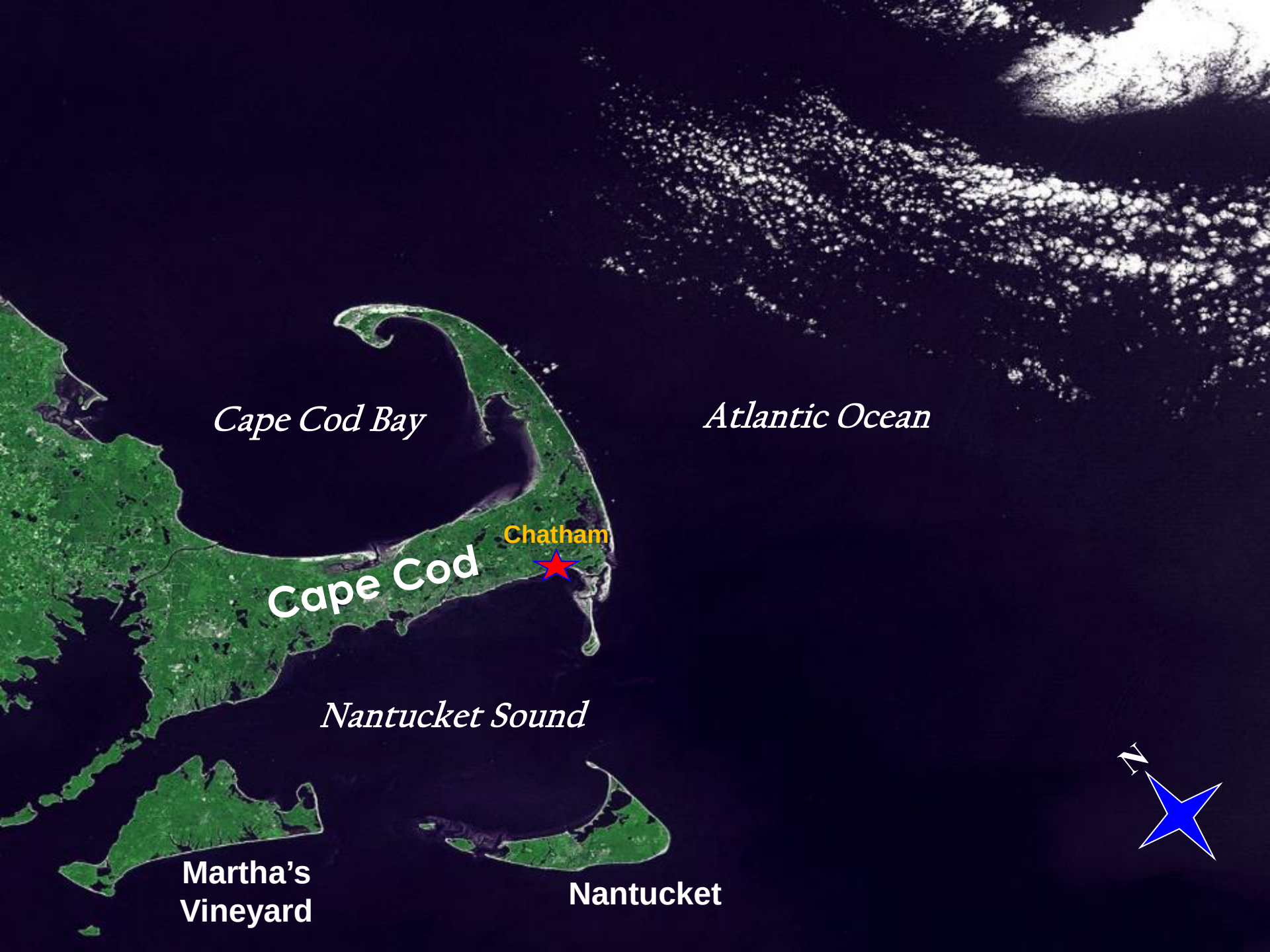
Dredging, Sand Management and Habitat Restoration of a Jettied Inlet System, Chatham, MA

