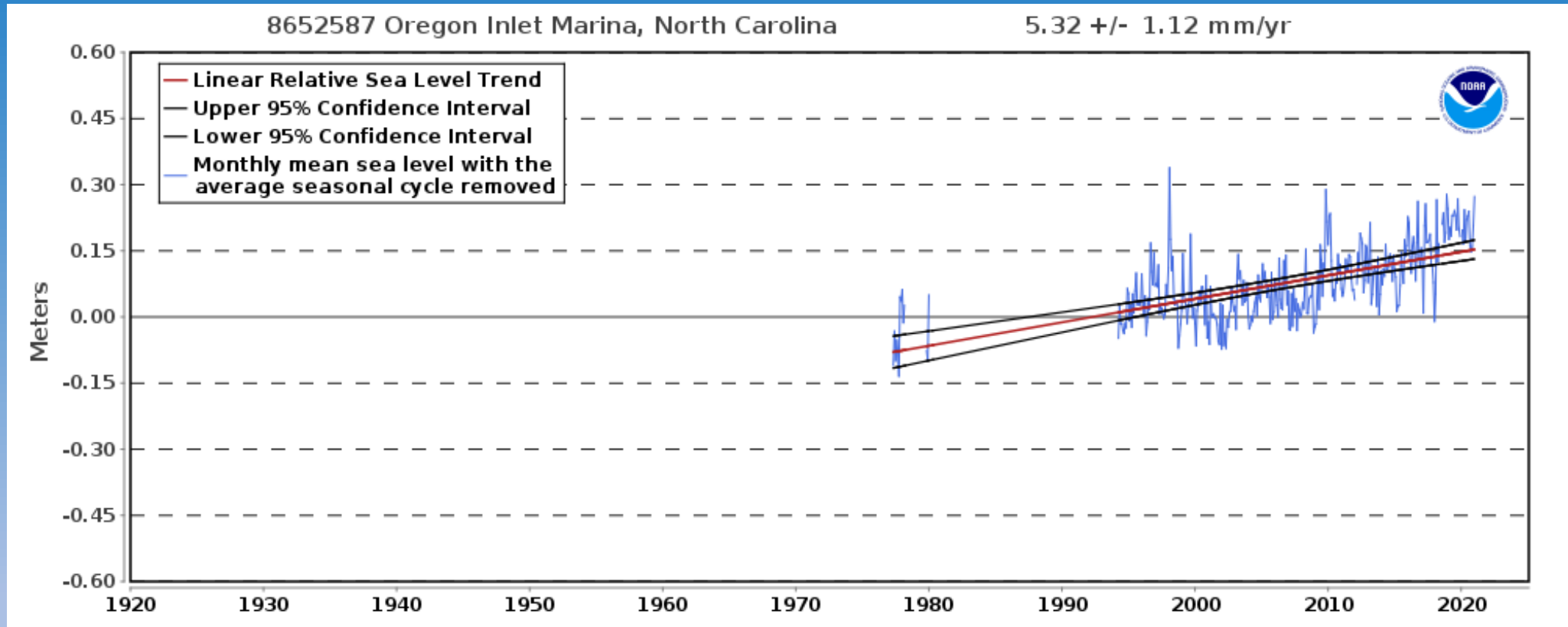




**Test removal of
shotcrete**

2/3/21

Current rate of sea level rise = **5.32 +/- mm/yr**



“The relative sea level trend is 5.32 millimeters/year with a 95% confidence interval of +/- 1.12 mm/yr based on monthly mean sea level data from 1977 to 2020 which is equivalent to a change of 1.75 feet in 100 years.”

Graphic and text from NOAA found here: https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=8652587

2022 Sea Level Rise Technical Report

Updated projections available through 2150 for all U.S. coastal waters.



FEMA



“Rise in the next three decades is anticipated to be, on average: 10 - 14 inches (0.25 - 0.35 meters) for the East coast”

From: [2022 Sea Level Rise Technical Report \(noaa.gov\)](https://www.noaa.gov/2022-sea-level-rise-technical-report)

1

The Next 30 Years of Sea Level Rise

Sea level along the U.S. coastline is projected to rise, on average, 10 - 12 inches (0.25 - 0.30 meters) in the next 30 years (2020 - 2050), which will be as much as the rise measured over the last 100 years (1920 - 2020). Sea level rise will vary regionally along U.S. coasts because of changes in both land and ocean height.

