

Kiawah Island East End Project

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Coastal Science & Engineering



Inlet Shoal Bypassing

Kiawah Island

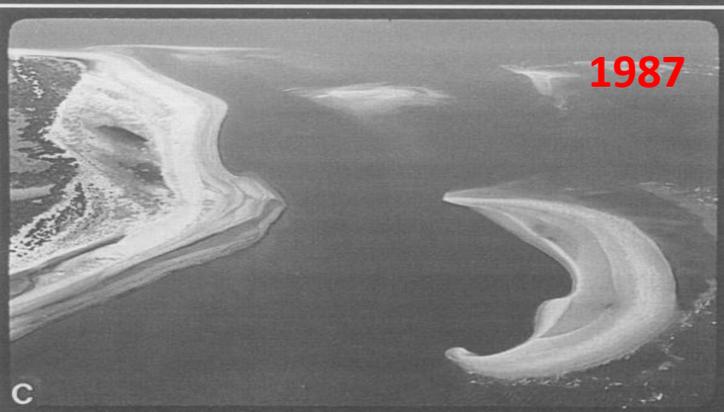
1977



1983



1987

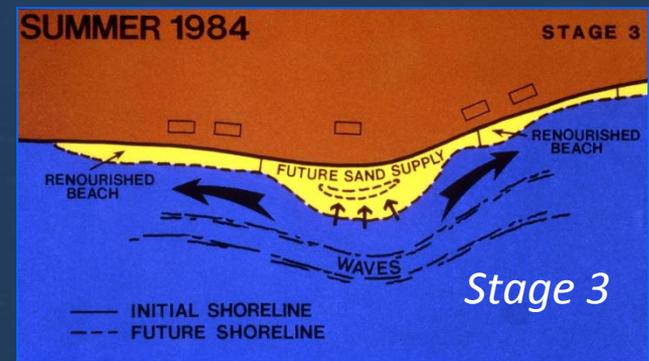
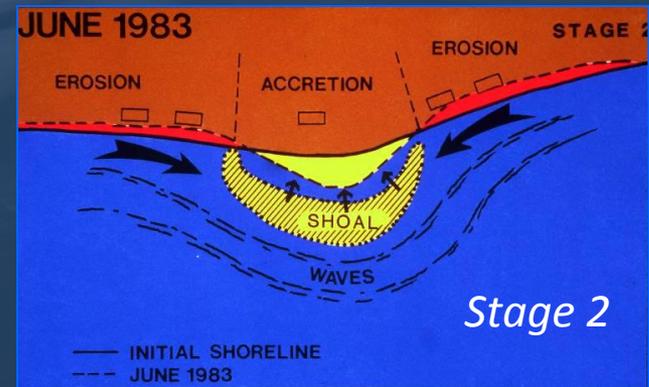
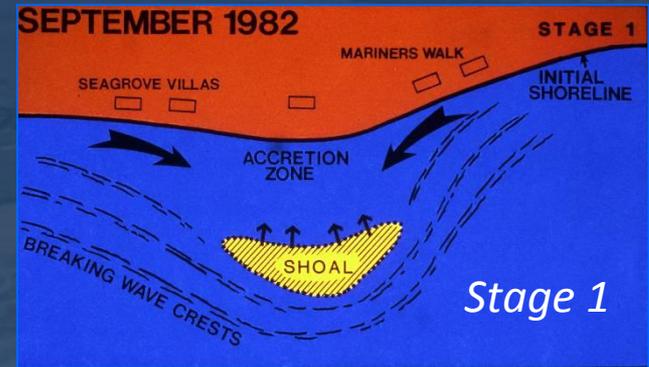


Fripp Island



Shoal Bypassing:
The episodic release of sand bars from ebb tidal deltas and subsequent onshore migration and attachment to the downcoast shoreline.

