

Regular Workshop – September 24, 2012  
Agenda Item 9

Agenda Item: North End Structures Update

Presenter: Town Manager

Summary: The Town Manager will update the Commission on the current condition of the North end beach, options to address erosion, status of current permit applications, and seek Commission policy direction regarding future actions.

Attachments: PowerPoint Presentation

Recommended

Action: Pending discussion, provide direction to Manager.



**NORTH END EROSION CONTROL STRUCTURE  
DISCUSSION - SEPTEMBER 24, 2012**



## EROSION CONTROL STRUCTURES NORTH LONGBOAT KEY AND GREER ISLAND

- Policy Framework
- Options
- Regulatory Agency Discussions
- Existing Conditions and Costs
- Recommendations



## TOWN COMPREHENSIVE PLAN

**Objective 1.4** The Town will take those actions necessary to implement applicable sections of the Comprehensive Beach Management Plan, ... (to) enhance storm protection; and protect upland properties and public infrastructure.



## TOWN COMPREHENSIVE PLAN – OBJECTIVE 1.4

**Policy 1.4.3** The Town will implement the Comprehensive Beach Management Plan, as amended, in cooperation with other agencies.



## TOWN COMPREHENSIVE PLAN – OBJECTIVE 1.4

**Policy 1.4.8** The Town will not fund or allow new armoring or groin construction along the Gulf shoreline, unless such structures are integrated into the Town's Comprehensive Beach Management Plan, as amended, and the Town and FDEP finds that such structures are necessary to protect the public health, safety and welfare.



# 1995 BEACH MANAGEMENT PLAN

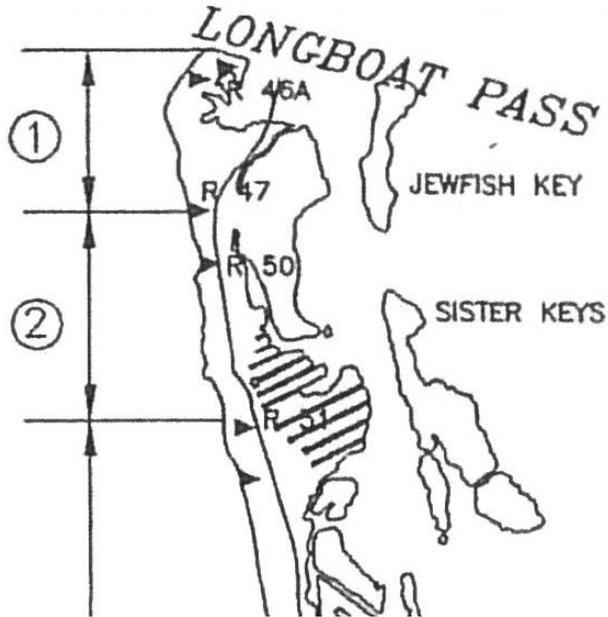
## SECTION 1

INTERIM OPTIONS :

- 1. COORDINATE WITH MANATEE COUNTY ON EXPERIMENTAL GROINS & MONITORING.
- 2. 25,000-50,000 CY FROM LONGBOAT PASS DREDGING (1996)

LONG TERM :

- 1. CONSIDER INCLUSION IN FUTURE RENOURISHMENTS.
- 2. FURTHER EVALUATE STABILIZING STRUCTURES.
- 3. CONTINUE SAND PLACEMENT FROM LONGBOAT PASS DREDGINGS AS NEEDED.





# 1999 COMPREHENSIVE BEACH MANAGEMENT PLAN UPDATE SUMMARY

Portions of Greer Island have eroded in the last six years with higher recession rates in the last two years, affecting the county park.



## 2008 UPDATE COMPREHENSIVE BEACH MANAGEMENT PLAN

Structures should be considered at the north end of the island to control existing high erosion rates. Groins and/or a terminal structure may be needed to slow the erosion of this area.



# 2008 UPDATE COMPREHENSIVE BEACH MANAGEMENT PLAN

The structures at the north end of the Island combined with periodic nourishment with sand are the minimum actions required to protect the health, safety and welfare of the public in this area.



## **2008 UPDATE COMPREHENSIVE BEACH MANAGEMENT PLAN**

Based on the high unit cost of sand and continued high erosion rates in Section 1, as a result of the inlet and ebb shoal interactions with the beach, structural control of the littoral transport is recommended.



## 2008 UPDATE COMPREHENSIVE BEACH MANAGEMENT PLAN

Implement structural control of high erosion areas (Greer Island Beach Park, Long Beach Village, and Islander Club Condominium). It has been determined that the above program constitutes the minimum actions necessary to protect the health, safety and welfare of the community.



## OPTIONS

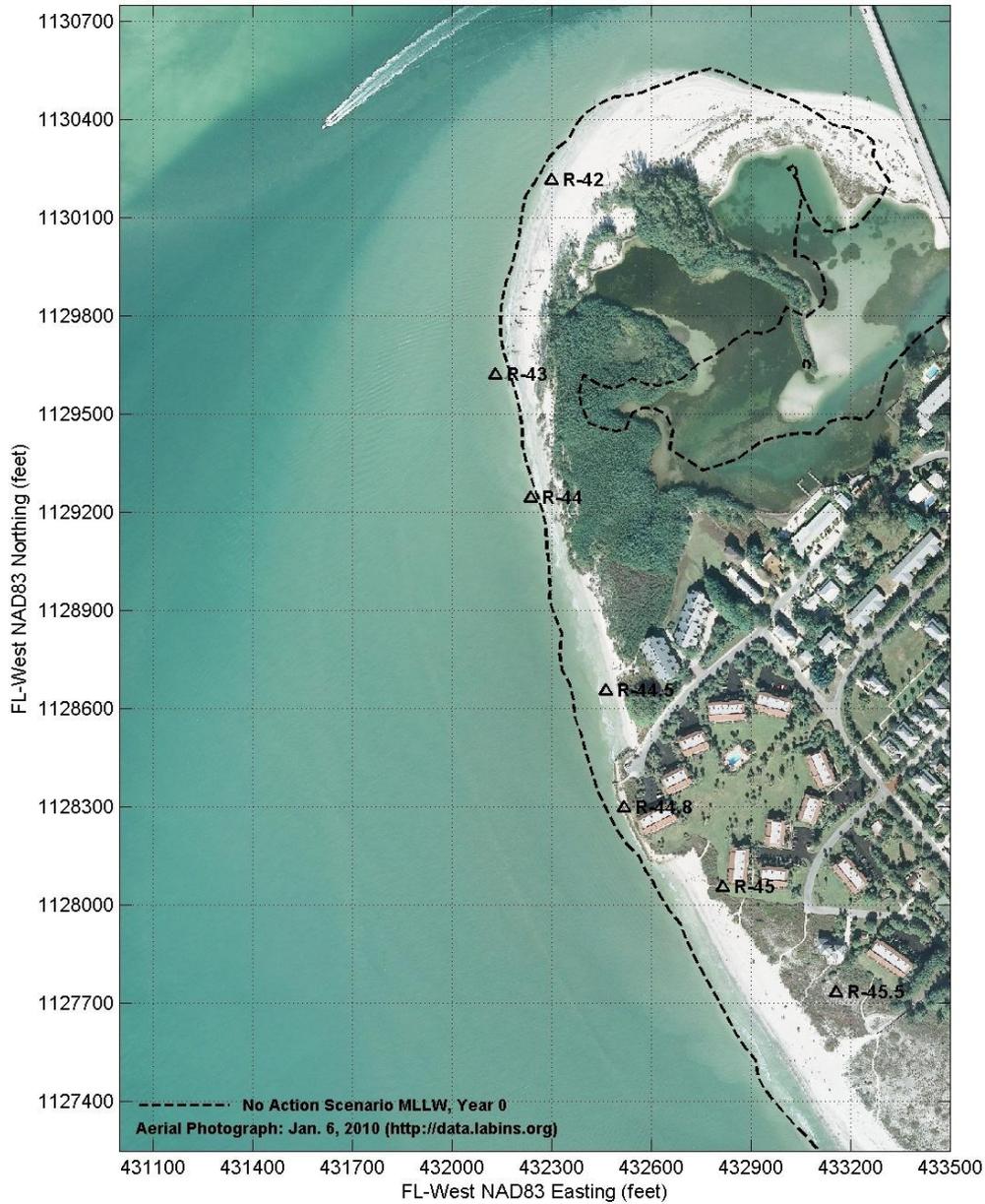
- Build No Groins
- Two Groins
- Three Groins
- Seawall Extension



