Kiawah Island 2025 Beach Condition Update

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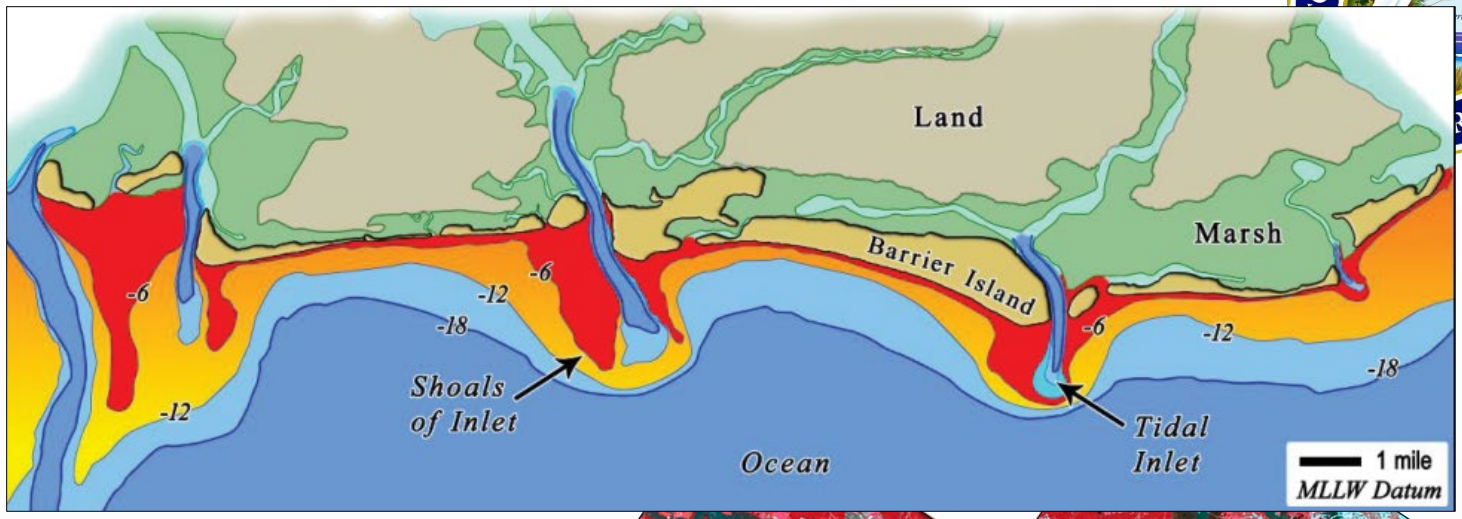
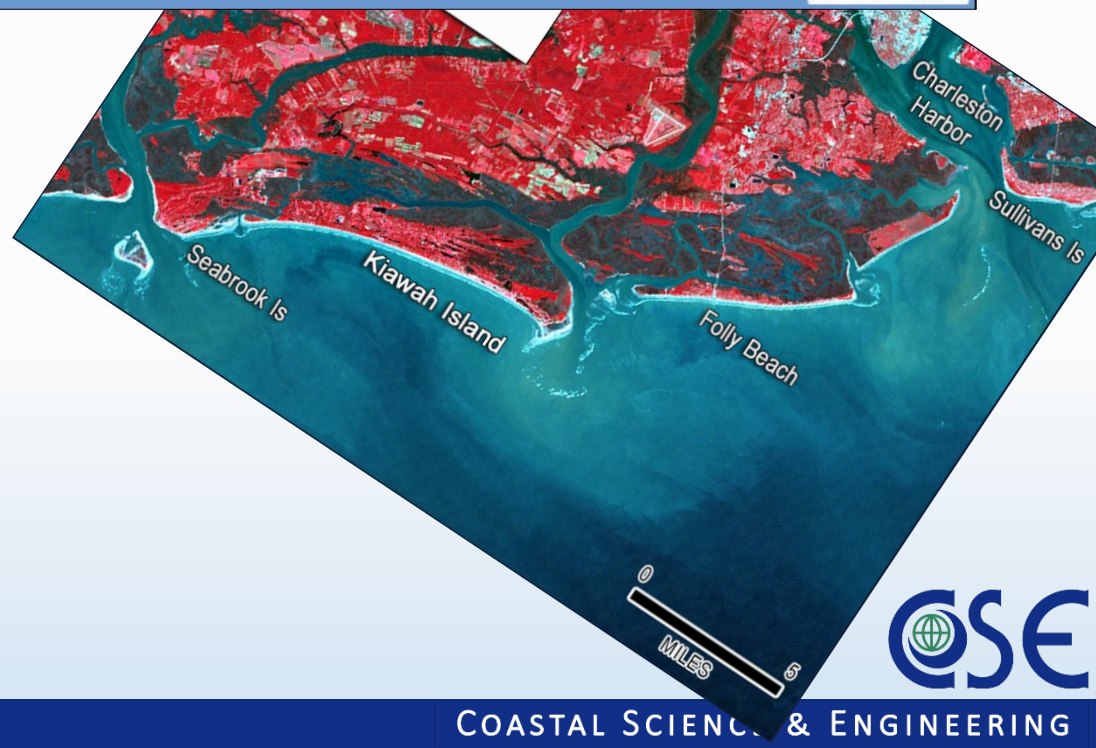
Kiawah Island Background