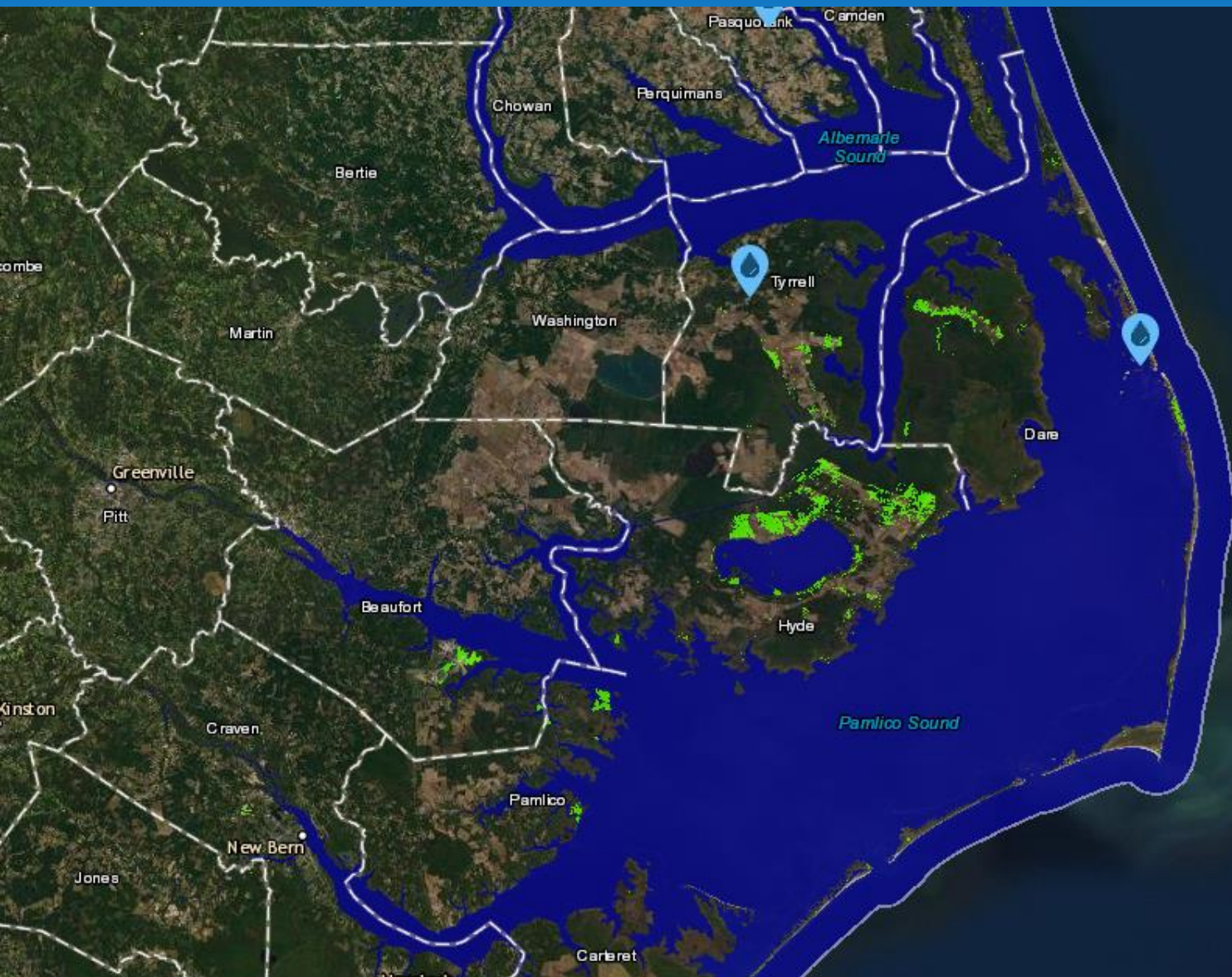
[Learn More](#)

2

More Damaging Flooding Projected

Sea level rise will create a profound shift in coastal flooding over the next 30 years by causing tide and storm surge heights to increase and reach further inland. By 2050, “moderate” (typically damaging) flooding is expected to occur, on average, more than 10 times as often as it does today, and can be intensified by local factors.

