

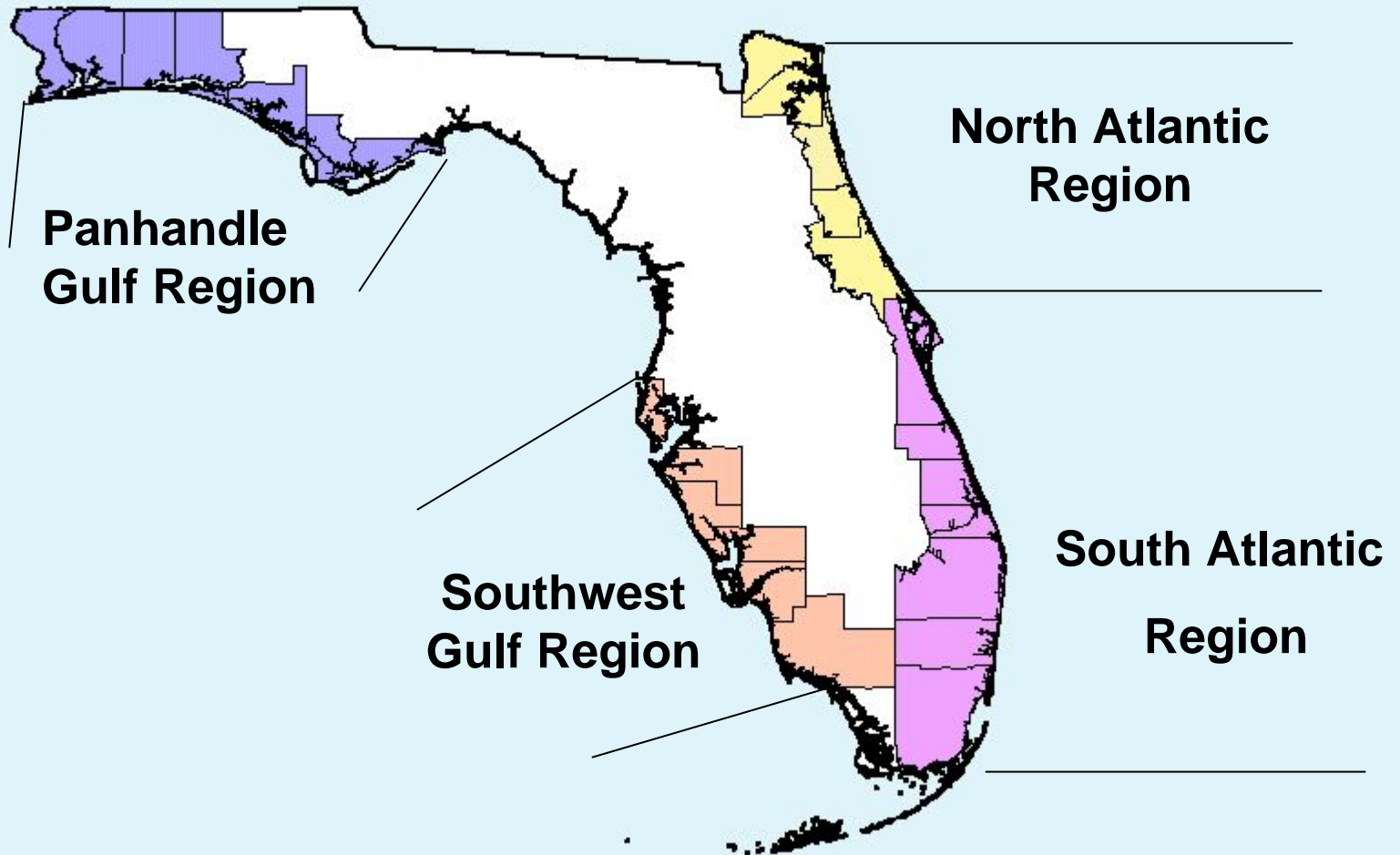
For consideration:

Reef Mitigation 'Gardens'