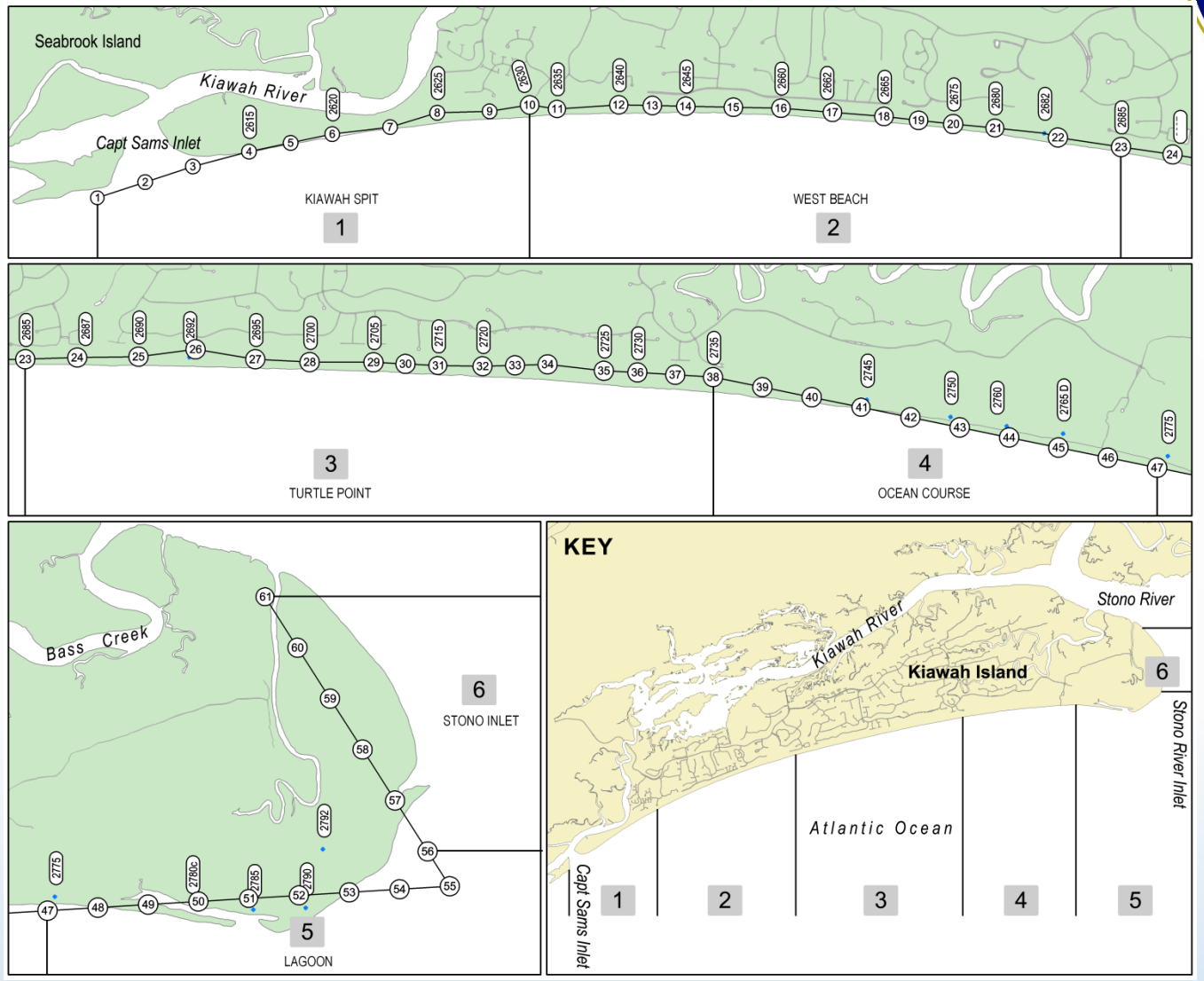
- Major Dynamics
  - Stono Inlet
    - Periodic sand recycling
  - Capt Sams Inlet
    - Periodic inlet relocation
  - Relatively stable in center
    - Persistent erosion along Eugenia, Mariners Watch
- Other Influences
  - Storms
    - <5 from 200 to 2012
    - >20 since 2015
  - Sea Level Rise
    - MSL is ~1 ft higher than in 2000
    - Likely to increase by at least 1 ft again by 2050