Three Stages of Inlet Shoal Bypassing



Source: Kana et al 1985



Kiawah Island - East End – 1998 to 2005



A = East lagoon
~80 acres marsh

B = West lagoon
Incipient marsh

Total Bypassing Volume ~5 mil cy

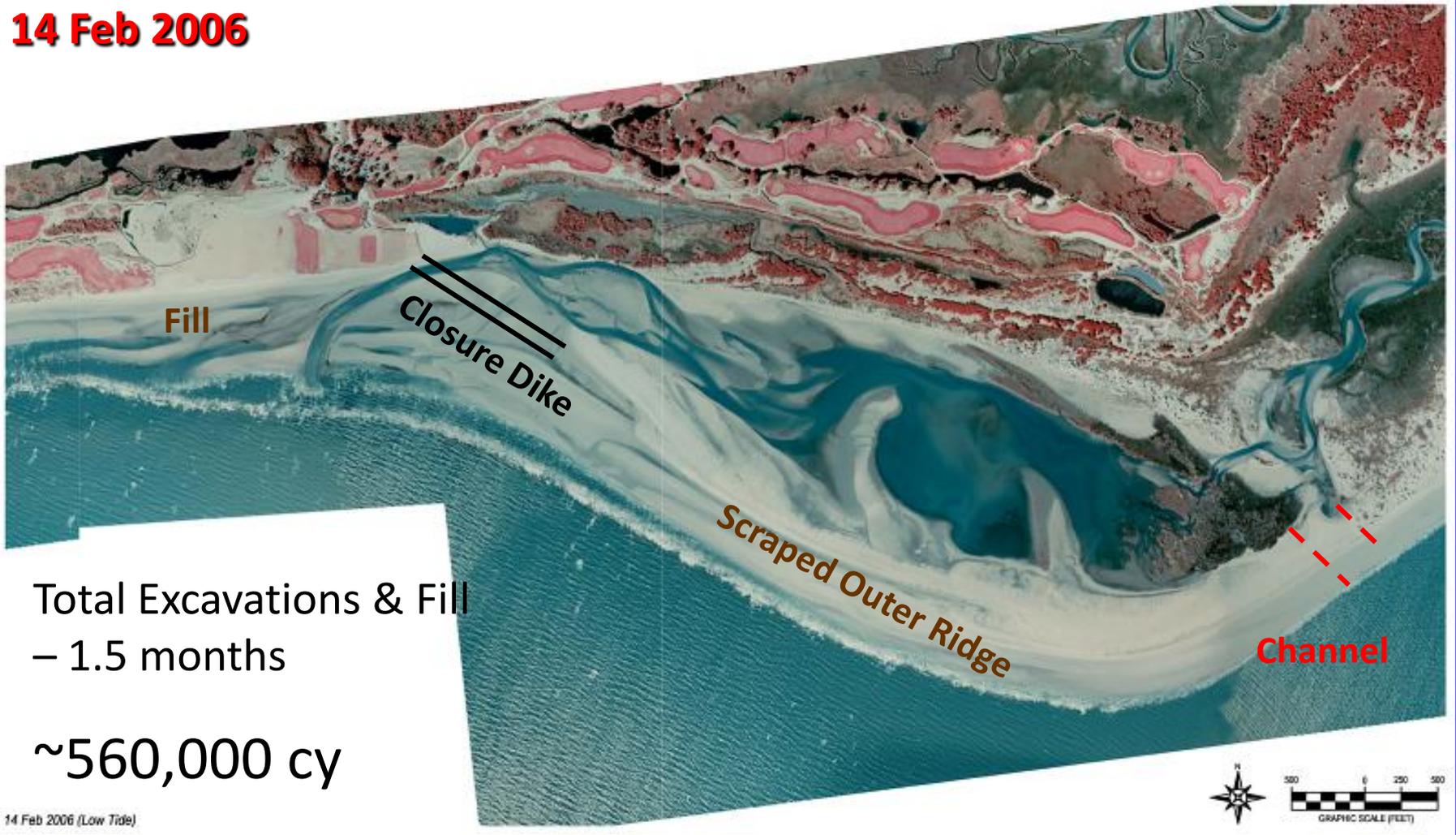
~5% of Stono Inlet's Ebb Delta Volume

2005



Pre-Construction - 2006

14 Feb 2006

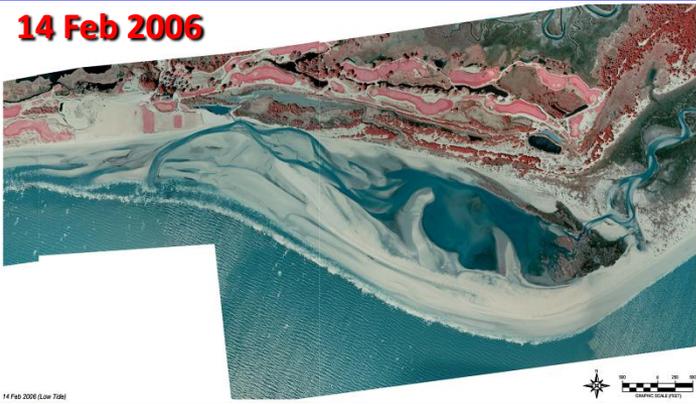


Closure Dike @ Low Tide – 16 June 2006