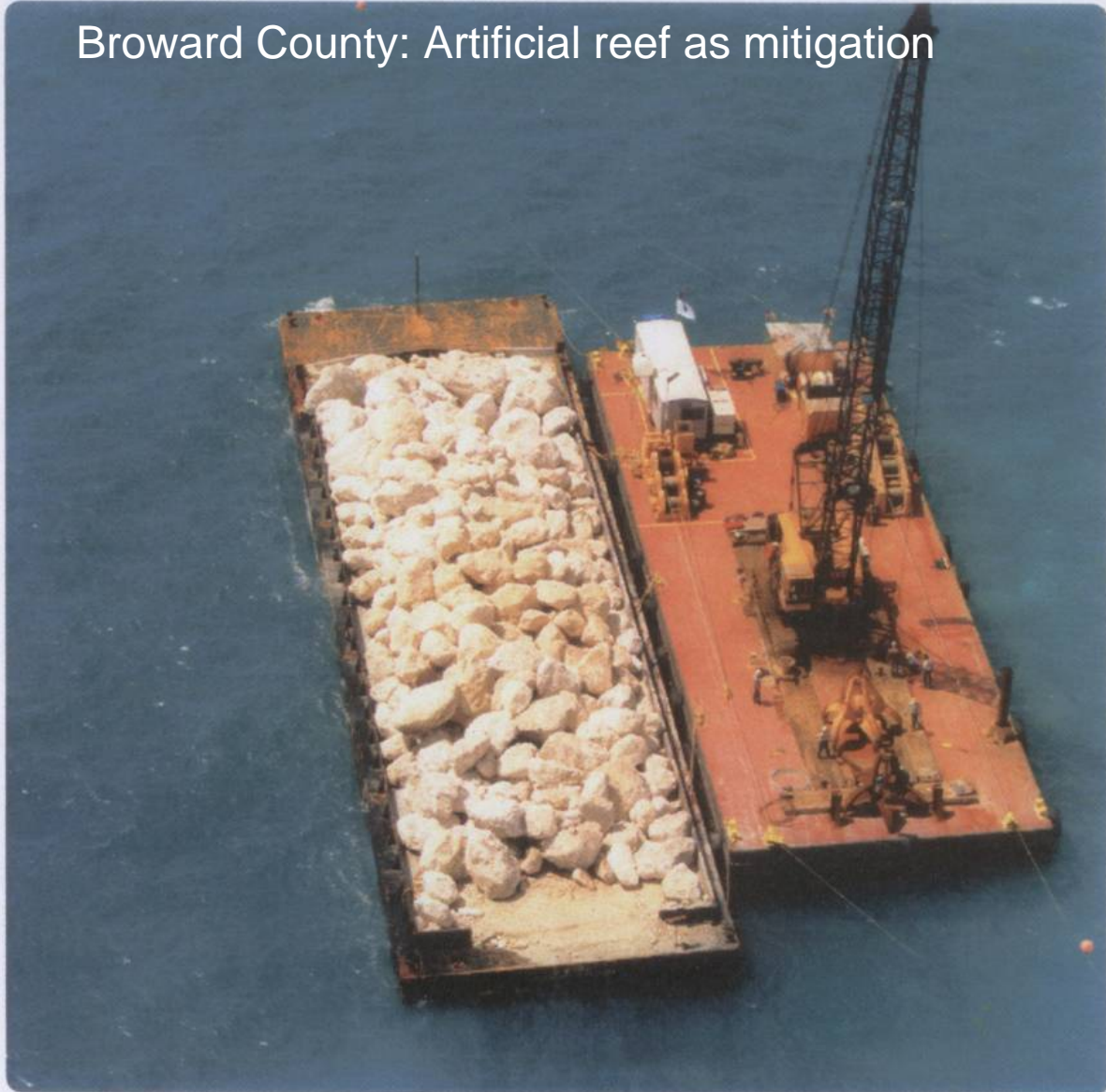
William R. Dally, Ph.D., P.E.



Surfbreak Engineering Sciences, Inc.



Broward County: Artificial reef as mitigation



Anchored Crane Barge



~ \$6,000,000 !