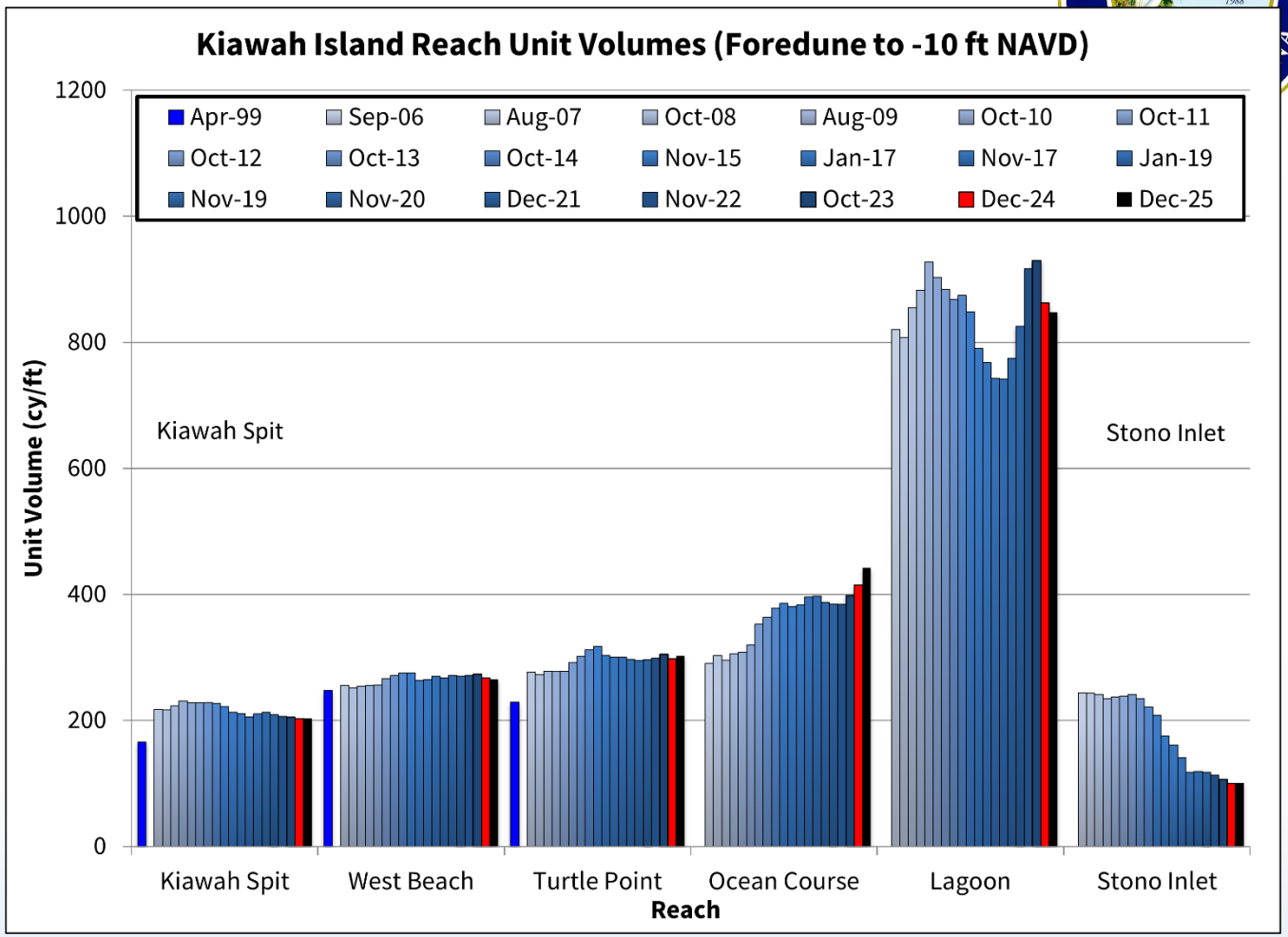
Kiawah Island Beaches

- 61 profiles established
  - Some duplicate older OCRM series
- 6 reaches
  - Kiawah Spit
  - West Beach
  - Turtle Point
  - Ocean Course
  - Lagoon
  - Stono Inlet

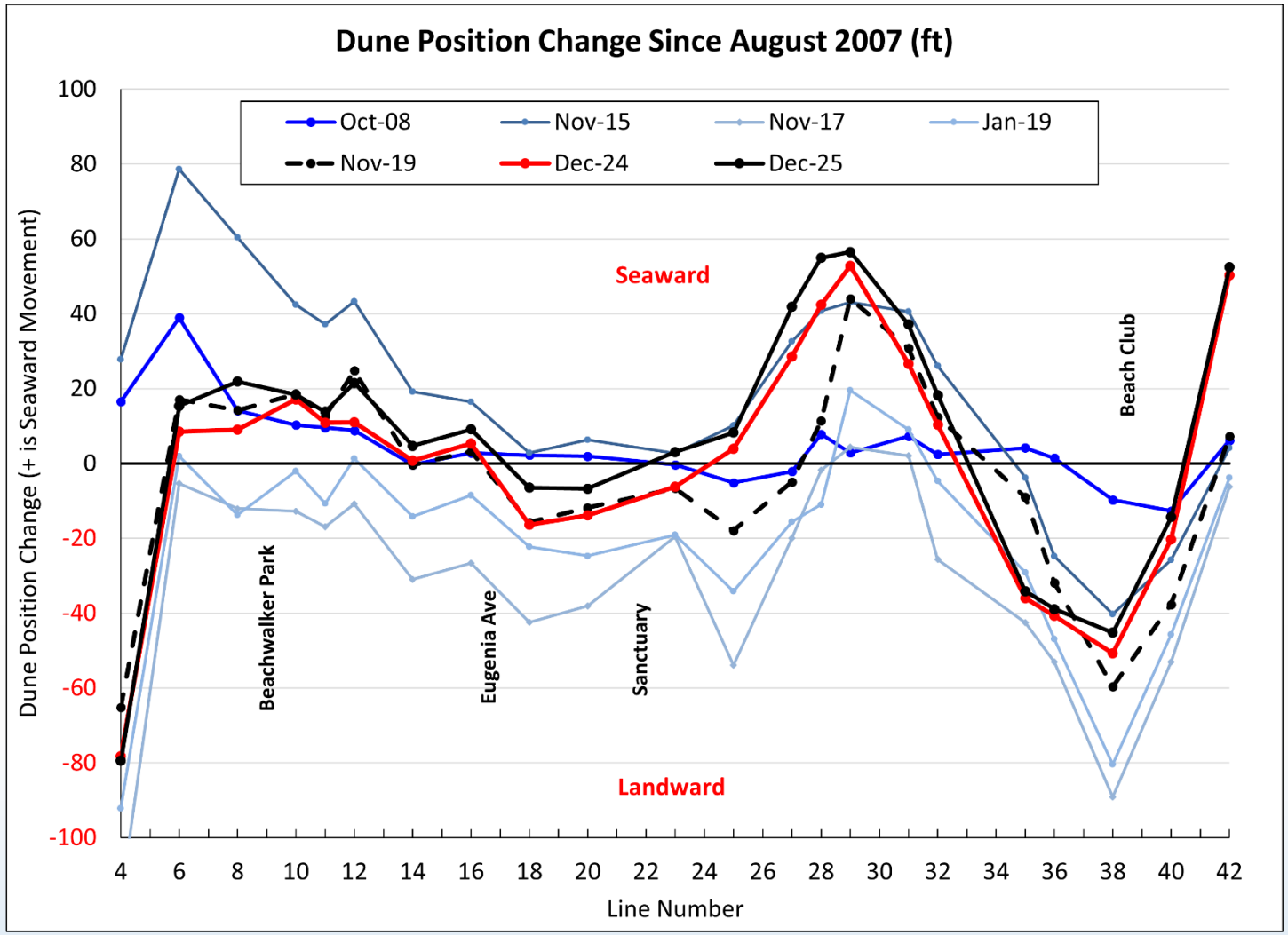


Kiawah Island Beaches

- Take away messages
  - East End: shoal attachment complete
    - Sand spreading downcoast
    - Proposed work to mitigate channel migration
  - West End: Kiawah Spit, Turtle Point gained sand last year
  - West Beach lost sand
    - Losses concentrated between Eugenia Avenue, Beachwalker Park
    - Continued narrowing at Beachwalker Park