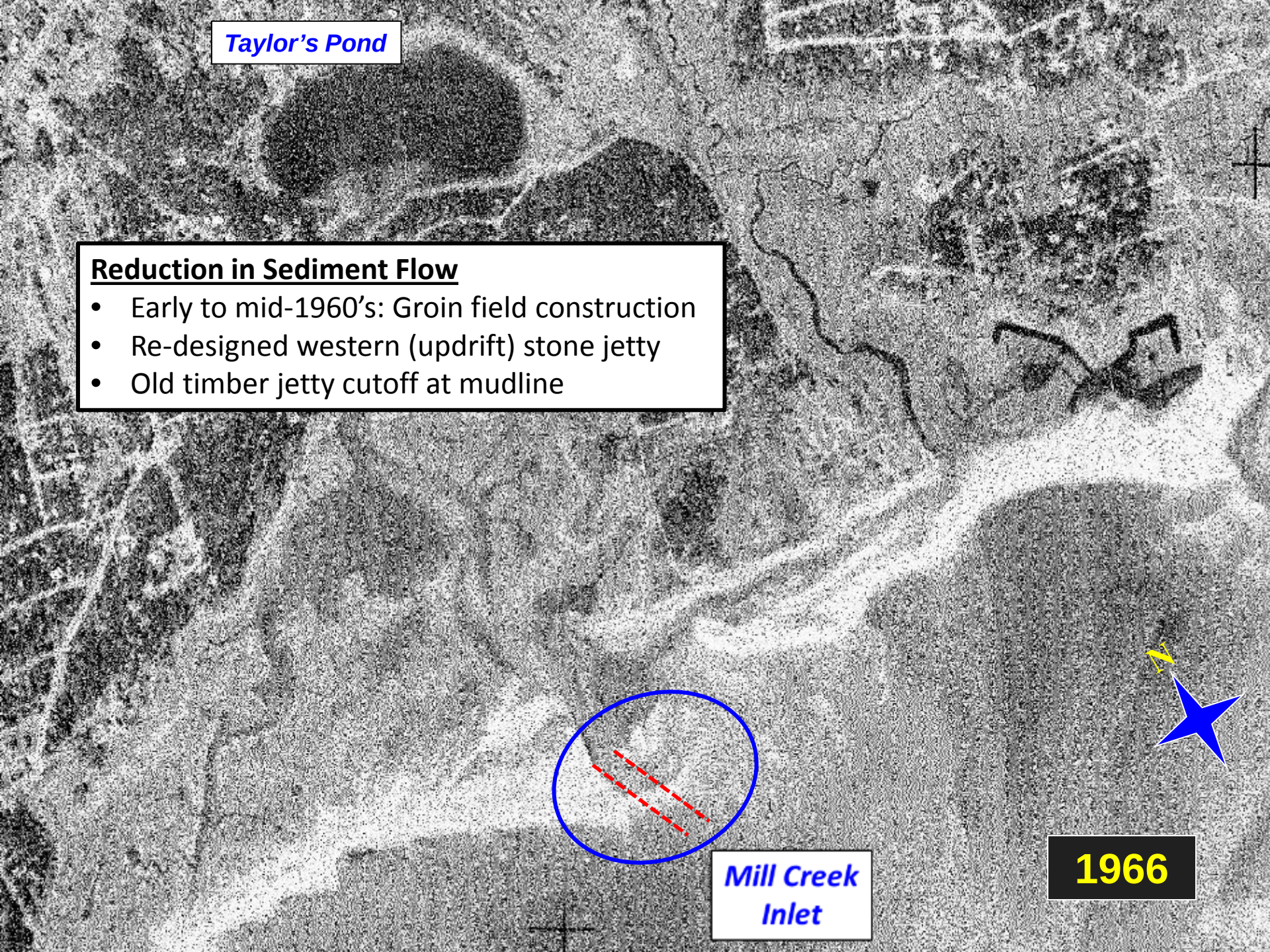
Ted Keon, Town of Chatham


Cape Cod Bay
Atlantic Ocean
Chatham
Cape Cod
Nantucket Sound
N
Martha's Vineyard
Nantucket