# No Groins No Action Scenario

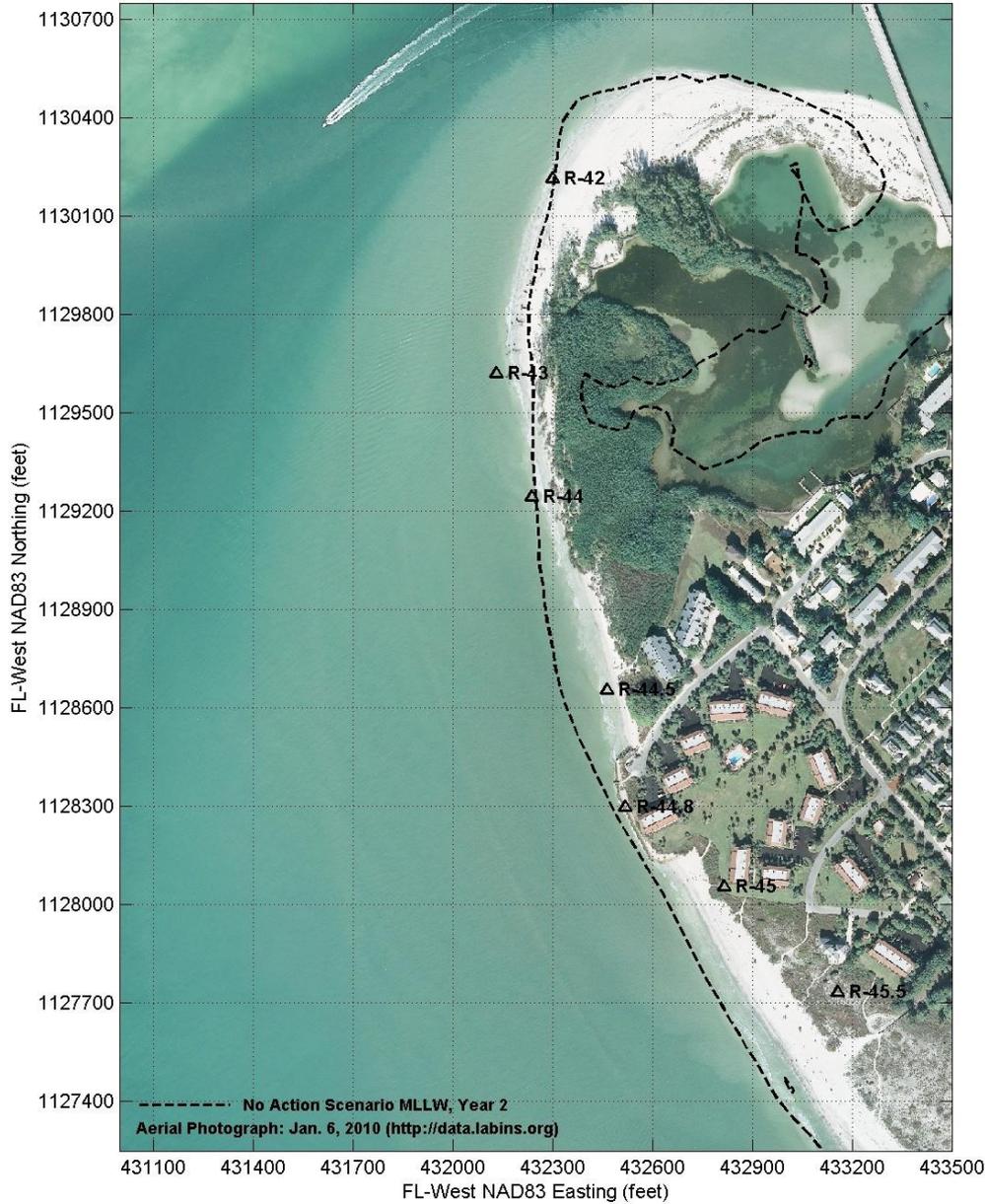
**No beach fills, navigational dredging,  
nor new erosion control structures**

No Action Scenario (Alt. A) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 0



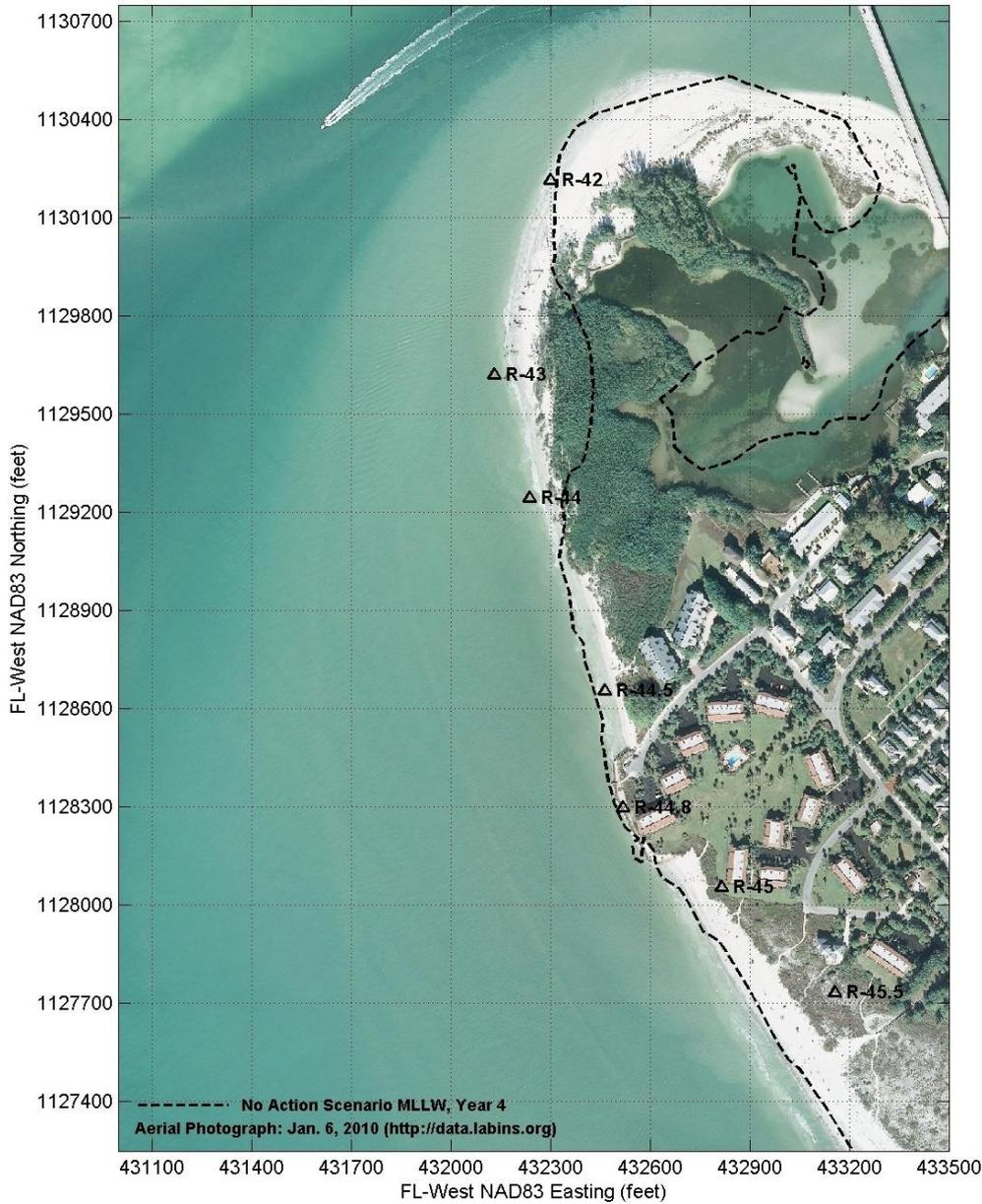
# No Action Scenario Year 0

No Action Scenario (Alt. A) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 2