[Learn More](#)



Data from: NOAA Sea Level Riser Viewer – available at: <https://coast.noaa.gov/slr/#/layer/slr>



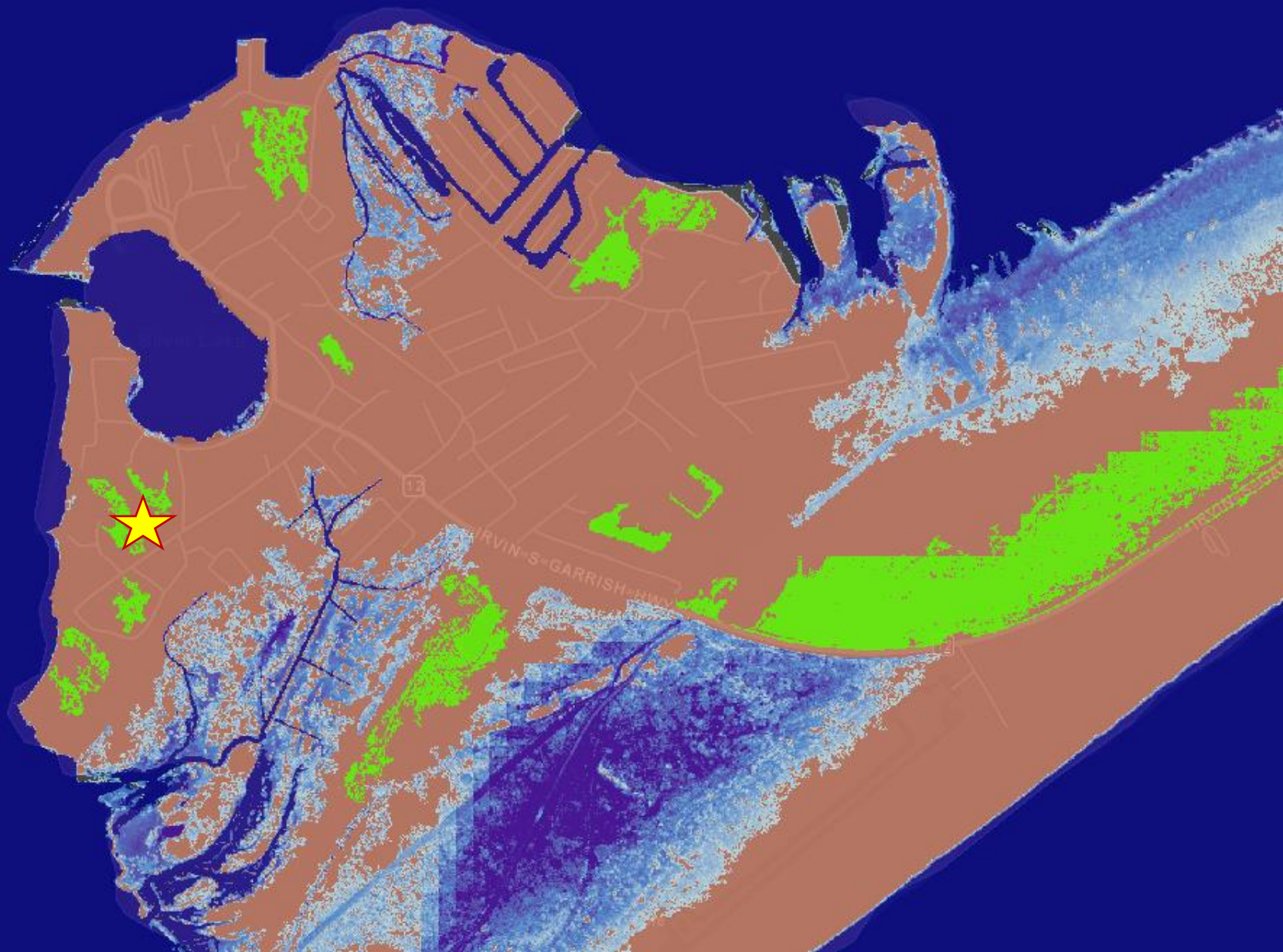
Data from: NOAA Sea Level Riser Viewer – available at: <https://coast.noaa.gov/slr/#/layer/slr>