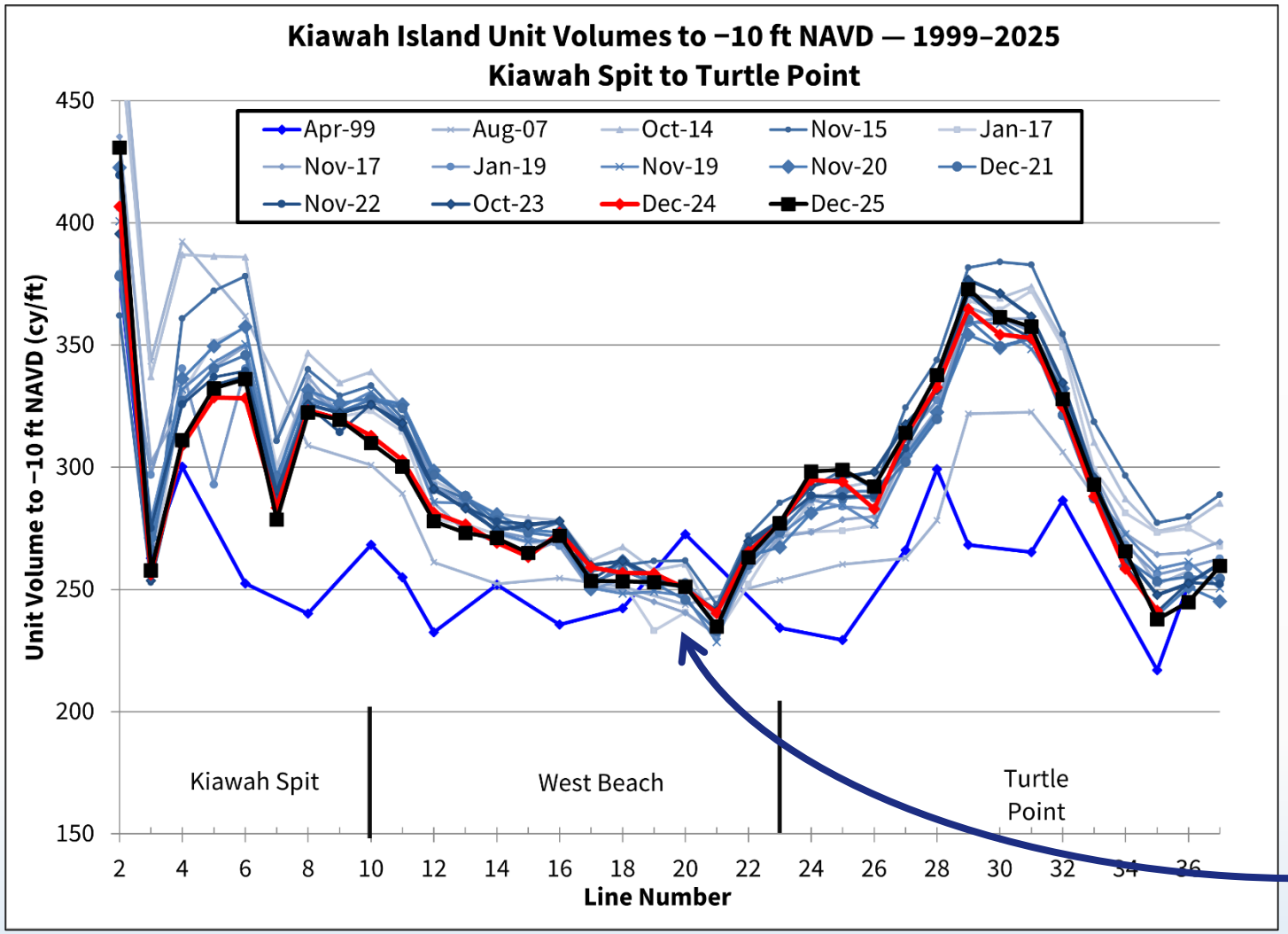


Kiawah Island Beaches



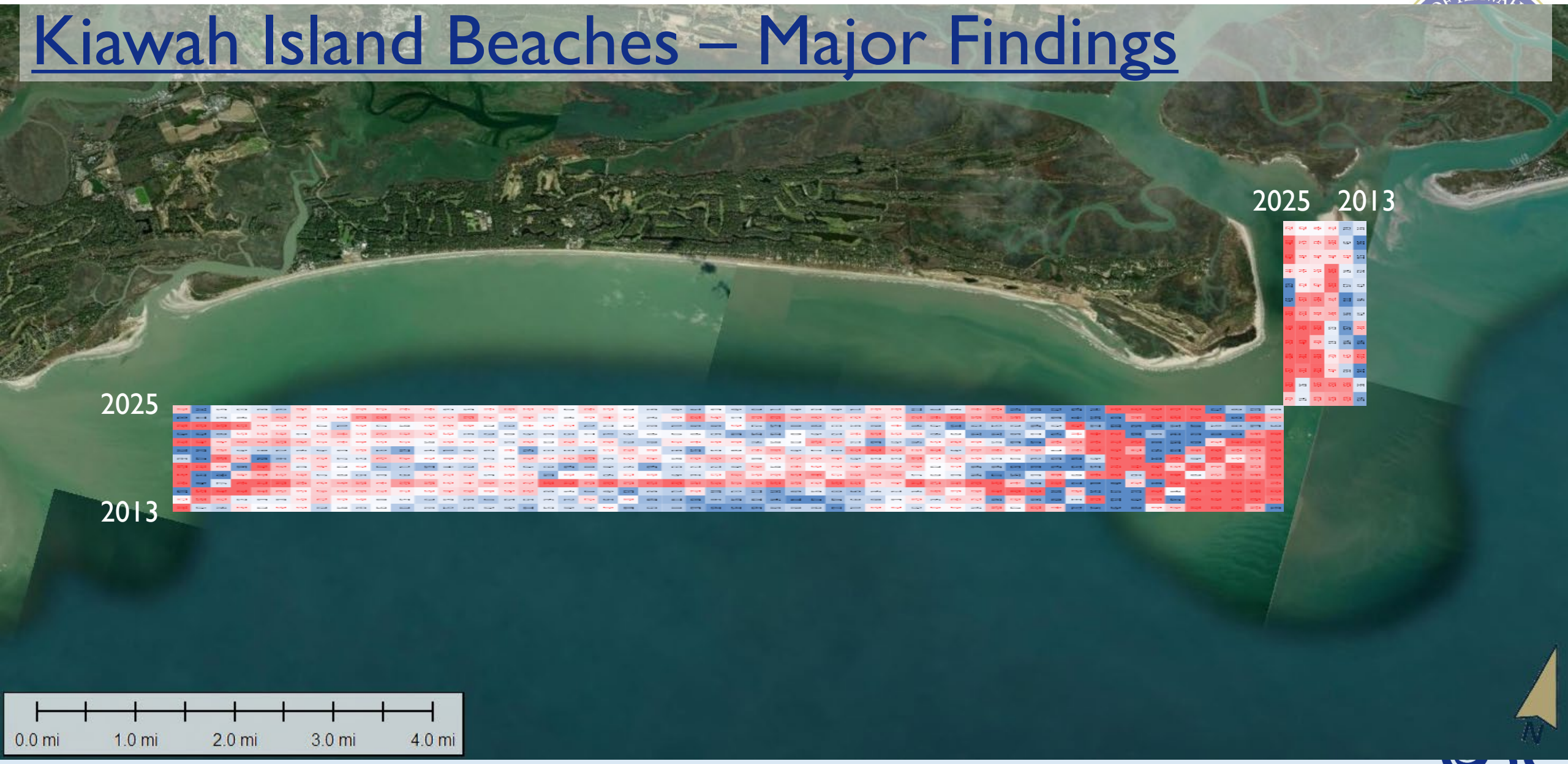
- Shoreline Position
- October 2008 to December 2025
- Dynamic at Turtle Point, Beach Club, Stono Inlet
  - Along inlet-affected beaches
- Relatively stable along West End