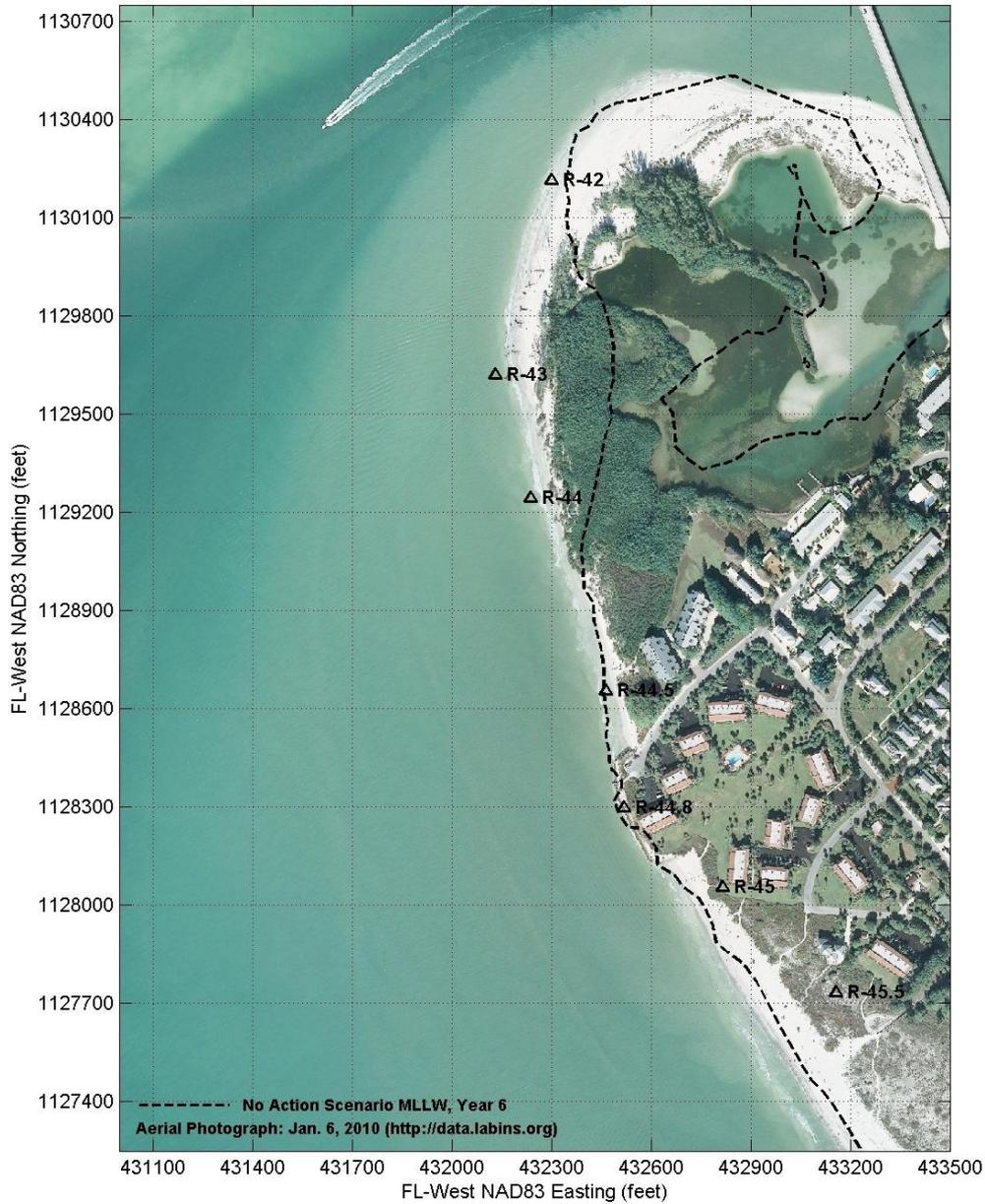
# No Action Scenario Year 2

No Action Scenario (Alt. A) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 4



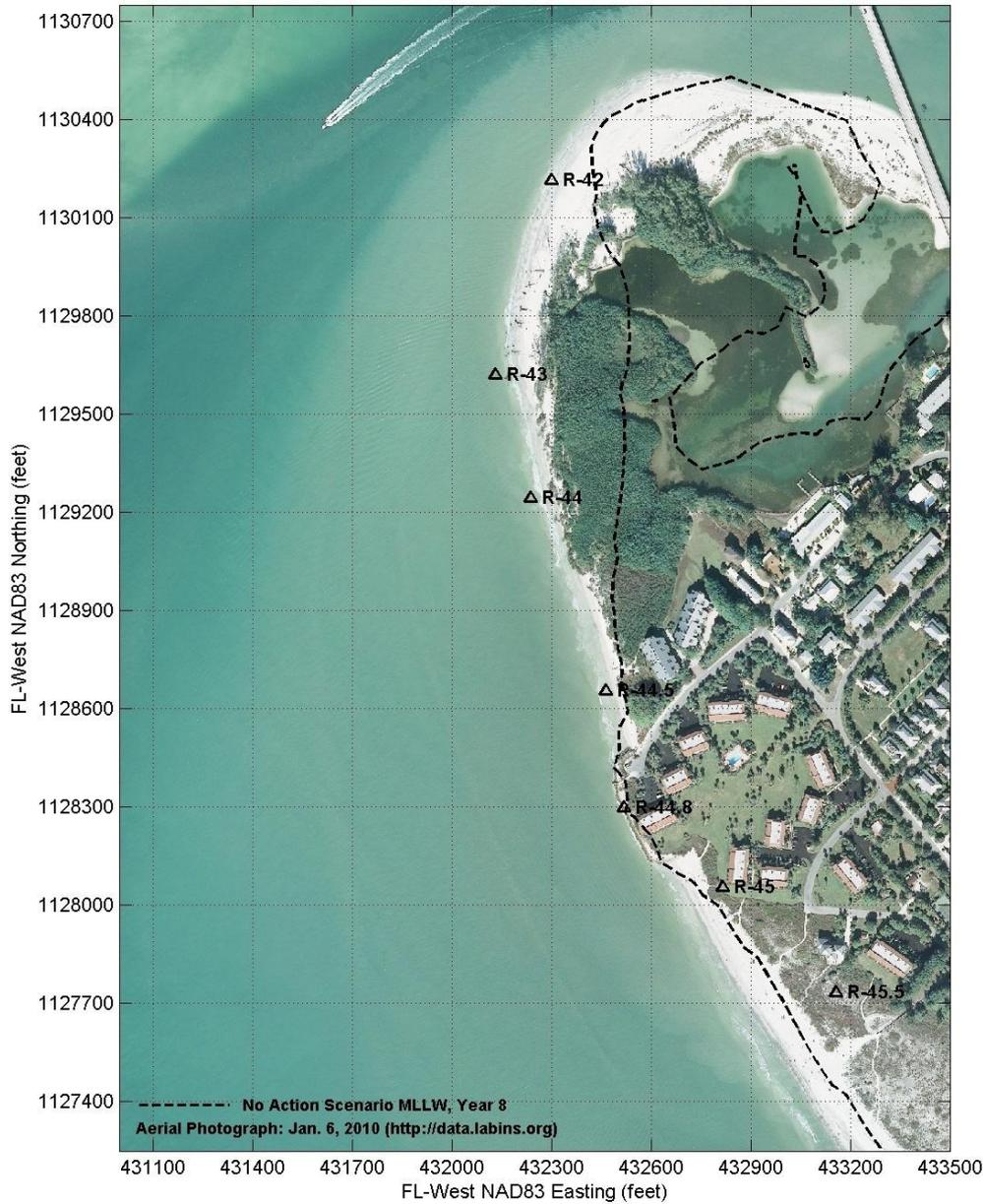
# No Action Scenario Year 4

No Action Scenario (Alt. A) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 6



# No Action Scenario Year 6

No Action Scenario (Alt. A) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 8



# No Action Scenario Year 8



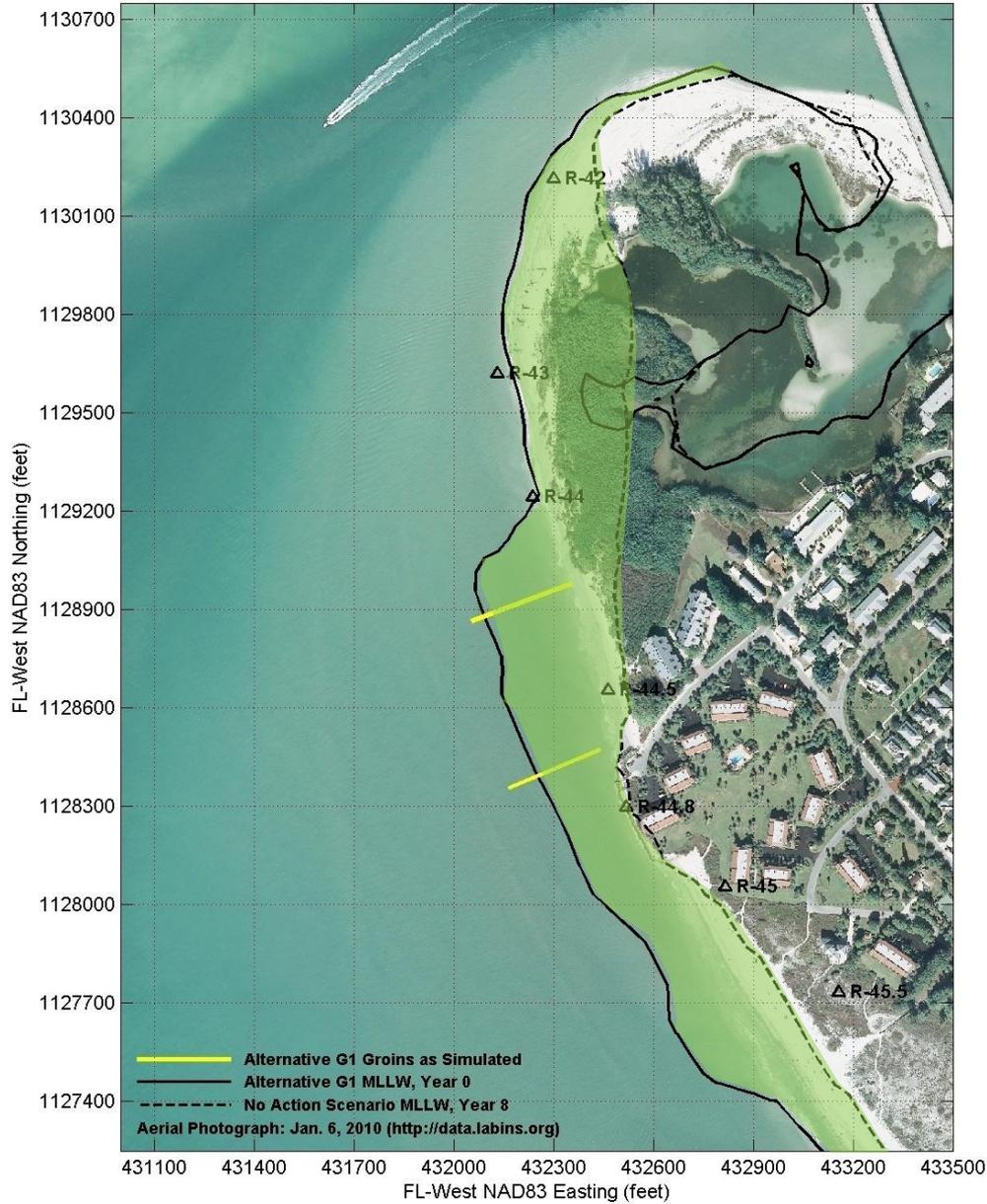
# **Two Permeable Adjustable Groins (PAGs) with Beach Fill**