CURRENT



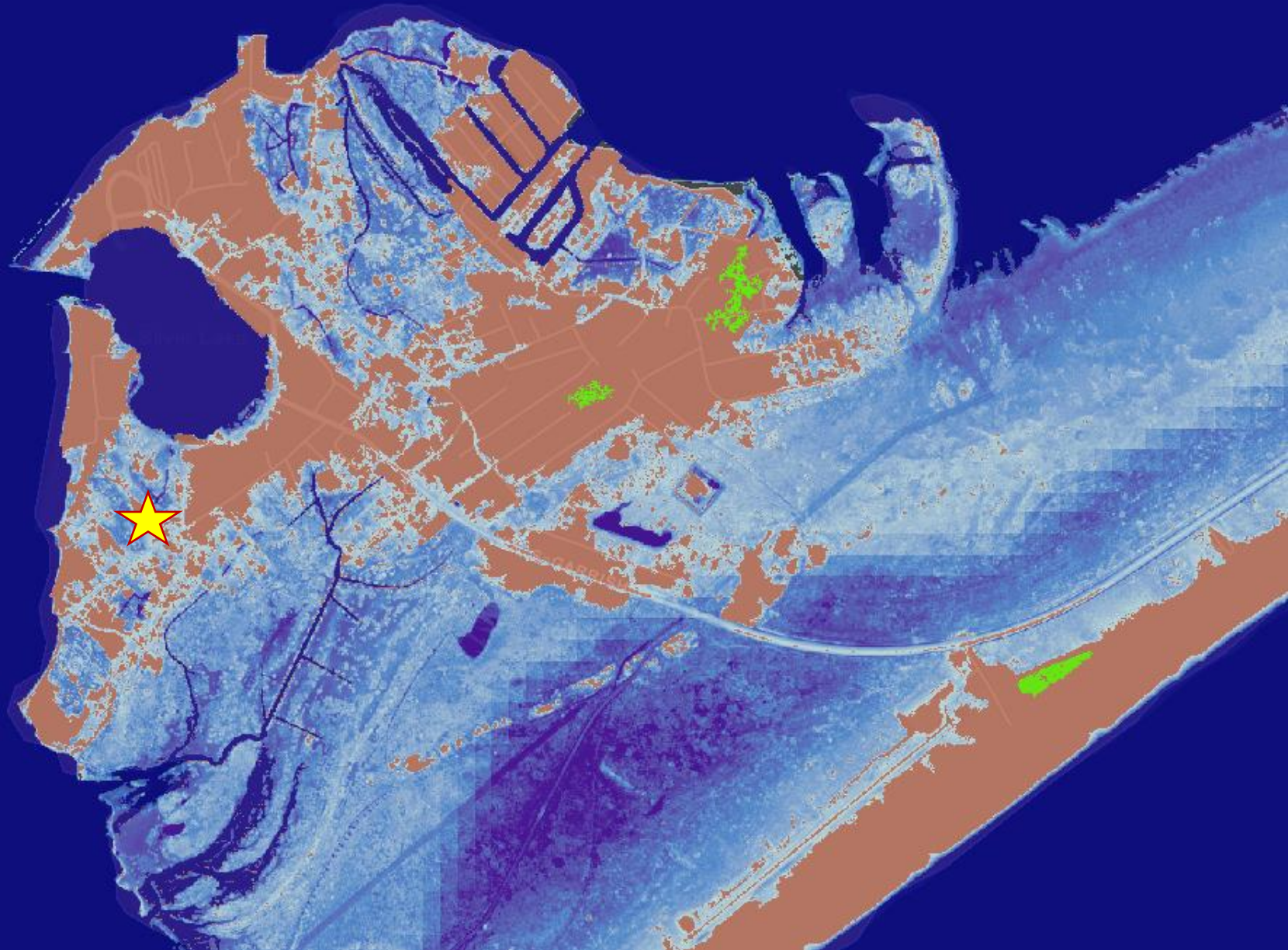
Data from: NOAA Sea Level Riser Viewer – available at: <https://coast.noaa.gov/slr/#/layer/slr>