  - Along strand-type beaches

Kiawah Island Beaches

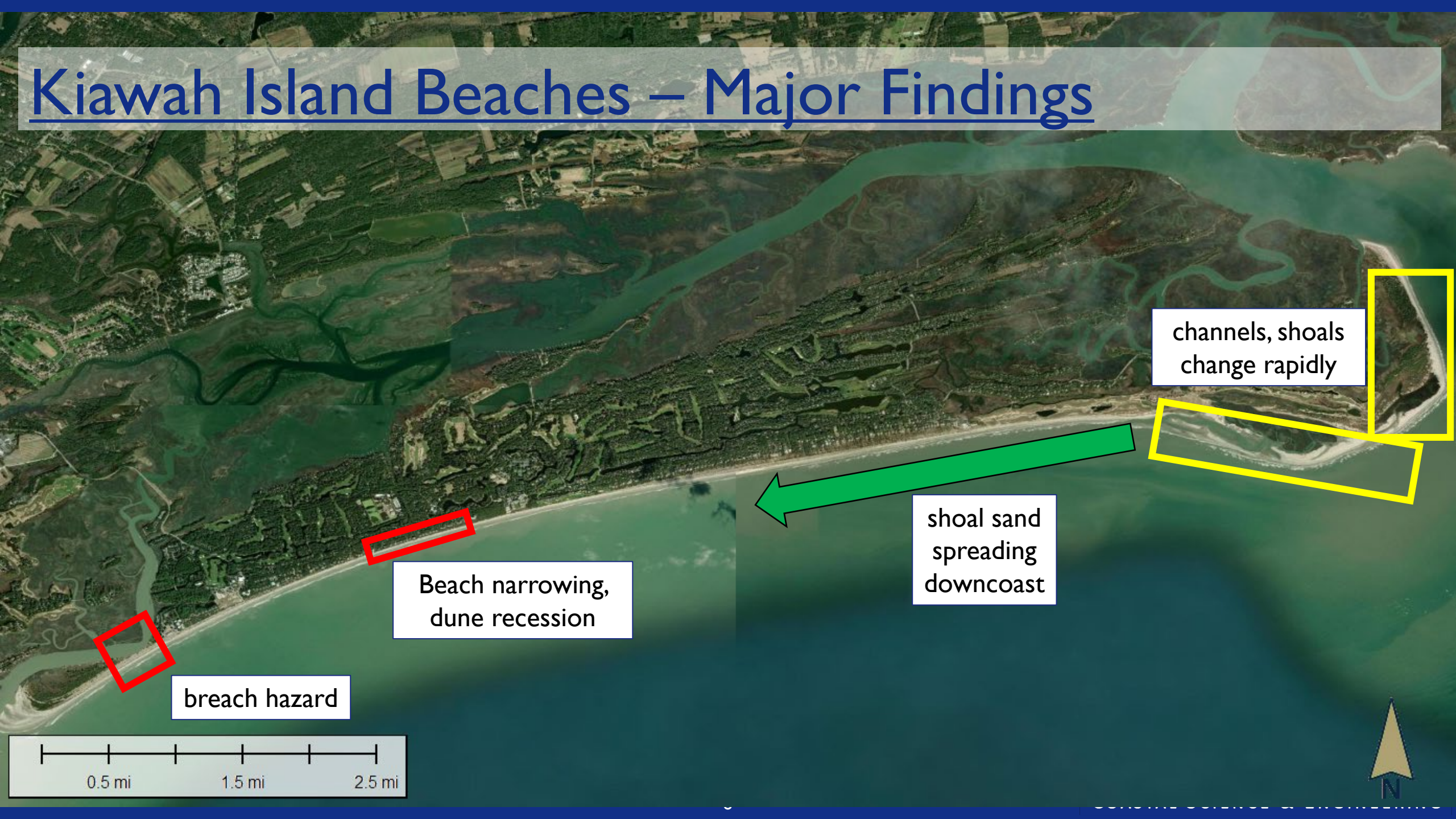


- Volume Changes
- April 1999 to December 2025
- Increases along all three West End reaches
- Hot spot of chronic erosion near Eugenia, Mariners Watch