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Indian River County

R-10 ▲

R-11 ▲

R-12 ▲

R-13 ▲

R-14 ▲

R-15 ▲

R-16 ▲

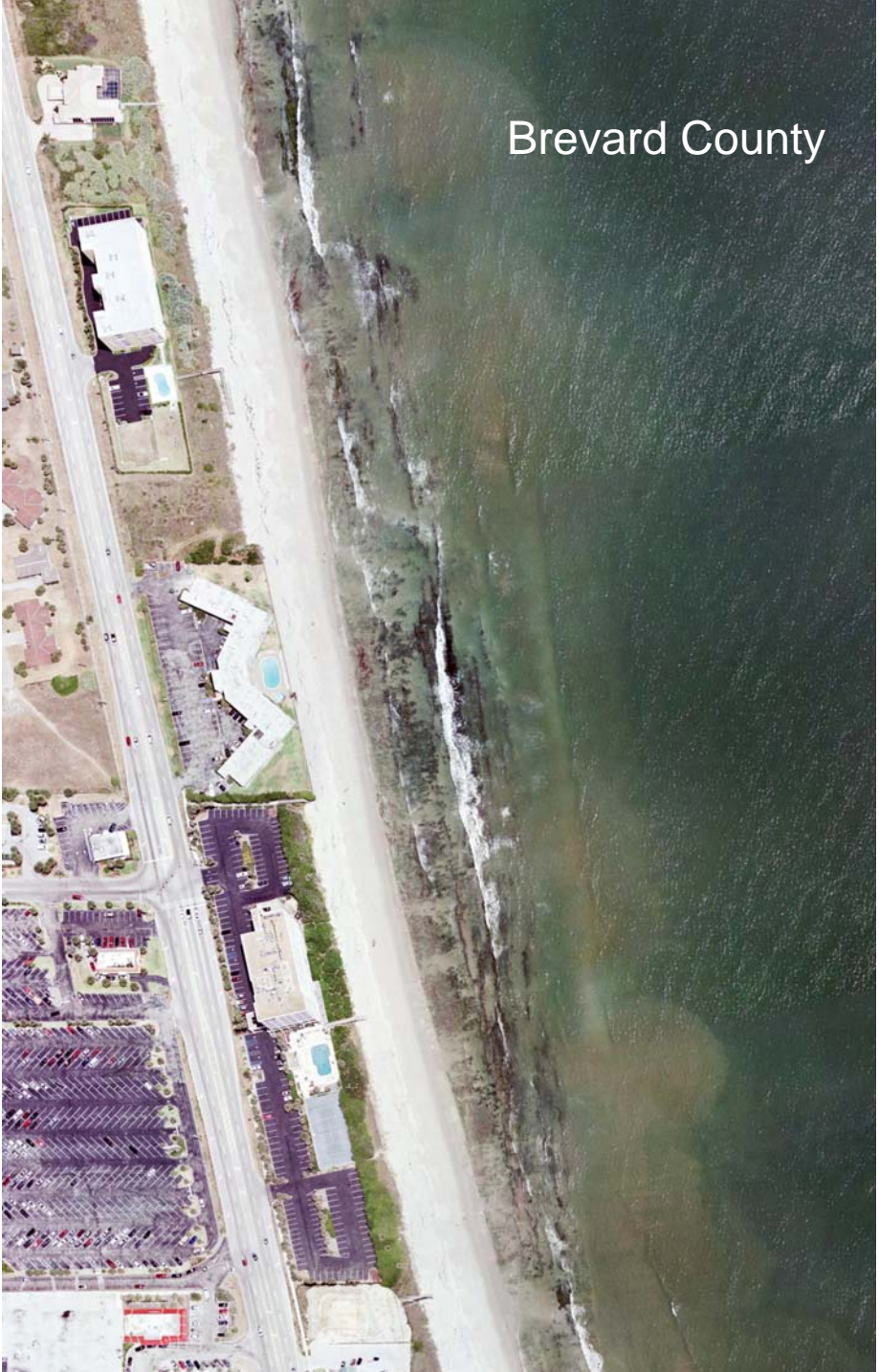
R-17 ▲

R-18 ▲

R-19 ▲

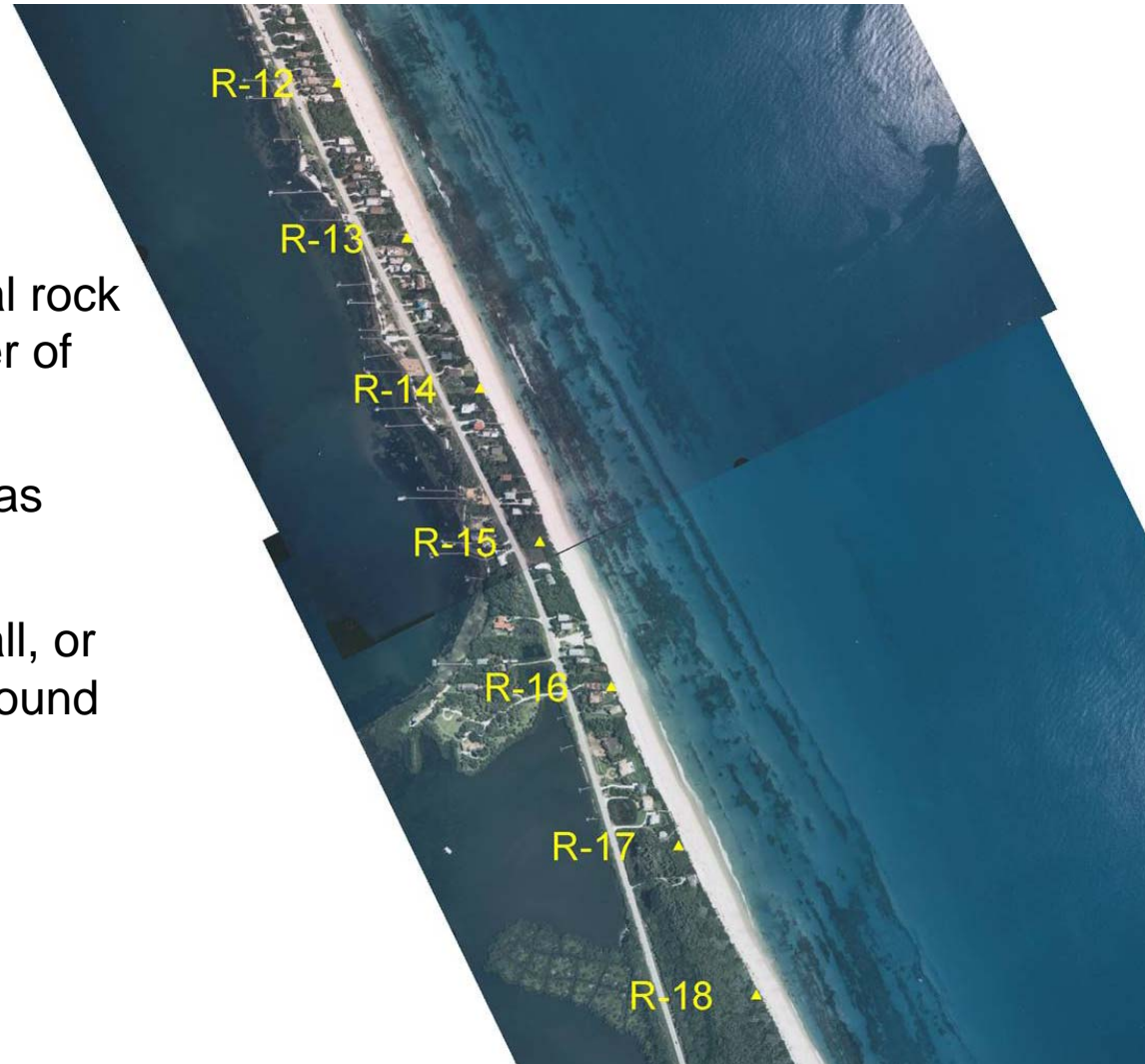


Brevard County



Reef-Mitigation 'Gardens'

1. Identify areas where the natural rock is covered by only a thin veneer of sand.
2. Hydraulically dredge these areas using a 'gentle' suction-head.
3. Either a) construct a low-sill wall, or b) dredge a sacrificial buffer around the garden.