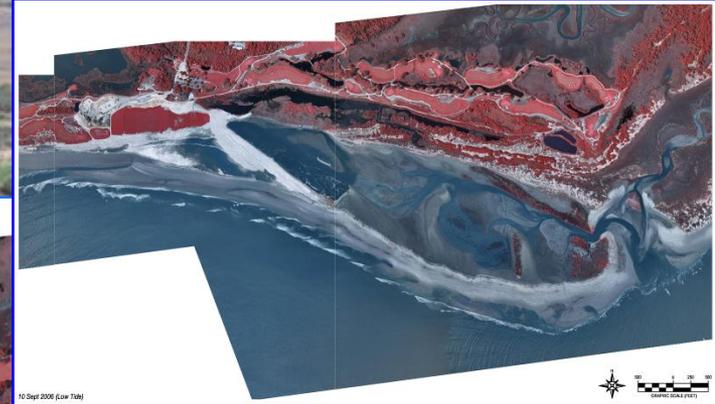


Outcome - 2006

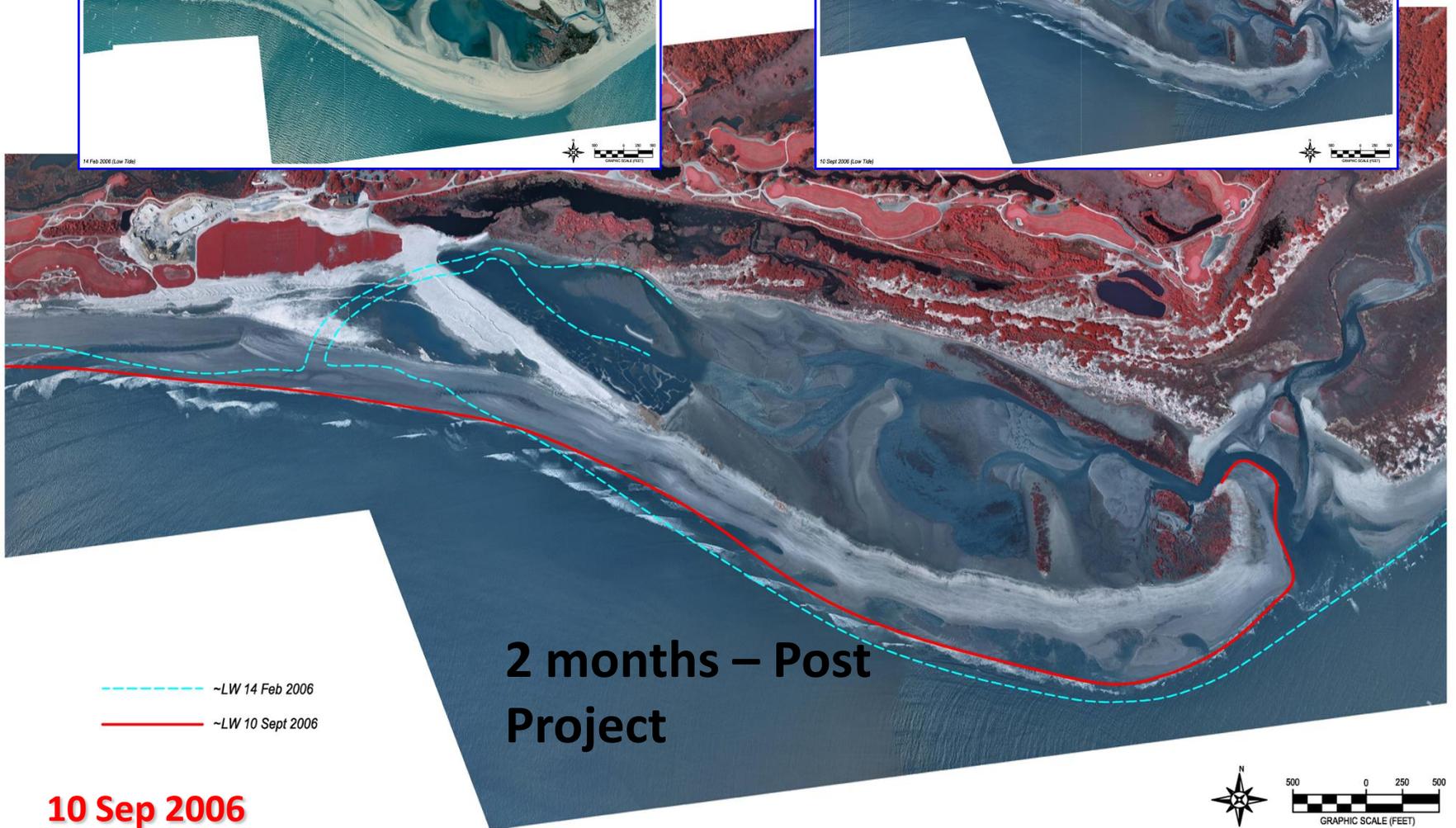
14 Feb 2006



14 Feb 2006 (Low Tide)



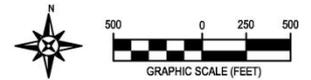
10 Sept 2006 (Low Tide)



2 months – Post Project

--- ~LW 14 Feb 2006
— ~LW 10 Sept 2006

10 Sep 2006



Conditions – 5 December 2007



17 Feb 2007

1.5 years – Post Project



Closed
Constructed
Channel



Washovers
Maintained!