1 FT.



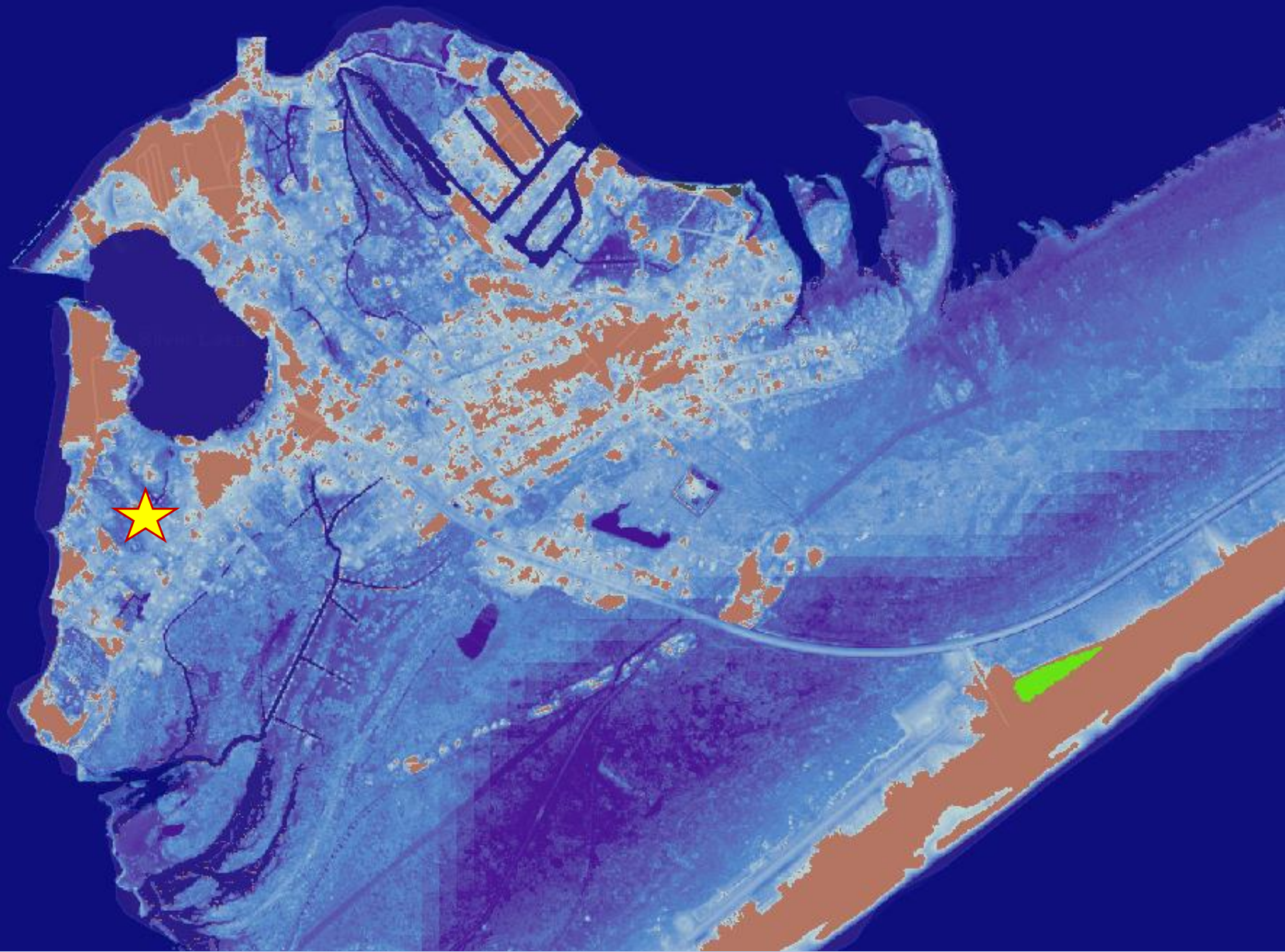
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2 FT.



Data from: NOAA Sea Level Riser Viewer – available at: <https://coast.noaa.gov/slr/#/layer/slr>

3 FT.



Data from: NOAA Sea Level Riser Viewer – available at: <https://coast.noaa.gov/slr/#/layer/slr>

Resource Topics Analyzed in the Environmental Assessment

- Historic Buildings and Structures
- Cultural Landscapes



Alternative A: No-action Alternative

- Rehabilitate the Ocracoke Lighthouse.
- Repair storm damage to the buildings and structures.
- Ongoing maintenance and storm repairs would be completed, as these are ongoing practices for maintaining the historic structures at the Ocracoke Light Station.