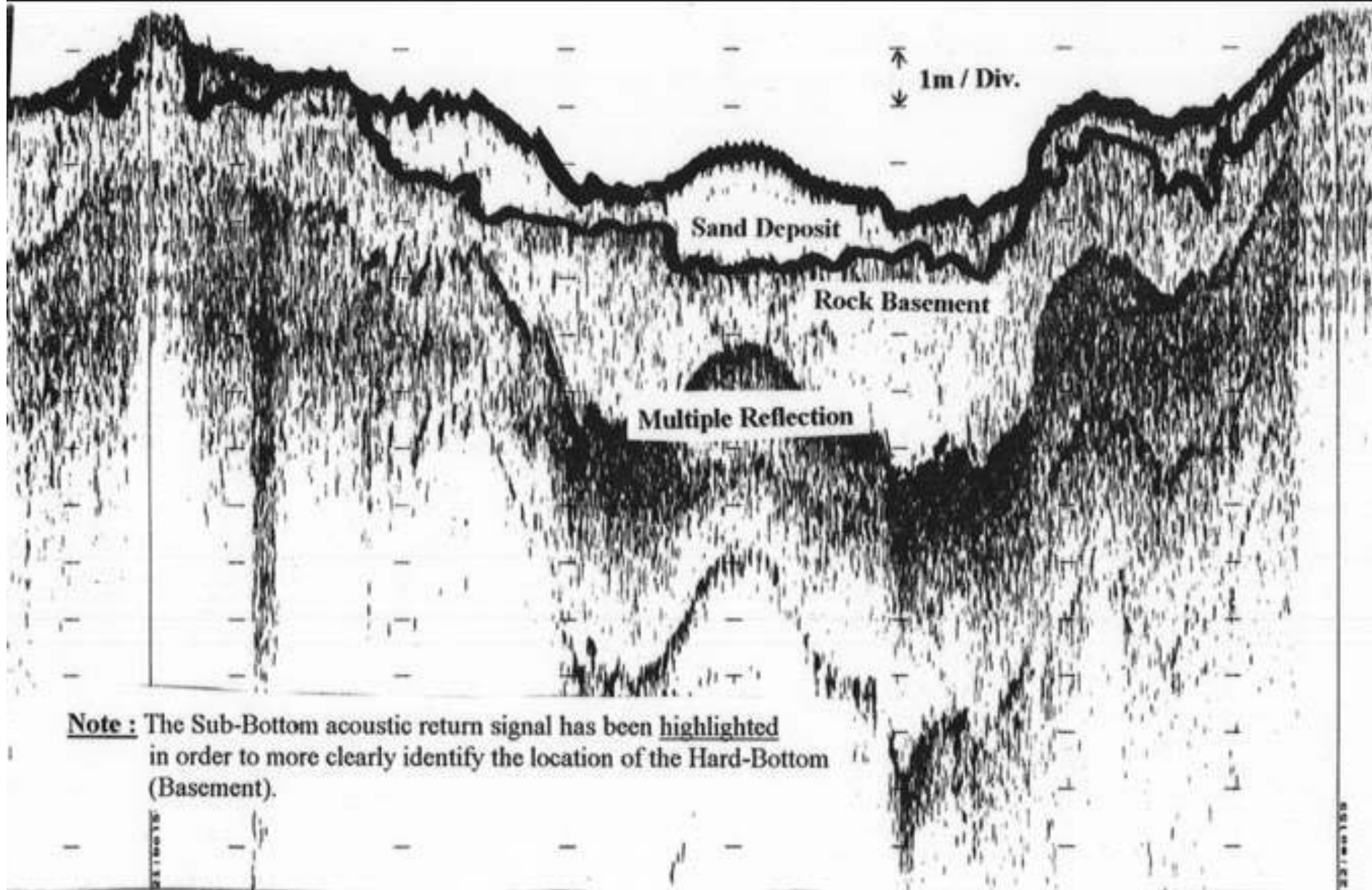


Reef Garden Development Plan

Phase I

1. Locate and characterize potential reef liabilities.
2. Conduct sub-bottom investigations and identify potential garden sites.
3. Identify/develop gentle dredging technology. ****
4. Liaison with permitting agencies.
5. Select a suitable site based upon location & water depth, veneer thickness, likelihood of successful biological colonization, assessment of sill or buffer requirements, and agency input.

Sub-Bottom Investigation



Reef Garden Development Plan

Phase II

1. Development of sill structure design & construction concepts (if needed).***
2. Engineering design of the sill structure (if needed).***
3. Pre-condition biological assessment.
4. State & Federal permitting of the project.

Reef Garden Development Plan

Phase III

1. Construct the garden. ***
2. Conduct comprehensive biological monitoring of the garden and of control sites.
3. Perform physical monitoring and garden maintenance.

Spin-off Applications?