Feb 2006



Sept 2006



Sept 2007



Oct 2008



Aug 2009



Oct 2010



Oct 2011



Feb 2013

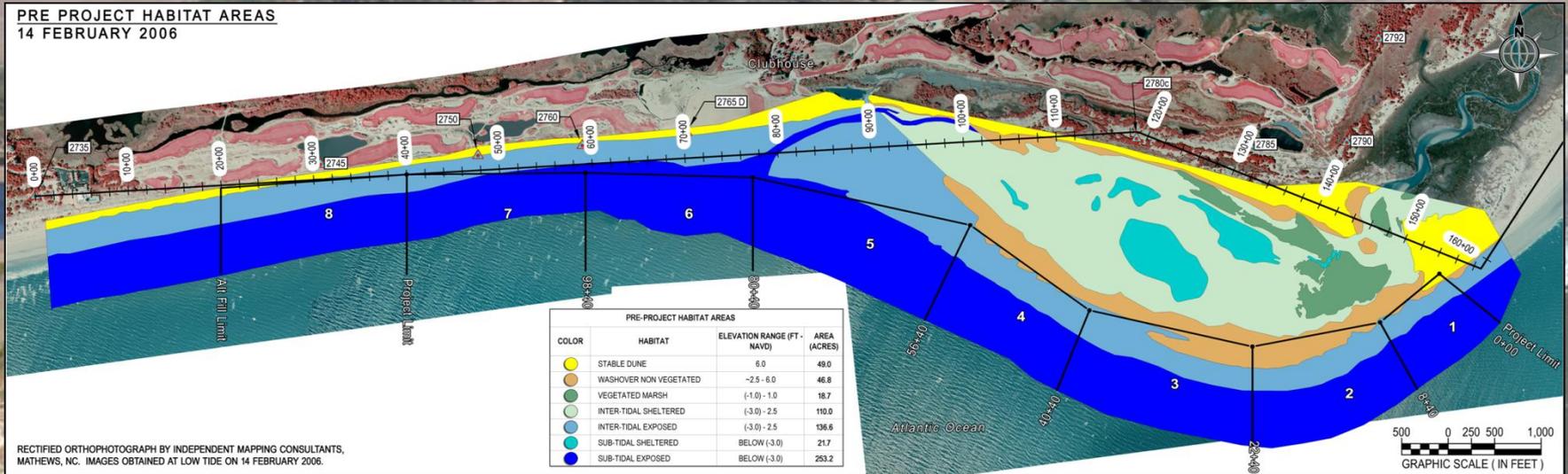


0 500 1,000 2,000 3,000 4,000 Feet

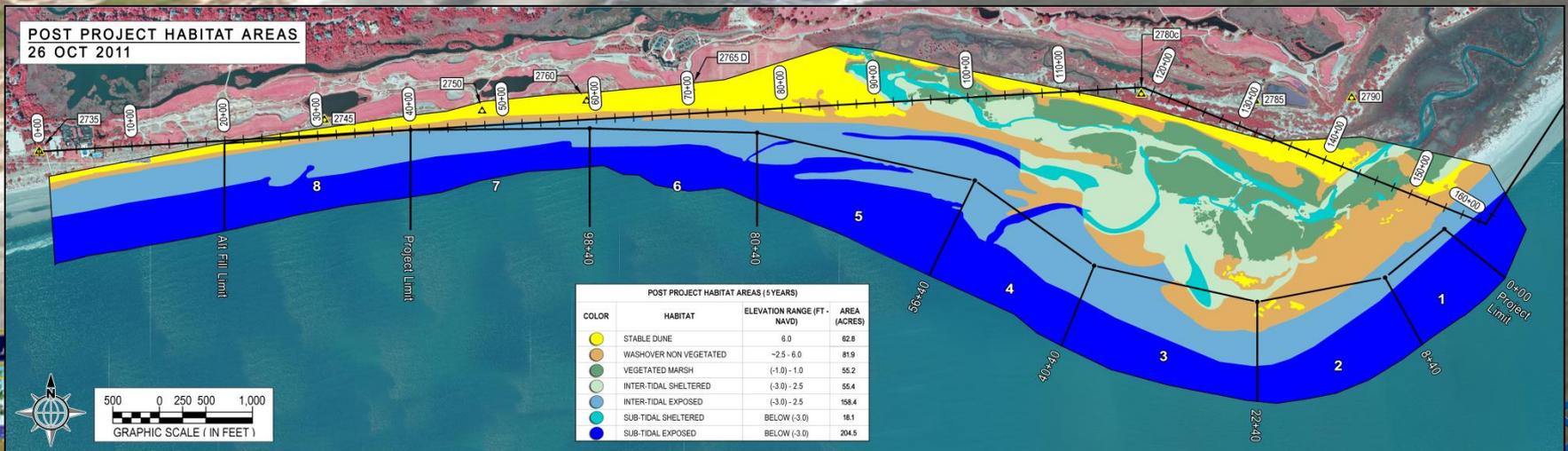


Pre and Post Project Habitat Areas

PRE PROJECT HABITAT AREAS
14 FEBRUARY 2006

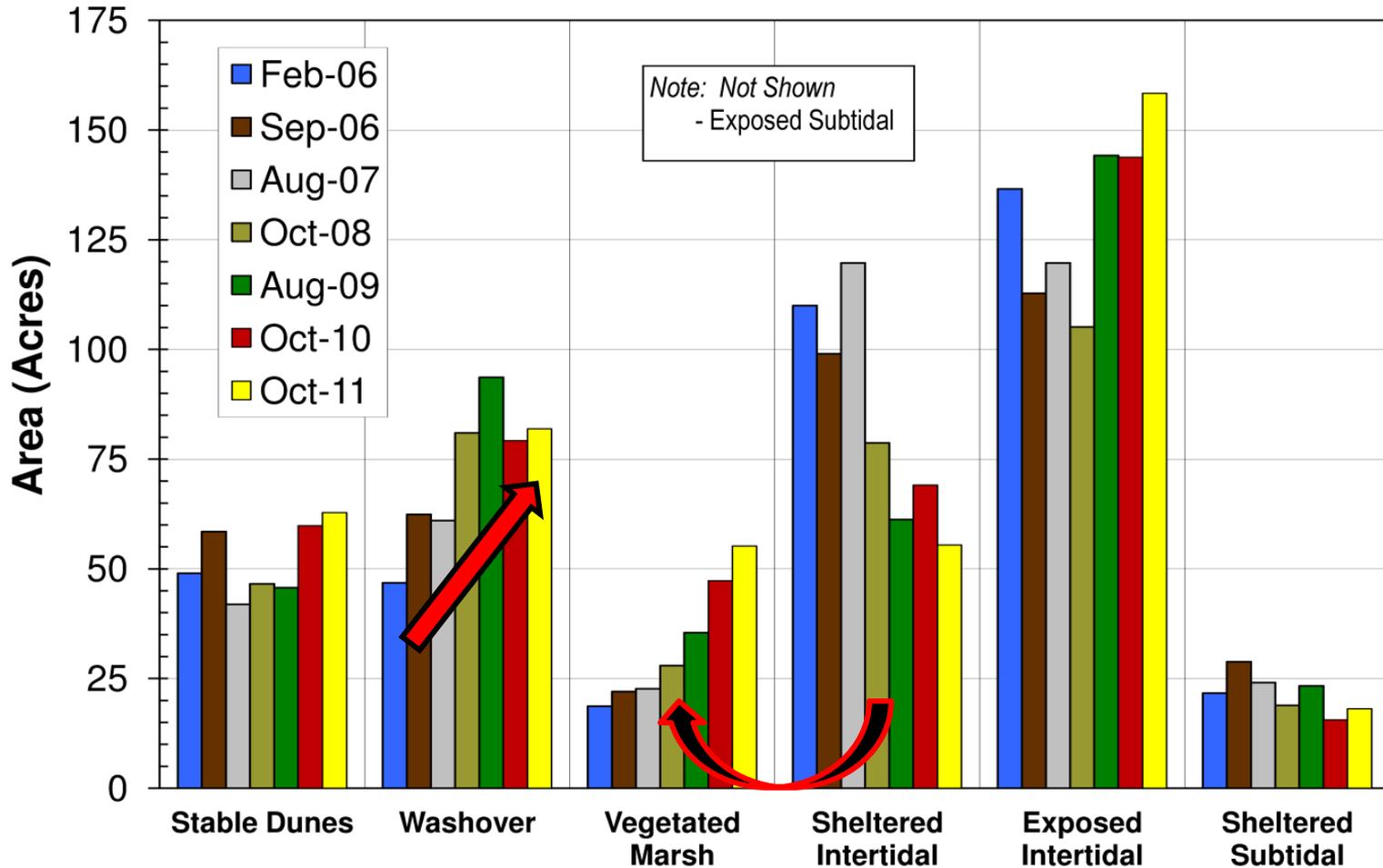


POST PROJECT HABITAT AREAS
26 OCT 2011



Changes to Habitat Areas 2006-2011

Habitat Areas - Kiawah Island East End
February 2006 to October 2011



Channel Migration – 2012-2014

September 2012



November 2013



January 2015





21 Oct 2014



6 Jan 2015



Erosion Rates near the Ocean Course Clubhouse

Prepared February 10, 2015



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Permitting Process

- Initial Agency Coordination
- Permit Application – May 2014
 - Text, drawings, monitoring plan
- Environmental - Documents (BA/EFH) – June 2014
- Public Notice
- Coordination with USACE, SCDHEC-OCRM, USFWS, SCDNR, NOAA-NMFS