Alternative A: No-Action Alternative



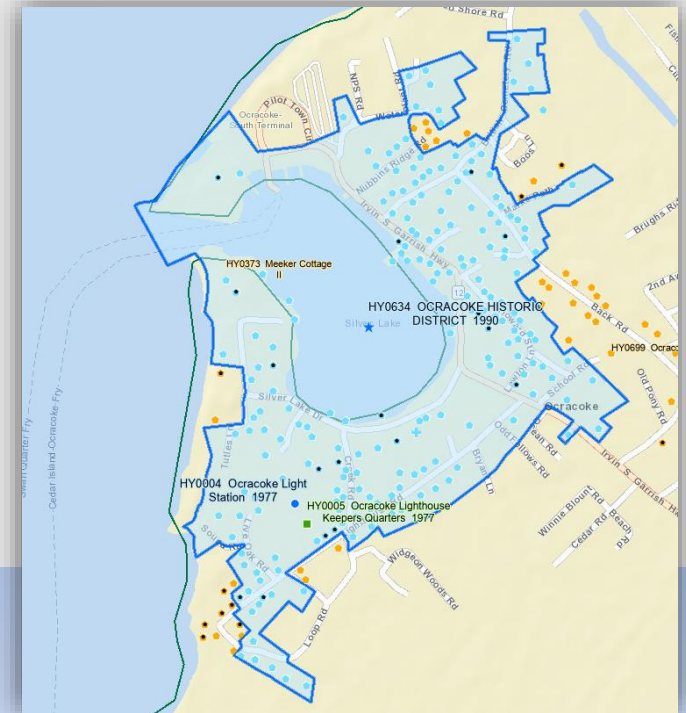
Potential Impacts

Alternative A: No-action Alternative

- Future storm events and flooding would impact structures.
- Flooding events could adversely impact the integrity of the structures and the cultural landscape, disqualifying the property for inclusion in the National Register of Historic Places.



- Viewshed would change as contributing features are lost, resulting in an adverse impact on the viewshed within the Ocracoke Historic District.