**Northern groin located up coast from 360 North condominium**

**Southern groin located near north end of  
North Shore Road seawall**

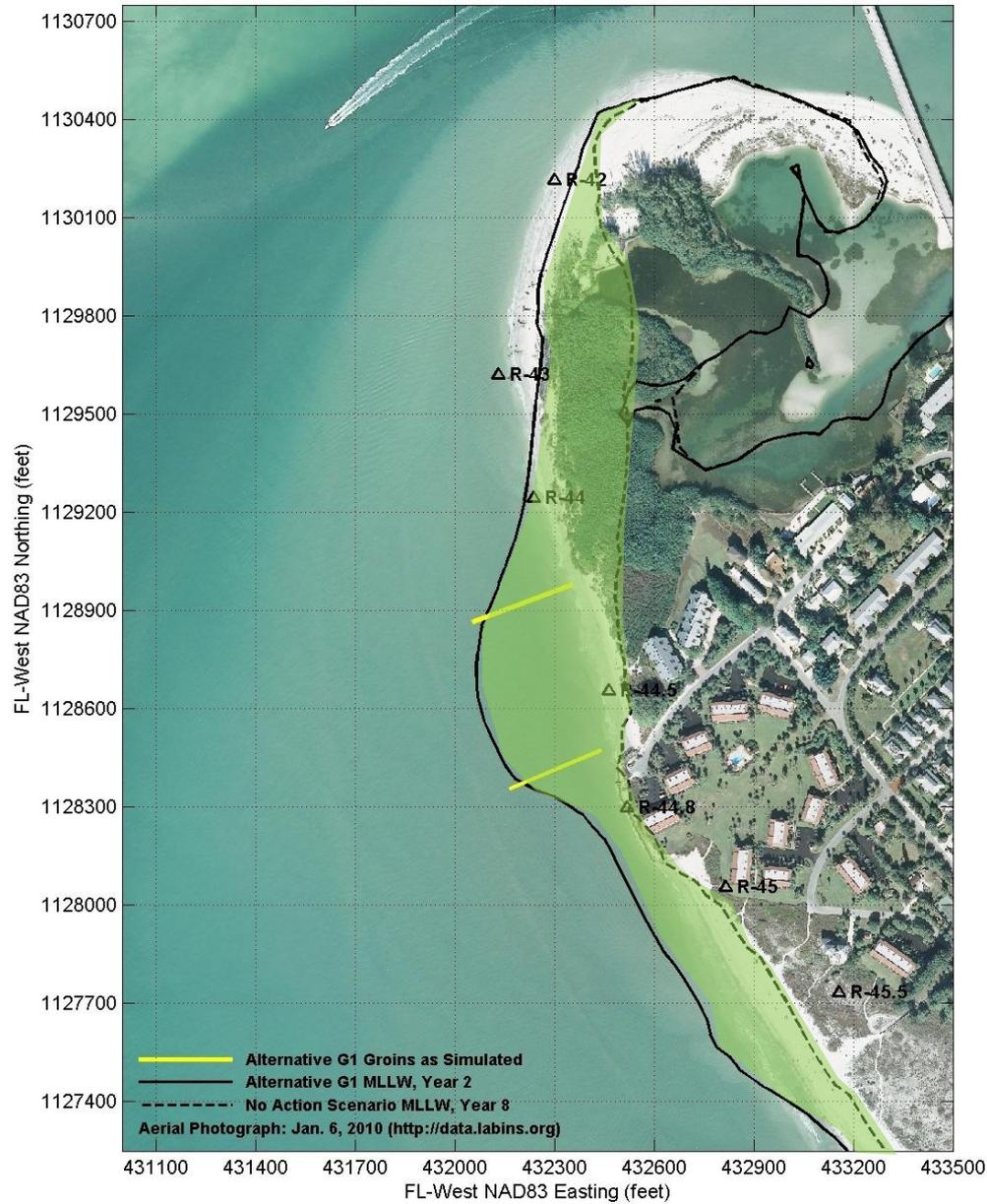
**Beach fill from navigation dredging**

Alternative G1 Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 0



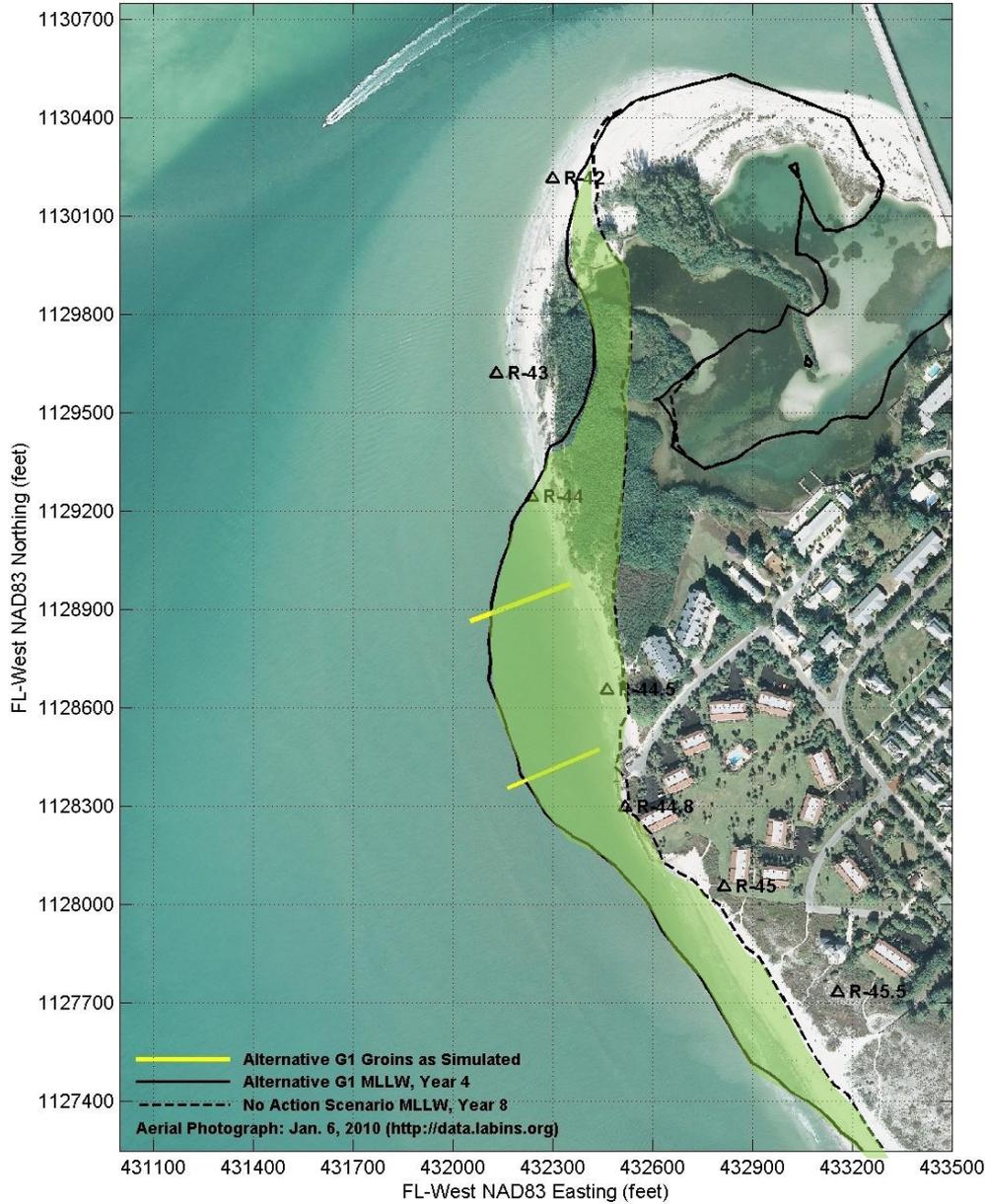
# Two PAG's with Beach Fill Year 0

Alternative G1 Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 2