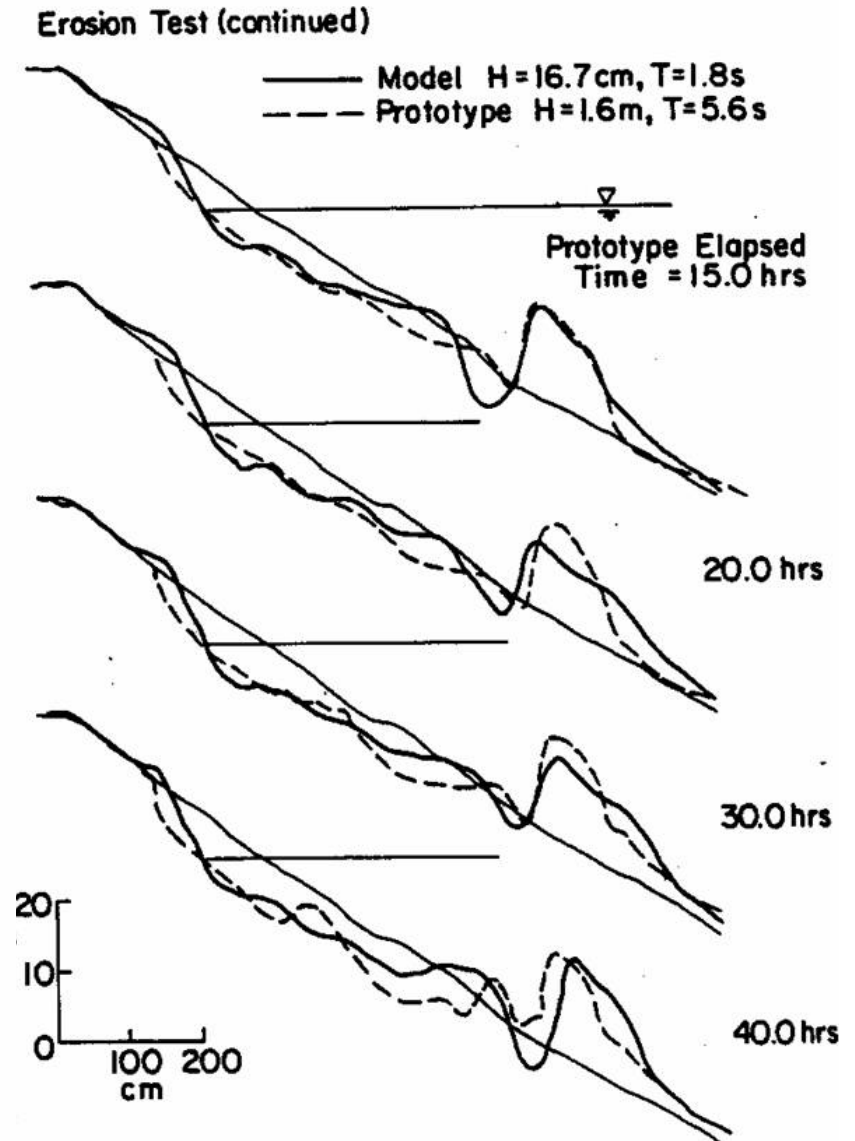
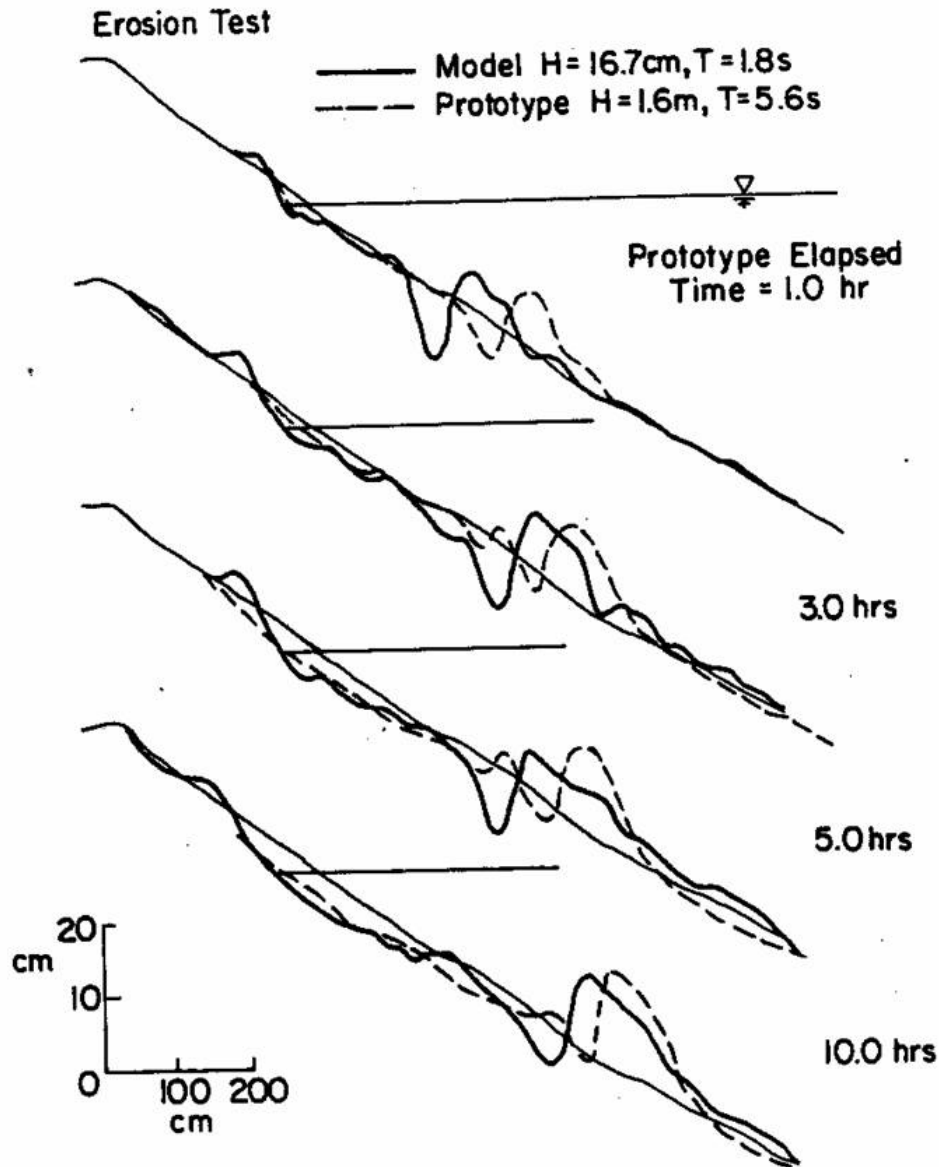
- 1) Dredging system for rescuing recently buried hard-bottom/coral.
- 2) Ability to create 'natural' artificial reefs.