Kiawah Island Beaches – Major Findings

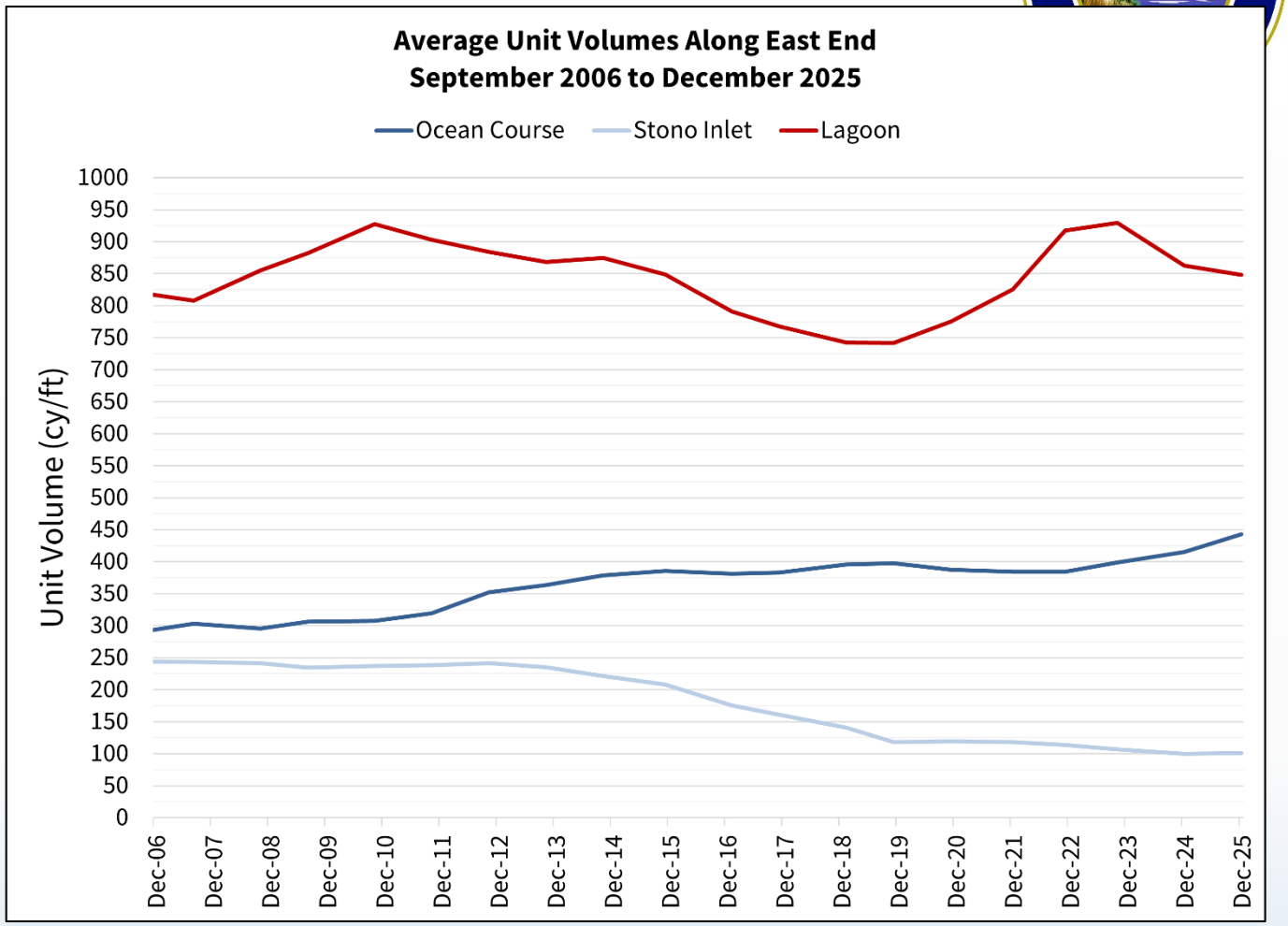


Kiawah Island Beaches – Major Findings



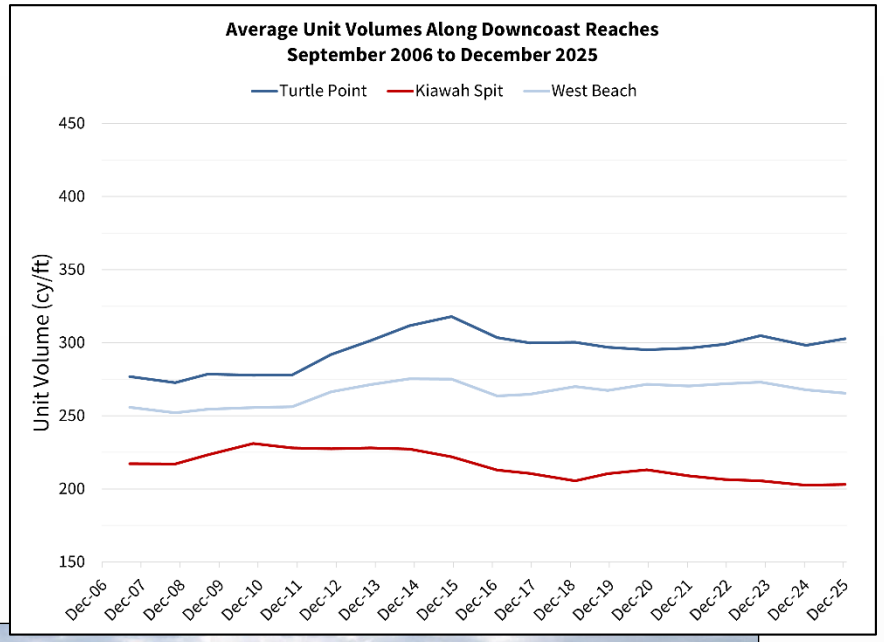
Kiawah Island Beaches

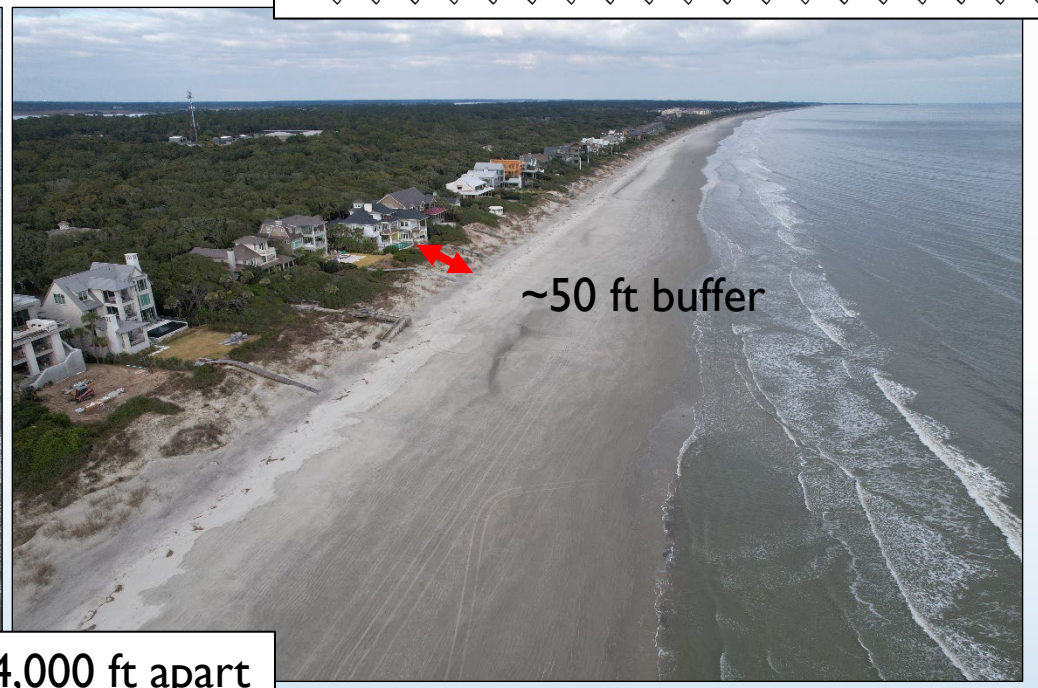
- Key Events – East End
  - Gained ~138,500 cy (6.2cy/ft/yr)
    - Losses at Lagoon, gains elsewhere
  - Shoal attachment complete
  - 2024 to 2025 – northerly migration of channel along Ocean Course driving range
    - Helps mitigate hazard…for now
    - Permit application submitted



Kiawah Island Beaches

- Key Events – West End
  - Gained ~40,000 cy (1.2 cy/ft/yr)
  - Range of dune conditions
    - Some properties well protected
    - Others vulnerable to storm impacts