KIAWAH ISLAND EAST END DUNE
HABITAT PRESERVATION PROJECT
Permit P/N SAC-2014-00537-1W

BIOLOGICAL ASSESSMENT & ESSENTIAL FISH HABITAT ASSESSMENT



Prepared for:

U.S. Army Corps of Engineers
Charleston District (South Carolina)



Applicant:

Town of Kiawah Island
Kiawah Island South Carolina



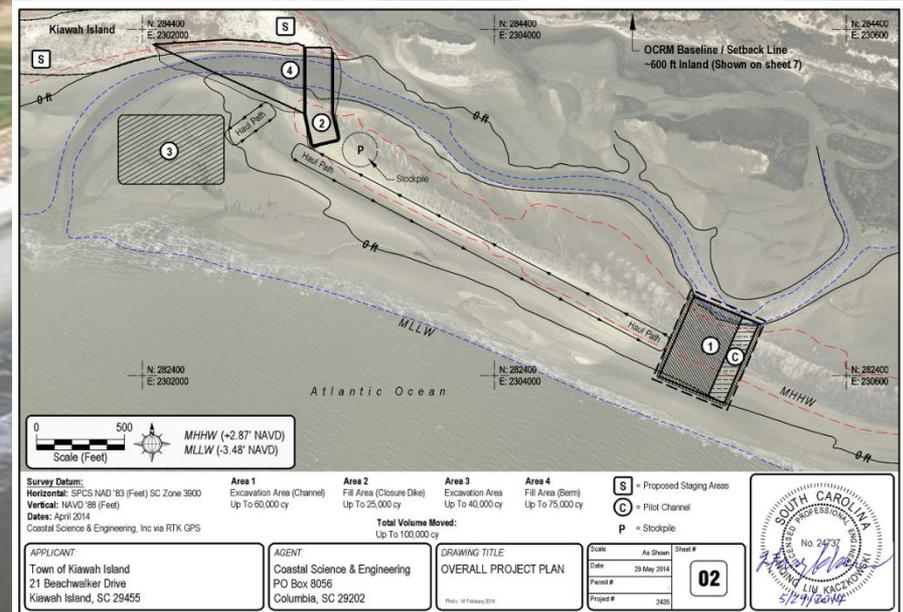
Prepared by:

Coastal Science & Engineering
Columbia South Carolina

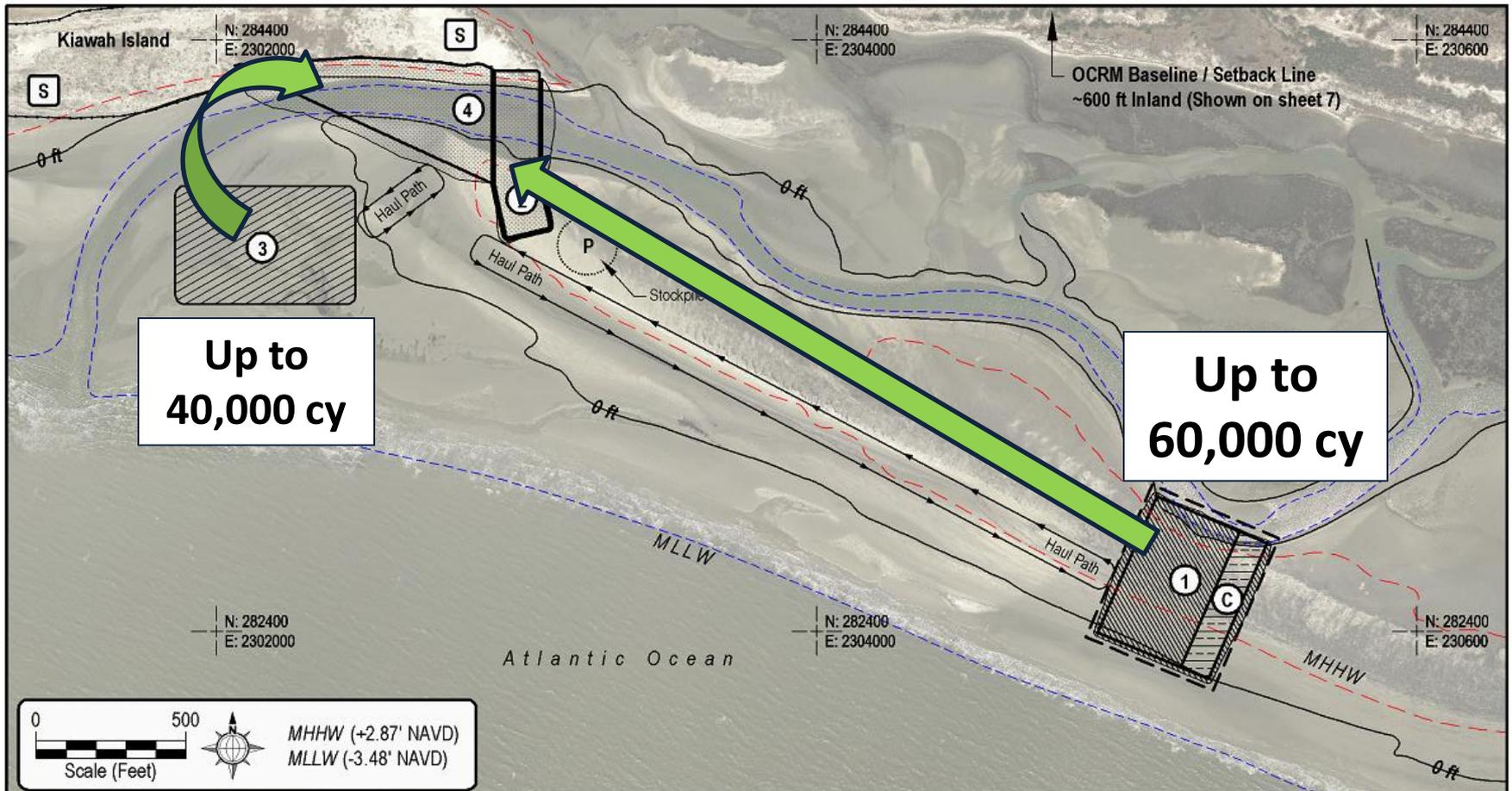


Permitting Process

- Received State Permit on 5 December 2014
- USACE permit pending
- Typical construction window of Sept-Oct
- One-time modification requested for May 15 – July 15 of 2015



Construction Plan



Survey Datum:
Horizontal: SPCS NAD '83 (Feet) SC Zone 3900
Vertical: NAVD '88 (Feet)
Dates: April 2014
 Coastal Science & Engineering, Inc via RTK GPS