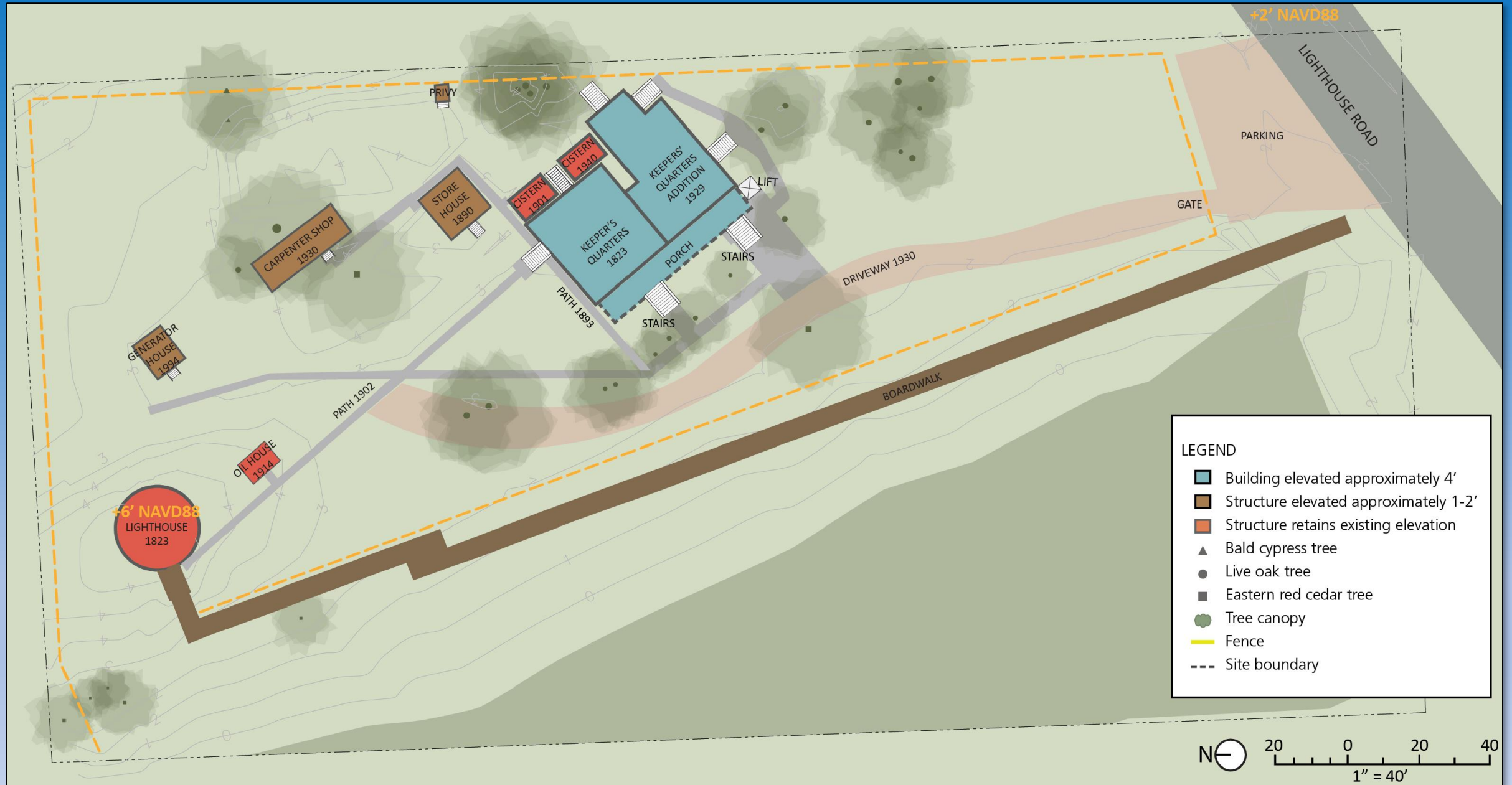


Alternative B: Elevate Some Buildings/Structures

- Rehabilitate Lighthouse, replace staircase, repair storm damage to the buildings and structures.
- Elevate the Double Keepers' Quarters 4 feet and the Carpenter's Shop, Store House, Privy, and Generator House 1 to 2 feet.
- Screen new foundations with historically appropriate material. Construct stairs and handrails to the entrance of the structures.
- Add elevated wheelchair lift station and concrete sidewalk to the Double Keepers' Quarters for accessibility. Replace the existing paths among the buildings in kind.
- Shift the Carpenter's Shop westward slightly and trim the live oak tree adjacent to the structure to avoid contact with the roof. Relocate the Privy to a location where it was previously located.



Alternative B: Elevate Some Buildings/Structures



Potential Impacts

Alternative B: Elevate Some Buildings/Structures

- Integrity and character-defining features for the buildings/structures and cultural landscape would be minimally affected. The relationship of the buildings and structures to each other within the setting would be maintained.
- The characteristics that qualify these buildings for inclusion in the National Register of Historic Places would not be diminished, and the integrity of the structures and their locations would remain relatively intact.



- The views would be similar as they are today. The views from within the Ocracoke Light Station to other parts of the Ocracoke Historic District would not be affected.

Alternative C: Ghost Structure

- Rehabilitate Lighthouse, replace staircase, repair storm damage to outbuildings and structures.
- Demolish the Double Keepers' Quarters and replace with a ghost structure. Document the DKQ in accordance with the *Secretary of the Interior's Standards for Architectural and Engineering Documentation* prior to removal and install interpretive materials.
- Anchor the Carpenter's Shop, Store House, Generator House, and Privy to the ground or elevate 1 to 2 feet. Screen elevated foundations by historically appropriate material. Shift the Carpenter's Shop westward slightly and trim the live oak tree adjacent to the structure to avoid contact with the roof.
- If the outbuildings are damaged in the future, repair, or demolish, remove and possibly replace with ghost structures. Any building to be demolished would be documented in accordance with the *Secretary of the Interior's Standards for Architectural and Engineering Documentation* prior to removal



Alternative C: Ghost Structure



Potential Impacts

Alternative C: Ghost Structure

- The adverse effects to the Double Keepers' Quarters and the cultural landscape would be immediate and permanent.
- Elevating the support structures would retain the character-defining features of the individual structures, make them more resilient to future flooding, and retain the integrity of the landscape.



- If the support structures are not elevated, some of the additional contributing resources that qualify this landscape for inclusion in the NRHP may also be lost, and the integrity of the property would be altered or destroyed.
- Removal of the contributing features would have noticeable changes to the views from and to the Ocracoke Light Station, resulting in an adverse effect on the Ocracoke Historic District.

Submit comments electronically at:

https://parkplanning.nps.gov/CAHA_ocracoke_lightstation

Comments should be clear, concise, and relevant to the issues associated with management of the Ocracoke Light Station.

Commenting is not a form of “voting.”

**Comments must be received by
April 13, 2022.**