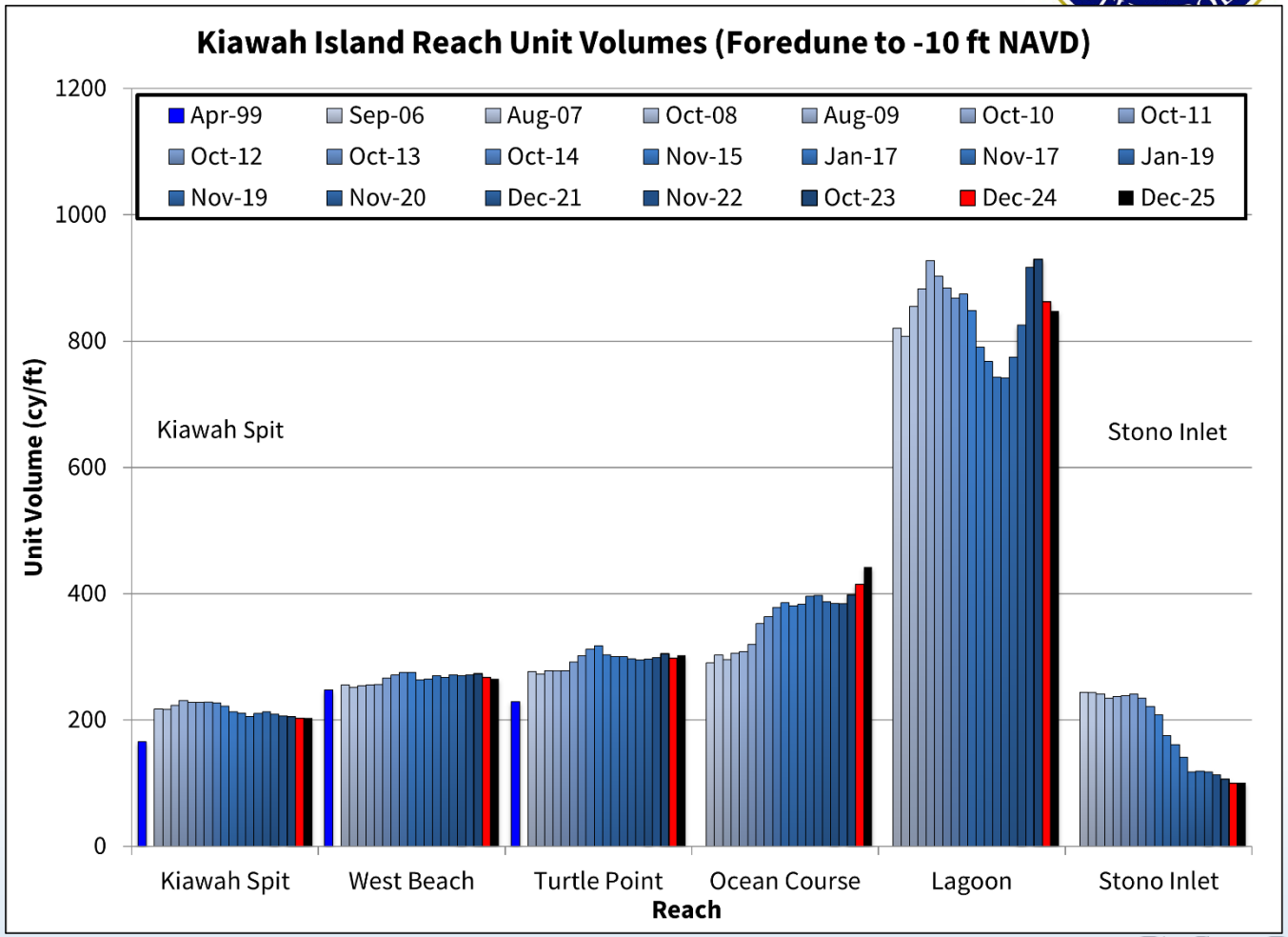
Images taken ~4,000 ft apart

Kiawah Island Beaches

- Key Events – West End
  - Continued narrowing of Kiawah Spit near Beachwalker Park
  - September 2010 (upper)
    - ~380 ft (through ~2015)
  - September 2025 (lower)
    - ~200 ft
  - Relatively stable until ~2015, consistent narrowing over last 10 years
    - Approximately 180 ft from 2015 to 2025

Summary and Recommendations

- Net positive long-term sand budget doesn't mean there isn't erosion!
  - Island-wide volume, 2007 to 2015
    ≈ +1.9 million cy
  - Island-wide volume, 2015 to 2019
    ≈ -1.9 million cy
  - Island-wide volume, 2019 to 2025
    ≈ +1.1 million cy
- East End susceptible to significant volume changes due to shoal attachment