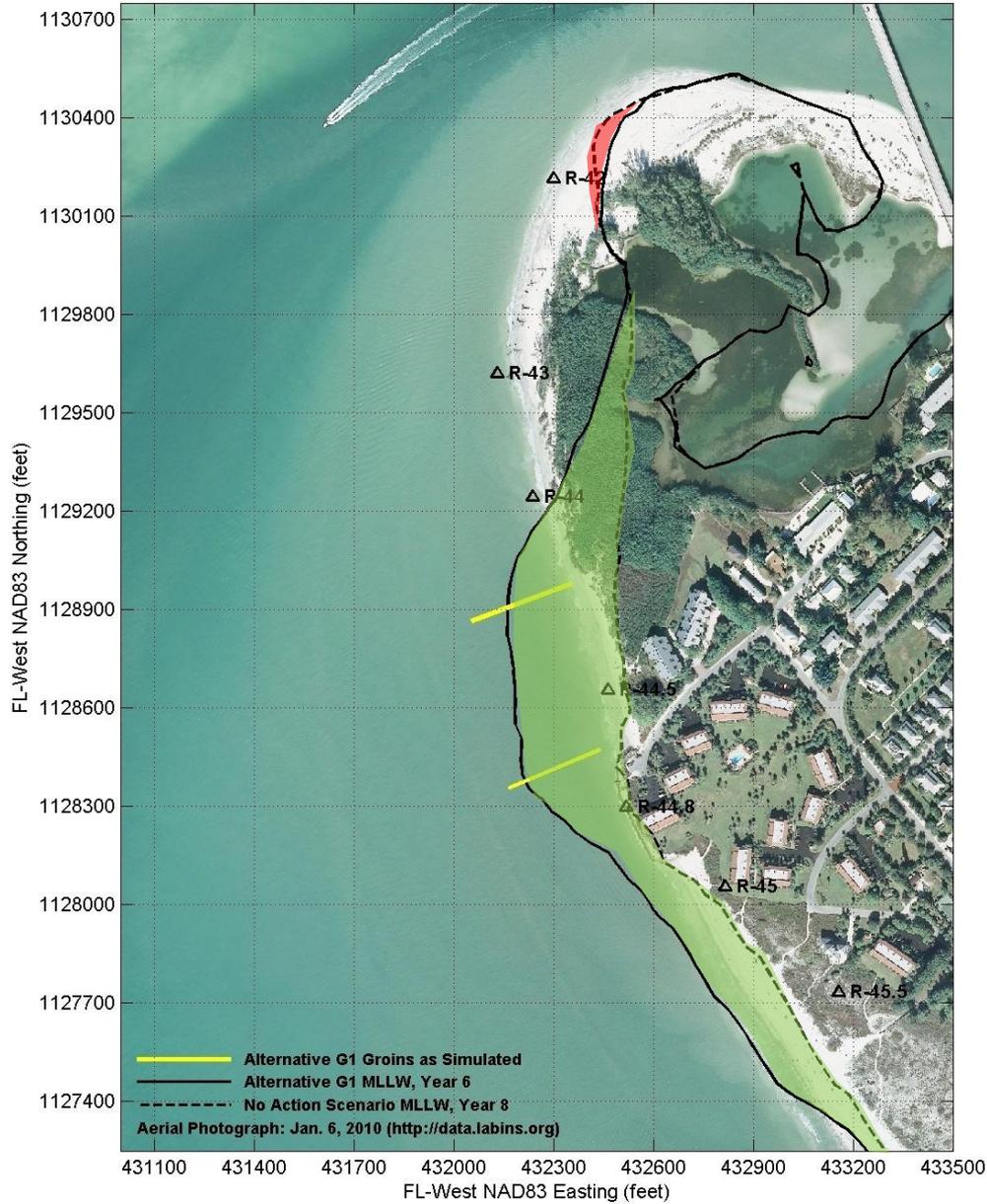
# Two PAG's with Beach Fill Year 2

Alternative G1 Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 4



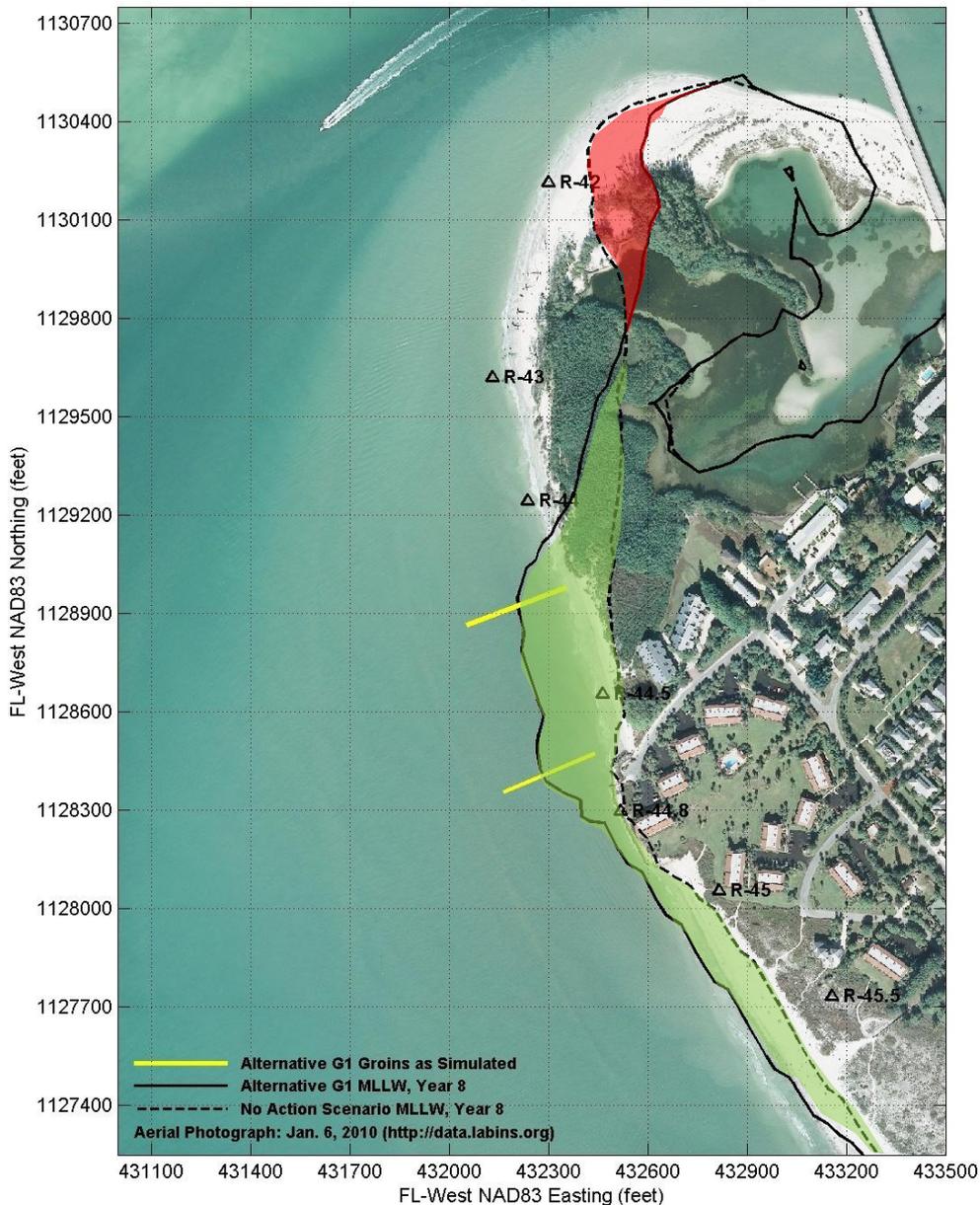
# Two PAG's with Beach Fill Year 4

Alternative G1 Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 6



# Two PAG's with Beach Fill Year 6

Alternative G1 Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 8



# Two PAG's with Beach Fill Year 8



# **May 2012 Recommended Inlet Management Plan**

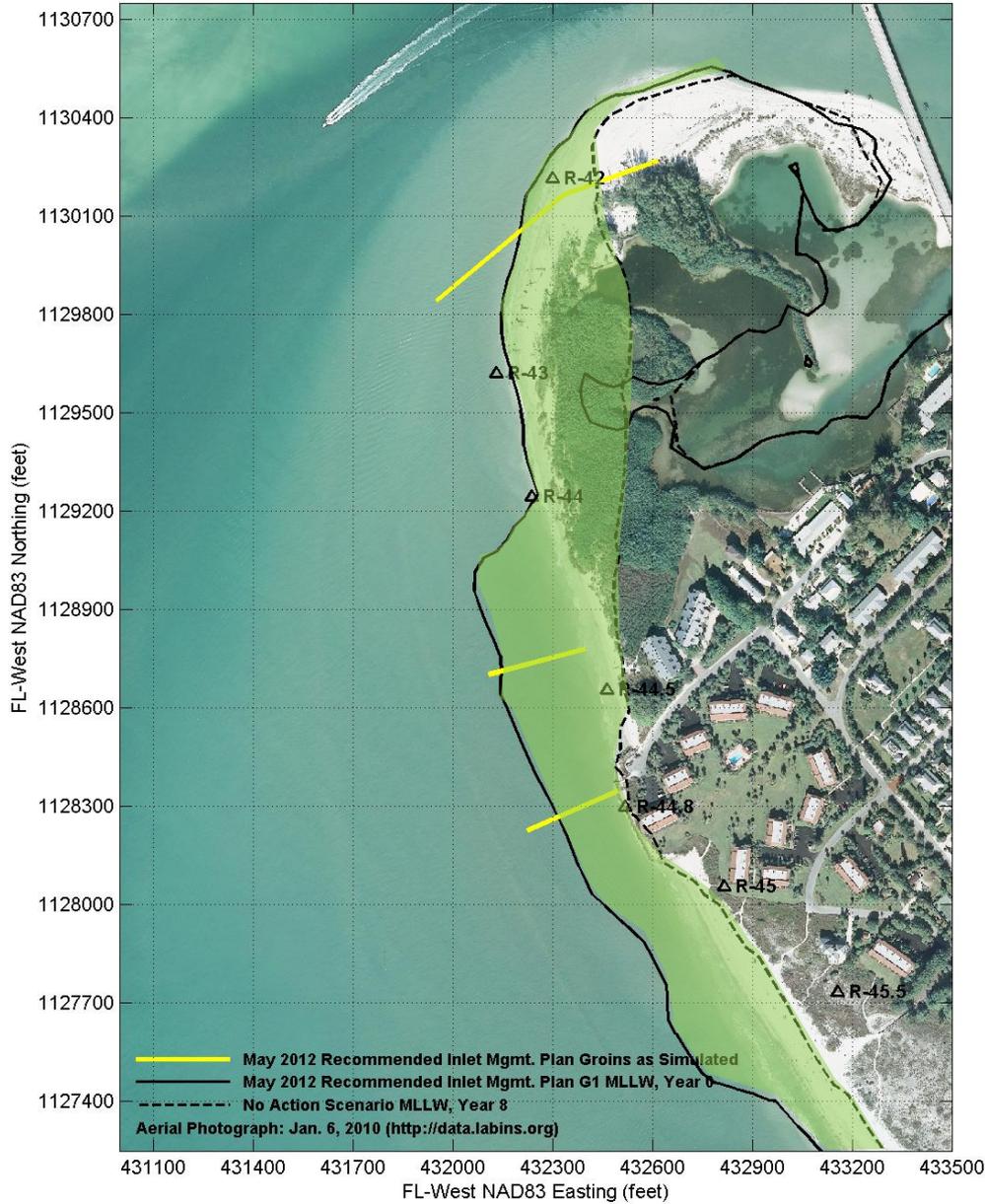