Large Marsh Ecosystem with Tidal Kettle Pond
• Commercially & recreationally harvested shellfish
• Minor navigation/boat mooring
• Shellfish propagation- Quahog grow-out beds
• 600 K to 1 M per yr.
Taylor's Pond
Shellfish Propagation
Forest Beach
Mill Creek Inlet
N

Harwich
Chatham
Sediment Deficit
Mill Creek Inlet
Numerous Jetties & Groin Fields
East
Littoral Direction
West
Nantucket Sound
N

Taylor's Pond
N
Mill Creek Inlet
1938


Taylor's Pond
Reduction in Sediment Flow
• Early to mid-1960's: Groin field construction
• Re-designed western (updrift) stone jetty
• Old timber jetty cutoff at mudline
N
Mill Creek Inlet
1966

Taylor's Pond

Sediment Deficit- Heightened Erosion

Mill Creek Inlet

Little to No Natural Sand By-passing

1979

West Jetty Fillet

- Filled to capacity
- Sand naturally by-passing into channel

Jun 2006

Issues

- Poor flushing/water quality
- East jetty “flanking”
- Navigation impacts
- Shellfish habitat impacts
  - Abandonment of propagation beds

Taylor’s Pond

Oct 2009

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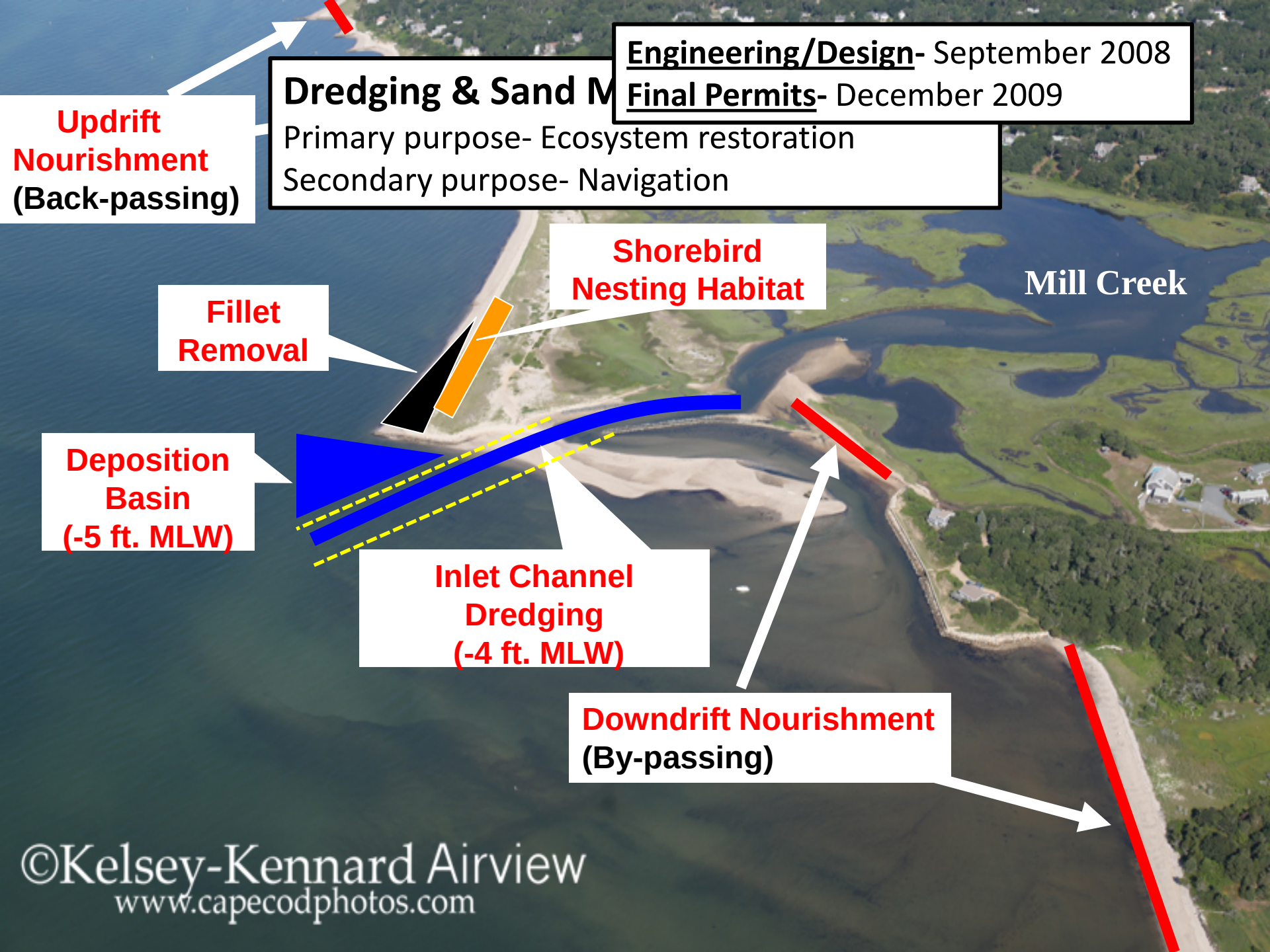
Engineering/Design- September 2008
Final Permits- December 2009
Dredging & Sand M
Primary purpose- Ecosystem restoration
Secondary purpose- Navigation
Updrift Nourishment (Back-passing)
Shorebird Nesting Habitat
Mill Creek
Fillet Removal
Deposition Basin (-5 ft. MLW)
Inlet Channel Dredging (-4 ft. MLW)
Downdrift Nourishment (By-passing)
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Initial Project Completion: April 2010