Problem: Predicting equilibrium toe of fill



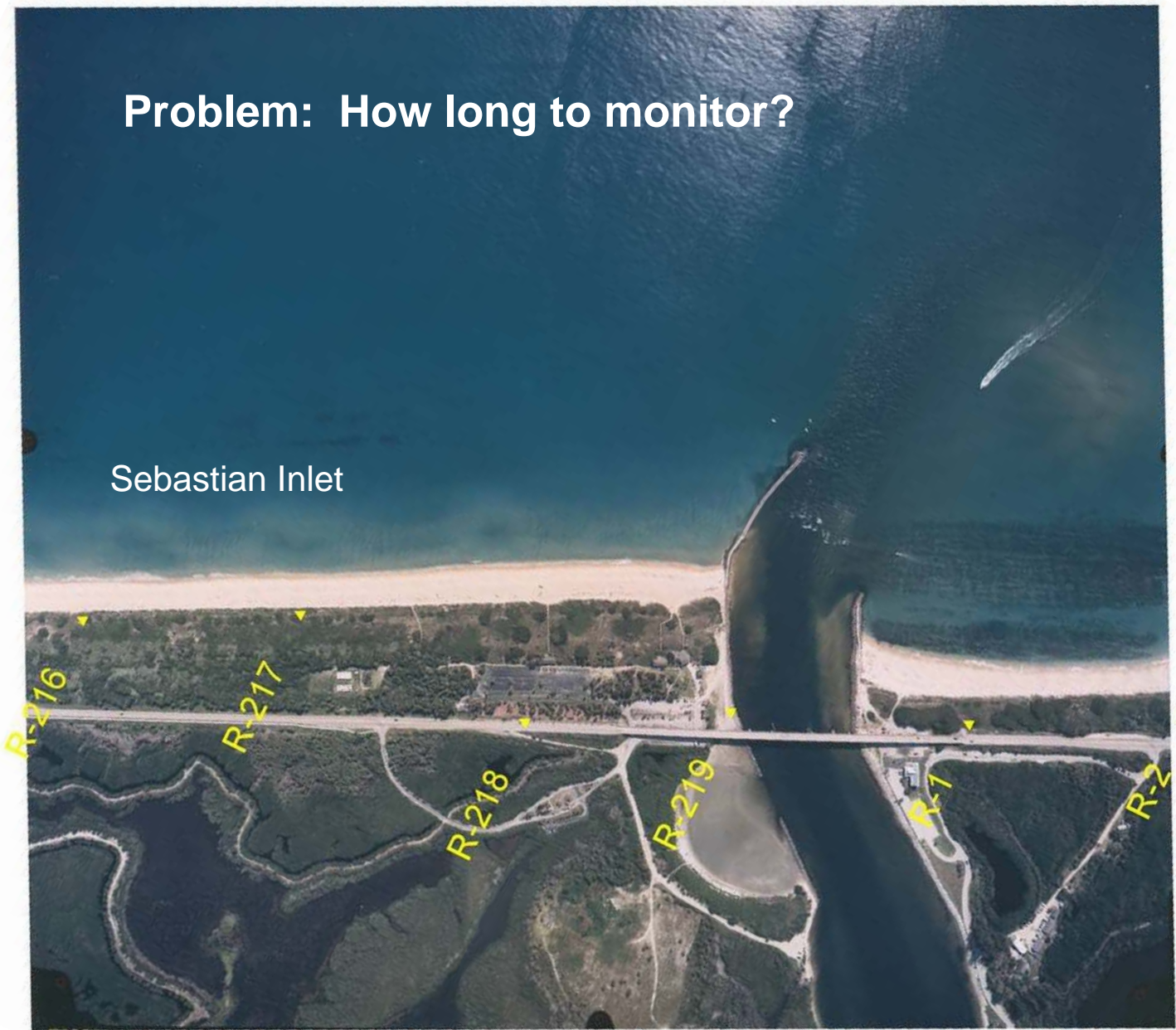
Indian River County
Sector 7