## **Two Permeable Adjustable Groins One Terminal Groin**

**Northern groin located opposite northwest corner of  
360 North Condominium**

**Southern groin located near North Shore Road  
dune/seawall walkover**

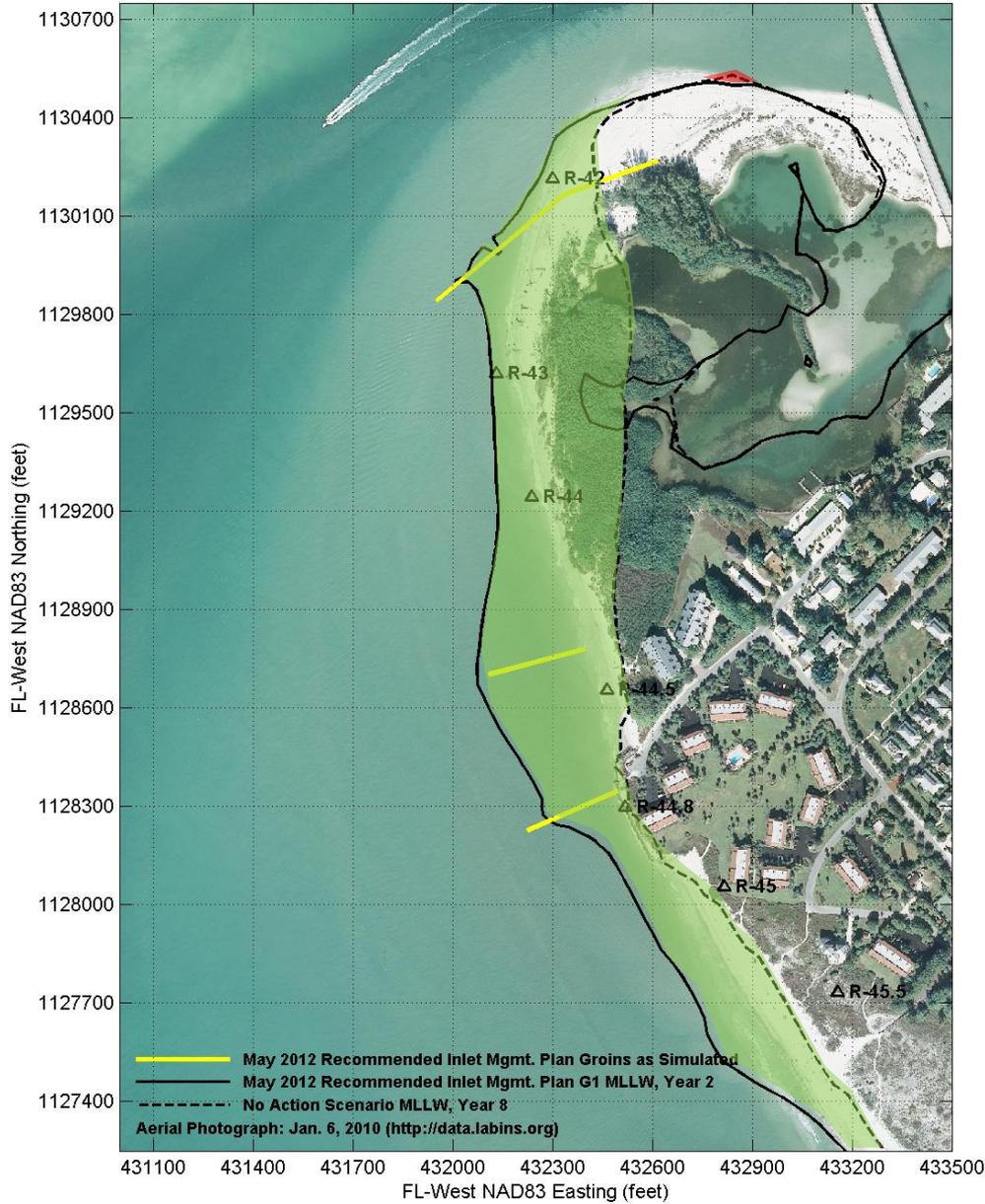
**New terminal groin at Longboat Pass**

May 2012 Recommended Inlet Mgmt. Plan (Alt. B1) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 0