Area 1
 Excavation Area (Channel)
 Up To 60,000 cy

Area 2
 Fill Area (Closure Dike)
 Up To 25,000 cy

Area 3
 Excavation Area
 Up To 40,000 cy

Area 4
 Fill Area (Berm)
 Up To 75,000 cy

Total Volume Moved:
 Up To 100,000 cy

- S** = Proposed Staging Areas
- C** = Pilot Channel
- P** = Stockpile

APPLICANT:
 Town of Kiawah Island
 21 Beachwalker Drive
 Kiawah Island, SC 29455

AGENT:
 Coastal Science & Engineering
 PO Box 8056
 Columbia, SC 29202

DRAWING TITLE:
 OVERALL PROJECT PLAN

Photo: 14 February 2014

Scale: As Shown Sheet # **02**

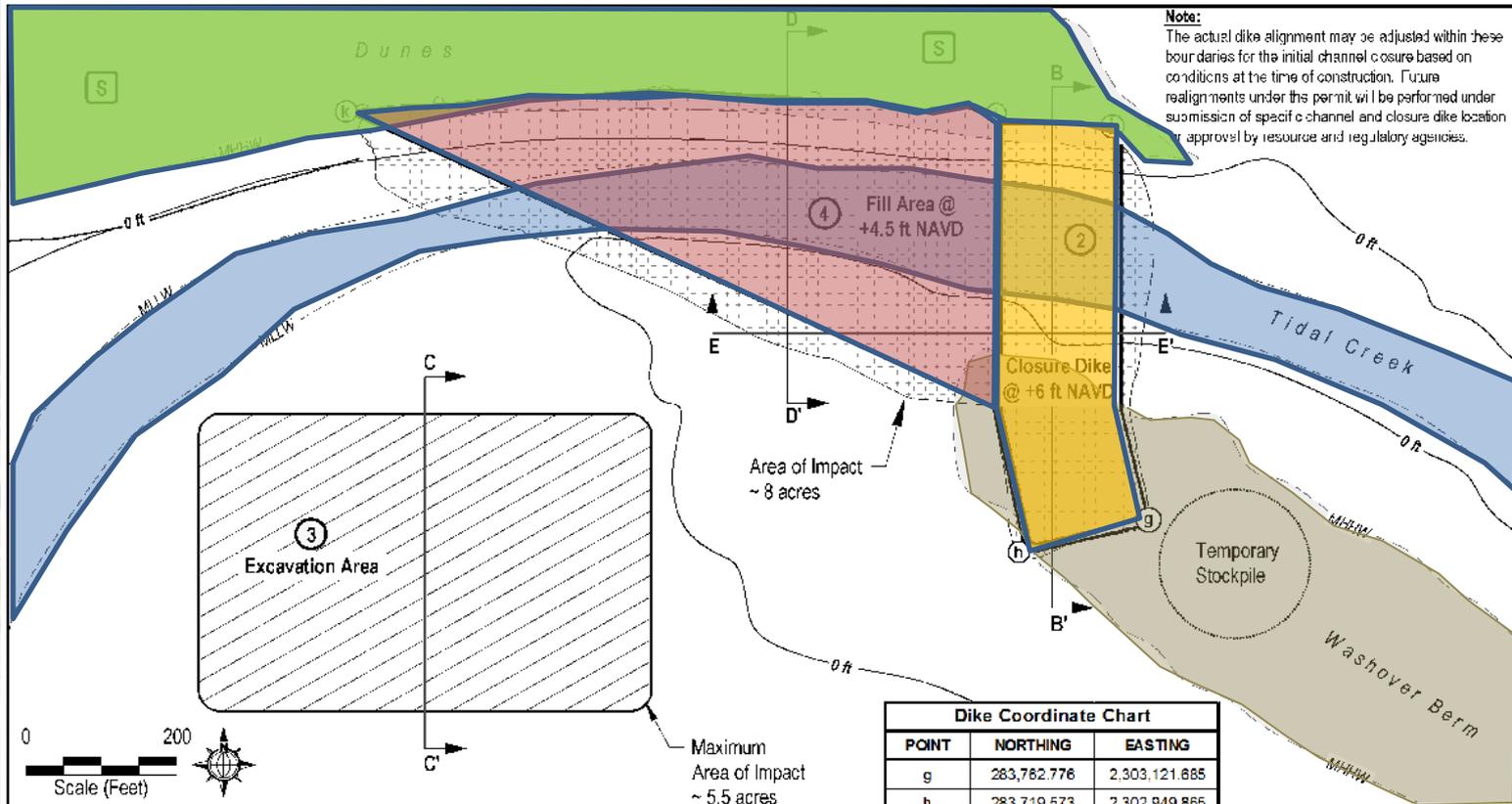
Date: 29 May 2014

Permit #

Project # 2435



Closure Dike and Beach Fill



Note:
The actual dike alignment may be adjusted within these boundaries for the initial channel closure based on conditions at the time of construction. Future realignments under this permit will be performed under submission of specific channel and closure dike location approval by resource and regulatory agencies.

Survey Datum:
Horizontal: SPCS NAD 83 (Feet) SC Zone 3502
Vertical: NAVD 83 (Feet)
Date: April 2014
Coastal Science & Engineering, Inc. via RTK GPS

Note:
The closure dike Area 2 will be constructed first, using sand excavated from Area 1 (sheet 3). The fill berm Area 4 will be constructed at 4.5 ft NAVD to allow periodic washover using sand from Areas 1 and 3.

POINT	NORTHING	EASTING
g	283,762.776	2,303,121.885
h	283,719.573	2,302,949.865
i	284,308.914	2,302,919.599
j	284,291.390	2,303,073.583
k	284,311.405	2,302,059.181

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Town of Kiawah Island
21 Beachwalker Drive
Kiawah Island, SC 29455

AGENT:
Coastal Science & Engineering
PO Box 8056
Columbia, SC 29202

DRAWING TITLE:
AREAS 2 - 4 CLOSURE DIKE &
ADDITIONAL EXCAVATION AREA
Proposed Plan

Scale: As Shown
Date: 29 May 2014
Permit #
Project # 2432



Construction



- Anticipate a ~3 week construction window
- Equipment – Off road trucks, excavators, bulldozers
- Working daylight hours ~3 hrs before to ~3 hrs after low tide
- Attempt to close dike on neap tide (lower high-tide)

Environmental Protection

During Construction

- Daily Turtle Monitoring
- Nest relocation
- Equipment Storage
- Habitat Protection
- Pre- and Post-project Survey
- High-Res Vertical Photos (pre and post)
- Marsh Monitoring (pre and post)
- Benthic and Plover Monitoring

Post-Construction

- Annual Beach Surveys (full profile)
- Quarterly Channel Surveys (line)
- Oblique Aerial Photos (2 in Year 1, annually in years 2-3)
- High-Res Vertical Photos (1 year post)
- Marsh Monitoring (1 Year Post)
- Annual Reports
- Benthic and Plover Monitoring



Terms and Conditions

- 2 events over a 5 year period, with minimum 3 year interval
- 100,000 cy max
- Sept-Oct Construction*
- Channel must be landward of Feb 2014 position



Approximate Schedule

- March 20 – Plans out for Bid
- 3 or 6 April – Mandatory Pre-Bid Meeting
- 15 April – Receive Bids
- 17 April – Award Contract
- 1 May – Notice to Proceed
- 15 May – Begin Construction