- Total volume removed: 14,000 cys
  - Channel and deposition basin only
  - Deferred fillet removal/habitat enhancement
- Flushing restored
- Shellfish propagation reestablished

Spring 2010

March 2010

7 Months Later

Inlet Dredging Since April 2010

Date	QTY	Disposal
Apr 2010	14,000 cys	By-Pass
Nov 2010	4,500 cys	By-Pass
Nov 2011	3,000 cys	Back-Pass
Apr 2012	2,000 cys	By-Pass
Oct 2012	4,000 cys	Back-Pass
Nov 2013	3,500 cys	By-Pass
Feb 2015	7,500 cys	By-Pass
Total	**38,500 cys**	

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Oct 17, 2010

Public/Private Partnership

Mill Creek

Fillet Removal

<u>Town Support</u>:

- Reduce inlet shoaling
- Sand back-passing
- Privately funded $$

Beach Disposal

Chatham

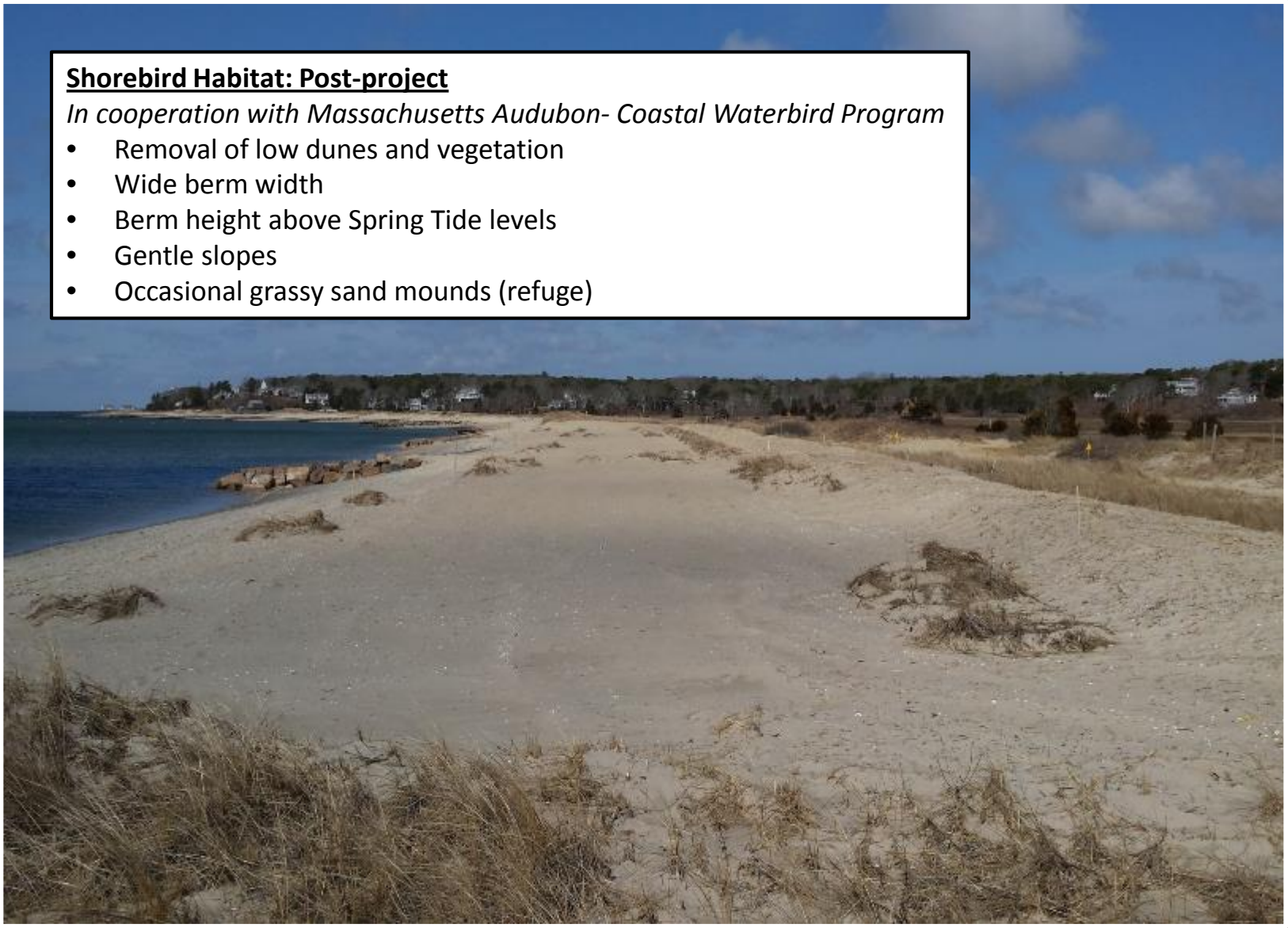
Harwich

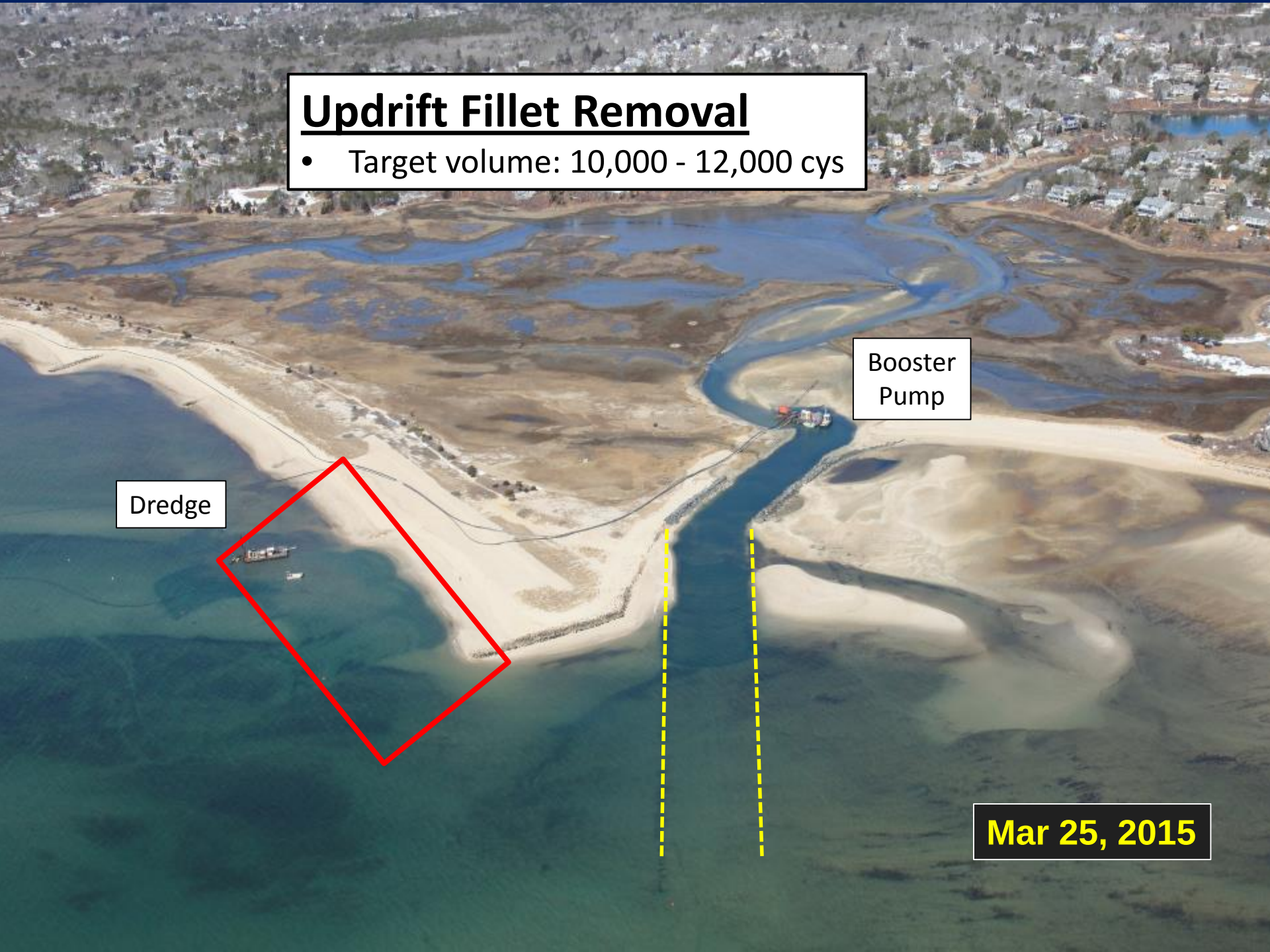
Red River

Shorebird Habitat: Post-project

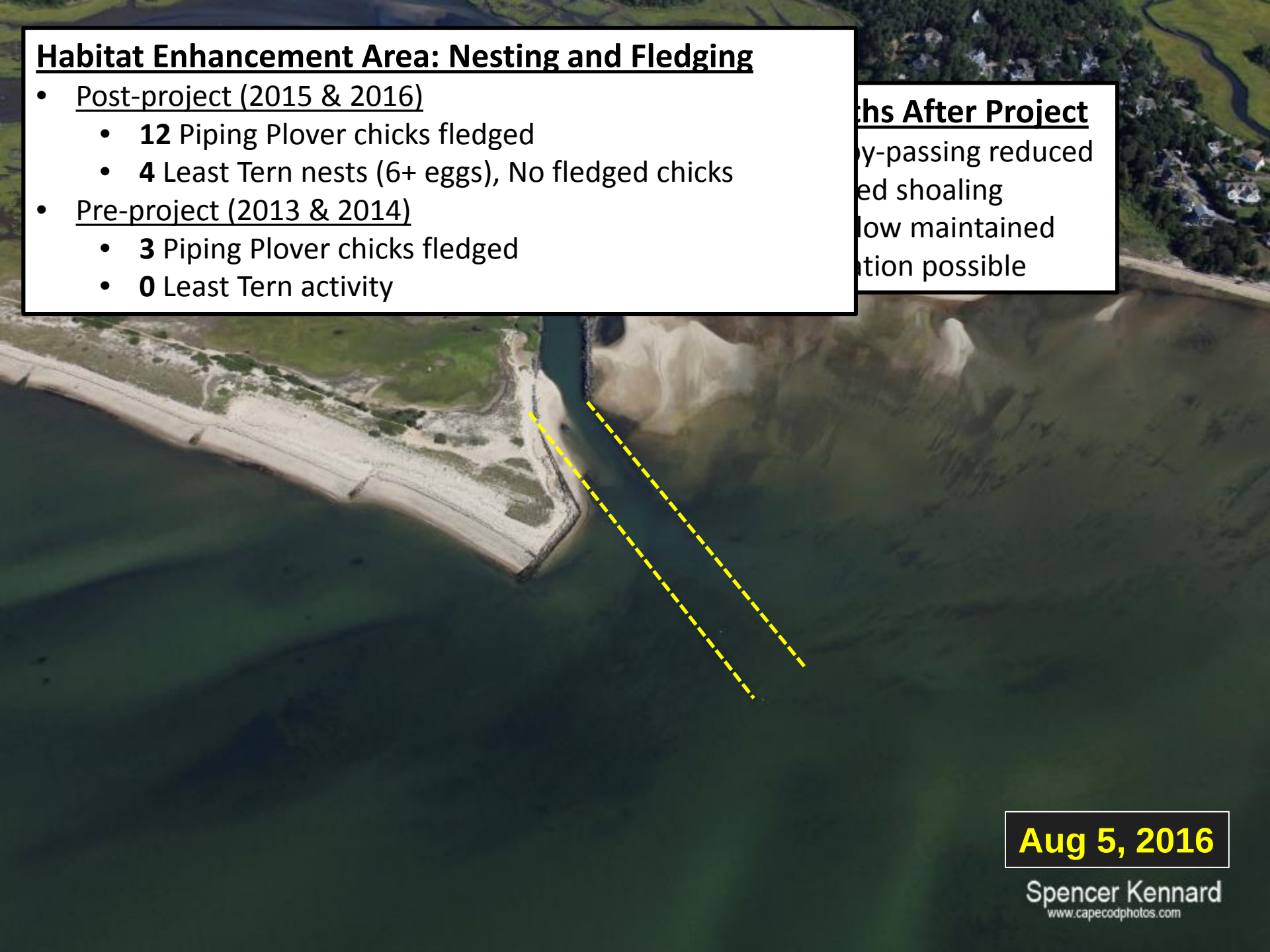
In cooperation with Massachusetts Audubon- Coastal Waterbird Program

- Removal of low dunes and vegetation
- Wide berm width
- Berm height above Spring Tide levels