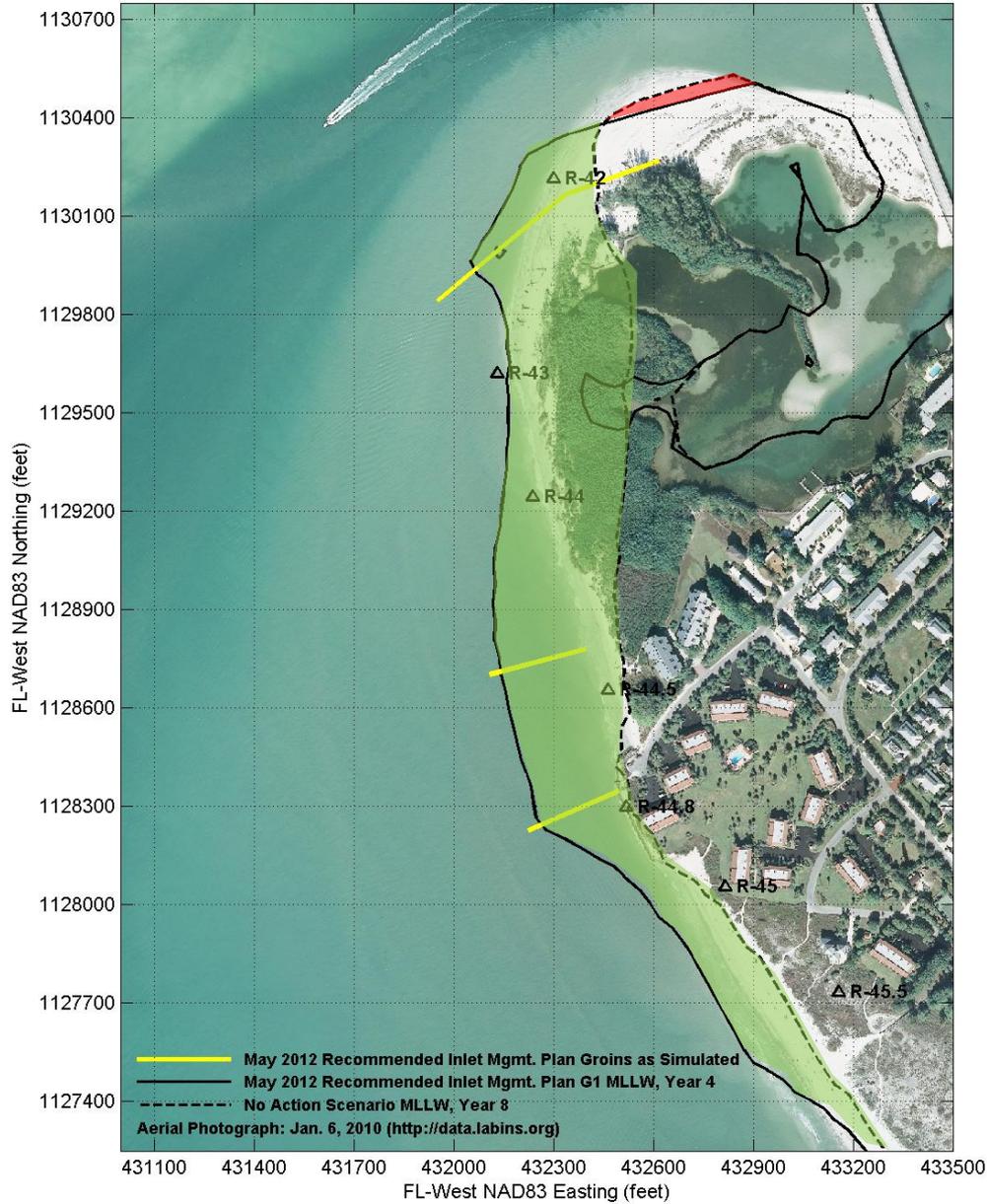
# Two PAG's One Terminal Groin Year 0

May 2012 Recommended Inlet Mgmt. Plan (Alt. B1) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 2

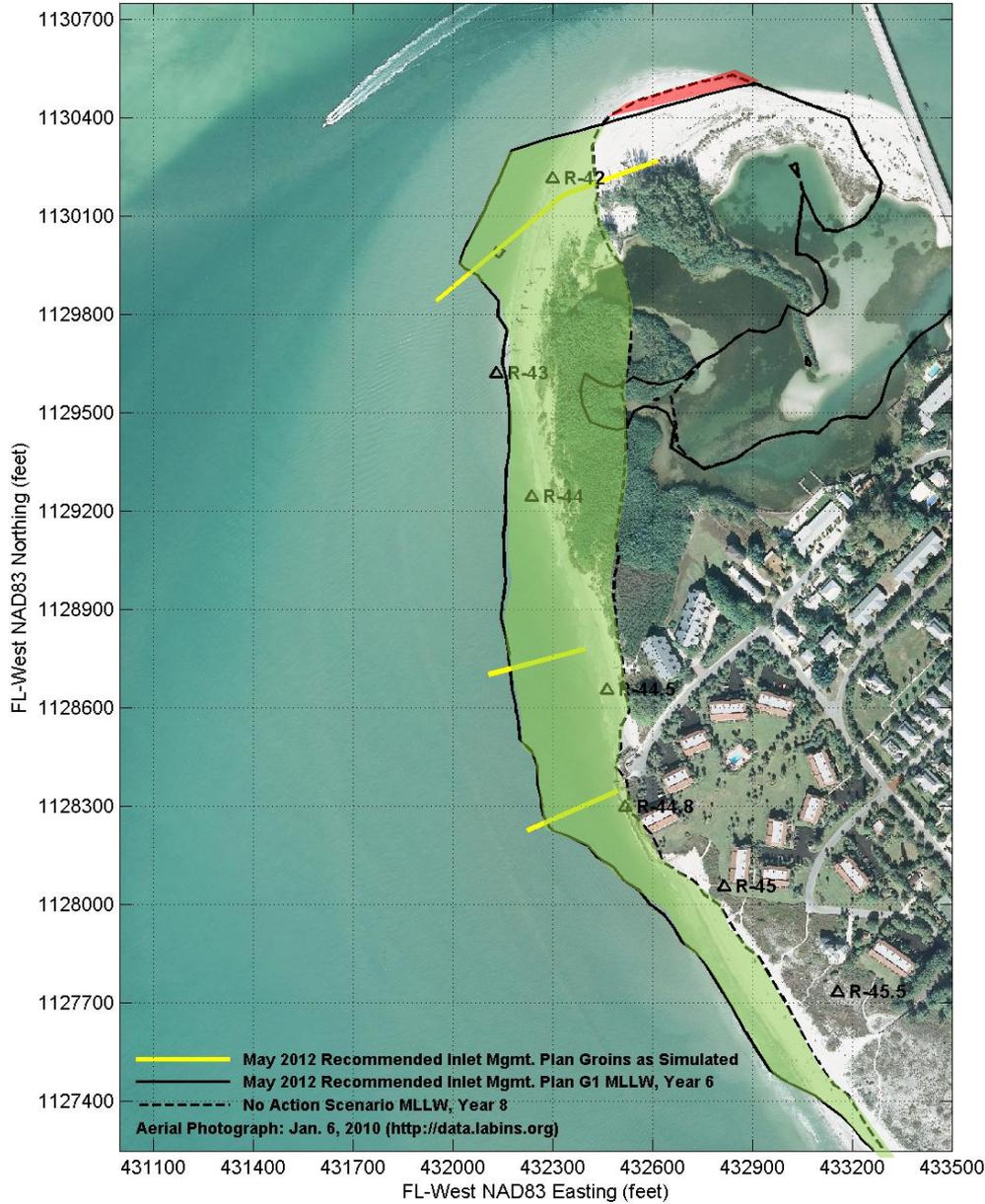


# Two PAG's One Terminal Groin Year 2

May 2012 Recommended Inlet Mgmt. Plan (Alt. B1) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 4