- Eugenia Ave, Mariners Watch are most vulnerable along West End
- Capt Sams Spit narrowing, extending



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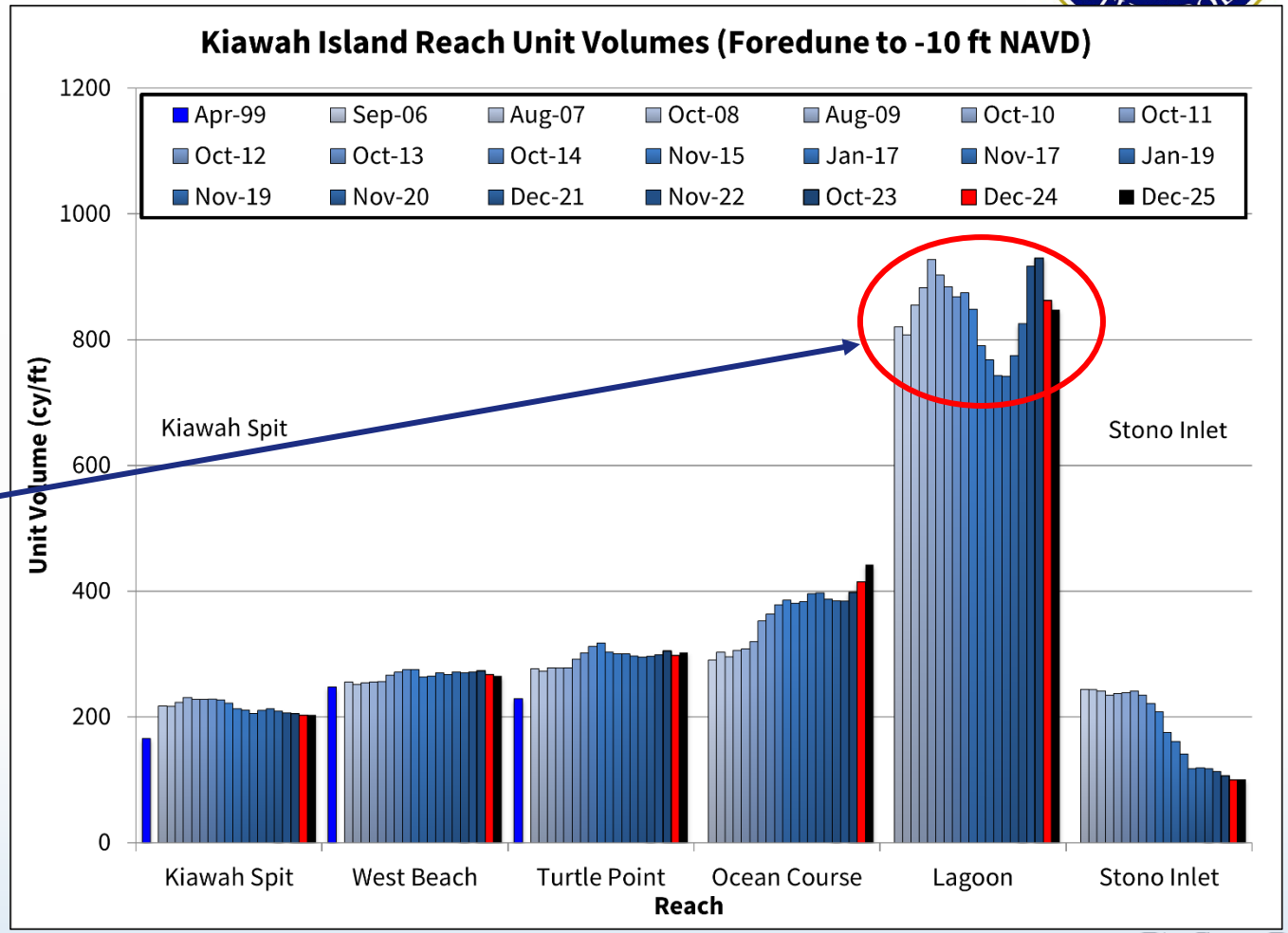
Conditions will change **quickly** and should be monitored regularly via visual inspections.



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Detailed survey and assessment of the island's protective dune buffer would be a useful guidance document for the Town to assess and adopt different strategies pro-actively

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Best options for extending life of spit and access from Beachwalker Park is to ensure positive sand budget in dunes, and reduce erosional pressure from landward side

Kiawah Island Beaches – Major Findings