- Gentle slopes
- Occasional grassy sand mounds (refuge)




Updrift Fillet Removal
• Target volume: 10,000 - 12,000 cys
Booster Pump
Dredge
Mar 25, 2015

Mill Creek
Dredge
Approx. 6,000 ft.
Public beach
930 cys
Private beaches
9,800 cys
Red River
Apr 2015
Mar 2015
Spencer Kennard
www.capecodphotos.com


Habitat Enhancement Area: Nesting and Fledging
• Post-project (2015 & 2016)
• 12 Piping Plover chicks fledged
• 4 Least Tern nests (6+ eggs), No fledged chicks
• Pre-project (2013 & 2014)
• 3 Piping Plover chicks fledged
• 0 Least Tern activity
hs After Project
y-passing reduced
ed shoaling
low maintained
tion possible
Aug 5, 2016
Spencer Kennard
www.capecodphotos.com

Private Funding

1. Engineering support
2. Dredge cost (9,800 cys)
3. Beachfill spreading
4. Habitat enhancement
5. Habitat monitoring (4 yrs.)

Total: est. $175,000

Sold- $3.75 M
(Sept 2016)

Listed- $1.999 M
(Under Contract)

Jun 2015

Spencer Kennard
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Thank You

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Photo courtesy Paul Lagg