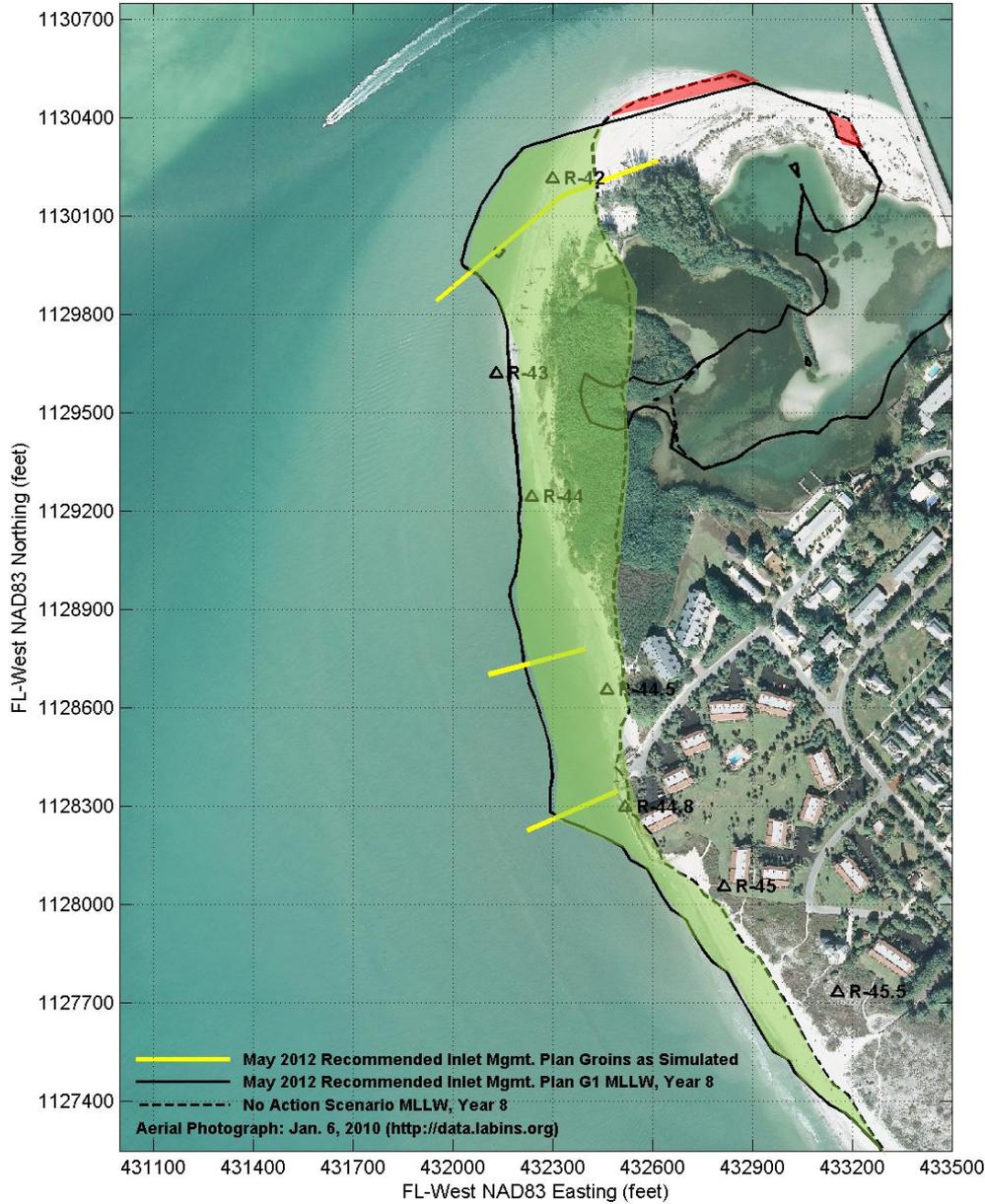


# Two PAG's One Terminal Groin Year 4



# Two PAG's One Terminal Groin Year 6

May 2012 Recommended Inlet Mgmt. Plan (Alt. B1) Simulated MLLW (-1.57 feet NAVD) Shoreline, Year 8



# Two PAG's One Terminal Groin Year 8



# BUILD NO GROINS



# SEAWALL EXTENSION IN FRONT OF 360 NORTH CONDOMINIUMS



**360 North  
Seawall**

**360 North Condominium**

**Connect to  
Existing  
Seawall**



## SEAWALL EXTENSION IN FRONT OF 360 NORTH CONDOMINIUMS



Post-Tropical storm  
Debbie  
6-28-12



**COSTS**

**Three Groins**

**Total**

**\$6,200,000**

**Includes Sand Placement for Project from an Upland Source**



# COSTS

**Forecast 20 year costs for sand placement on the North End**

**\$4.2 to \$7.4 Million**



# North End Projects / Costs - 2006 to Present

<u>Date</u>	<u>Project</u>	<u>Cubic Yards</u>	<u>Cost</u>
2006 Island Wide	Renourishment	110,000	\$1,026,466
March 2010	N Shore Emergency	1800	\$46,223
April 2010	Periwinkle Dune Restoration	7000	\$87,089
June 2011	Interim North End Renourishment	139,000	\$3,890,000
November 2011	North Shore Seawall Extension	N/A	\$296,548
		<b>Total</b>	<b>\$5,346,326</b>



# NORTH SHORE REACH ONE COMPARISONS

Pre-renourishment  
12-09



Looking South towards  
Coquina Building



Post-renourishment  
11-2-11



# NORTH SHORE REACH ONE COMPARISONS

Pre-Tropical Storm  
Debbie  
4-12



Looking South towards  
Coquina Building



Post-Tropical storm  
Debbie  
6-28-12



**NORTH SHORE REACH ONE COMPARISONS**

**Pre-renourishment  
4-10**



**Looking North  
towards  
360 North Condos**

**Post-renourishment  
11-2-11**





# NORTH SHORE REACH ONE COMPARISONS

Pre-Tropical Storm Debby  
4-5-12



Looking North  
towards  
360 North Condos

Post-Tropical Storm  
Debbie  
7-2-12





# NORTH SHORE REACH ONE COMPARISONS

Post-Tropical Storm  
Debbie  
7-2-12



Post-Tropical Storm Isaac  
8-30-12  
Low Tide

Tropical Storm Isaac  
8-27-12



Looking North  
towards  
360 North Condos



# NORTH SHORE REACH ONE COMPARISONS

Post-Tropical Storm Isaac  
8-30-12  
Low Tide



Looking North  
towards  
360 North Condos

Post-Tropical Storm Isaac  
8-30-12  
High Tide





# NORTH SHORE REACH ONE COMPARISONS



Pre-renourishment  
11-10



Post-renourishment  
11-2-11

Looking East towards  
North Shore Road



# NORTH SHORE REACH ONE COMPARISONS



**Looking East  
towards North Shore  
Road During Tropical  
Storm Debby 6-25-12**



**Post-Tropical Storm  
Debbie  
7-5-12**



# NORTH SHORE REACH ONE COMPARISONS

Pre-renourishment  
4-10



Looking East towards  
Coquina Building

Post-renourishment  
11-2-11





# NORTH SHORE REACH ONE COMPARISONS

Pre-Tropical Storm  
Debbie  
4-12



Post-Tropical Storm  
Debbie  
6-28-12



Looking Northeast  
towards Coquina  
Building



# NORTH SHORE REACH ONE COMPARISONS

Pre-renourishment  
12-09



Looking North towards  
Coquina Building

Post-renourishment  
11-2-11





**NORTH SHORE REACH ONE COMPARISONS**

**Pre-Tropical Storm  
Debbie  
4-12**



**Post-Tropical Storm  
Debbie  
6-28-12**



**Looking North towards  
Coquina Building**



2011  
Conditions



2012  
Conditions

North  
Shore  
Road





2011  
Conditions



2012  
Conditions

Northern  
Face at  
LBK  
Pass



North  
Shore  
Rd.

2012  
Conditions

Northern  
Face at  
LBK  
Pass



## CONCLUSIONS

- Building no erosion control structure will result in eventual narrowing of the beach from the North Shore sea wall to the north end of Greer (Beer Can) Island.
- 360 North Condominiums will continue to see over-wash and/or wave action during storms.
- Erosion if left unaddressed will eventually overtake all or part of the Australian Pines and mangrove areas of Greer Island.



## CONCLUSIONS

- The sand spit reaching under the Longboat Pass bridge may continue to grow eventually blocking tidal flow in the lagoon along North Shore Road buildings.
- The current public beach access at North Shore may be eroded away and may have to be closed to the public.
- Existing Town policy supports use of the beach to protect public infrastructure and properties from storms.



## CONCLUSIONS

- Beach management plans have identified erosion control structures on the north end for many years.
- Town voters approved funding to construct structures for this area in 2011.
- Analysis shows multiple structures and regular nourishment are the minimum actions required to stabilize the north end beach.



## CONCLUSIONS

- Regulatory agencies are likely to require preservation and/or mitigation of existing habitat.
- Regulatory agencies are likely to require sufficient structures to ensure that a stable beach exists all the way to the inlet.
- Renourishment of this section of beach will be required on a regular basis, currently estimated to be every 4 - 8 years following construction of the groins.



## RECOMMENDATIONS

- Continue with our effort in obtaining necessary permits from state and federal agencies for construction of three groins while negotiating permit conditions as favorable to the Town as possible.
- Move forward with construction of three groins and beach fill once permits are issued.
- Move forward with financing the project based on voter approved debt.



## RECOMMENDATIONS

- Seek funding assistance from all possible sources.
- Seek to have groins incorporated into the Inlet Management Plan that is awaiting DEP approval.
- Seek to have Longboat Pass channel realigned so as to minimize potential impacts on erosions rates in this area.



## RECOMMENDATIONS

- Allow coarser, darker sand to be used in this area of beach in an attempt to have sand resist erosion forces better than fine white sand.
- Amend the current 2008 Beach Management Plan Update to develop and adopt a maintenance plan specific to this area for long-term maintenance of the beach.



**End of Agenda Item**