Solution: Movable-bed physical modeling



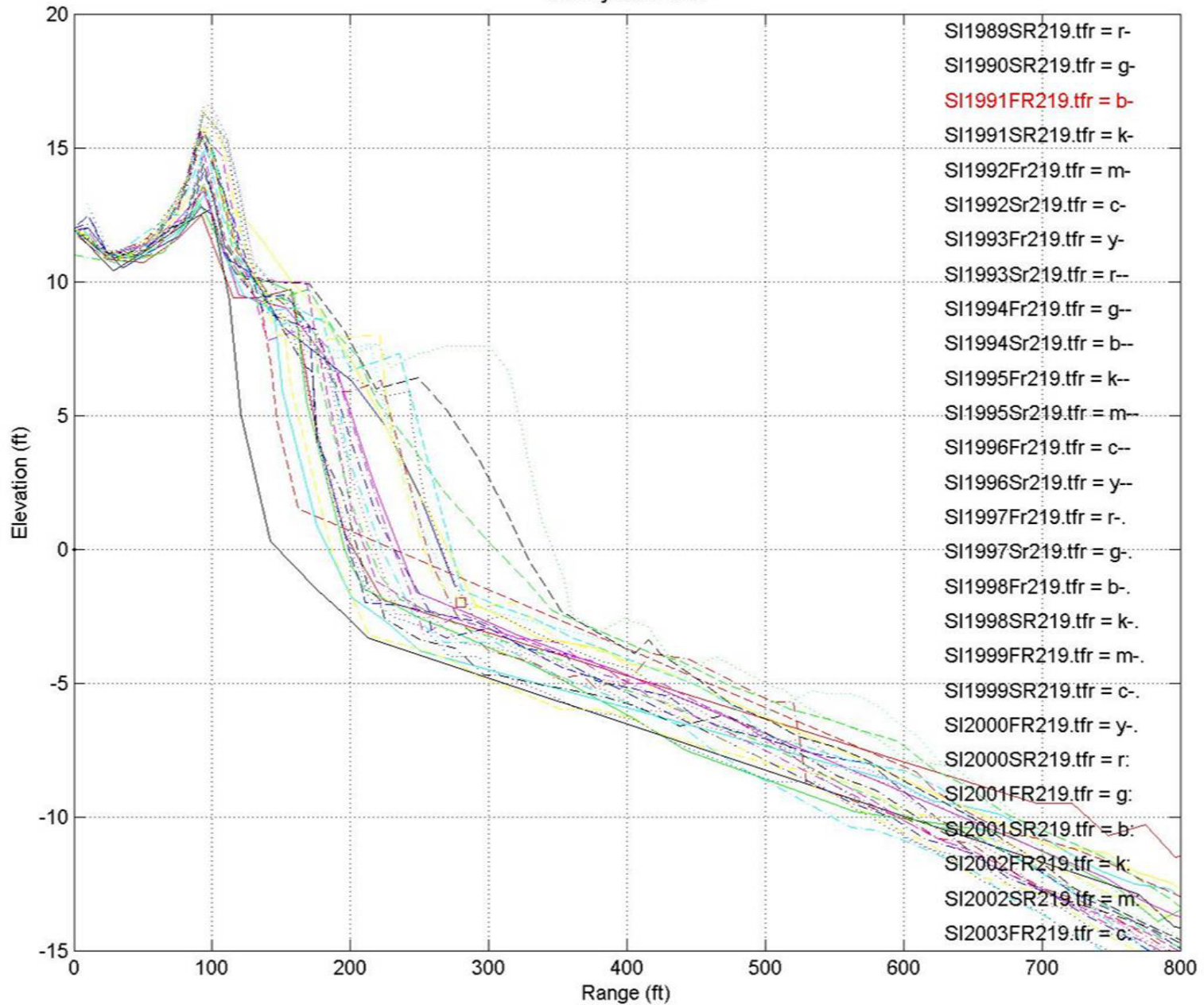
Problem: How long to monitor?

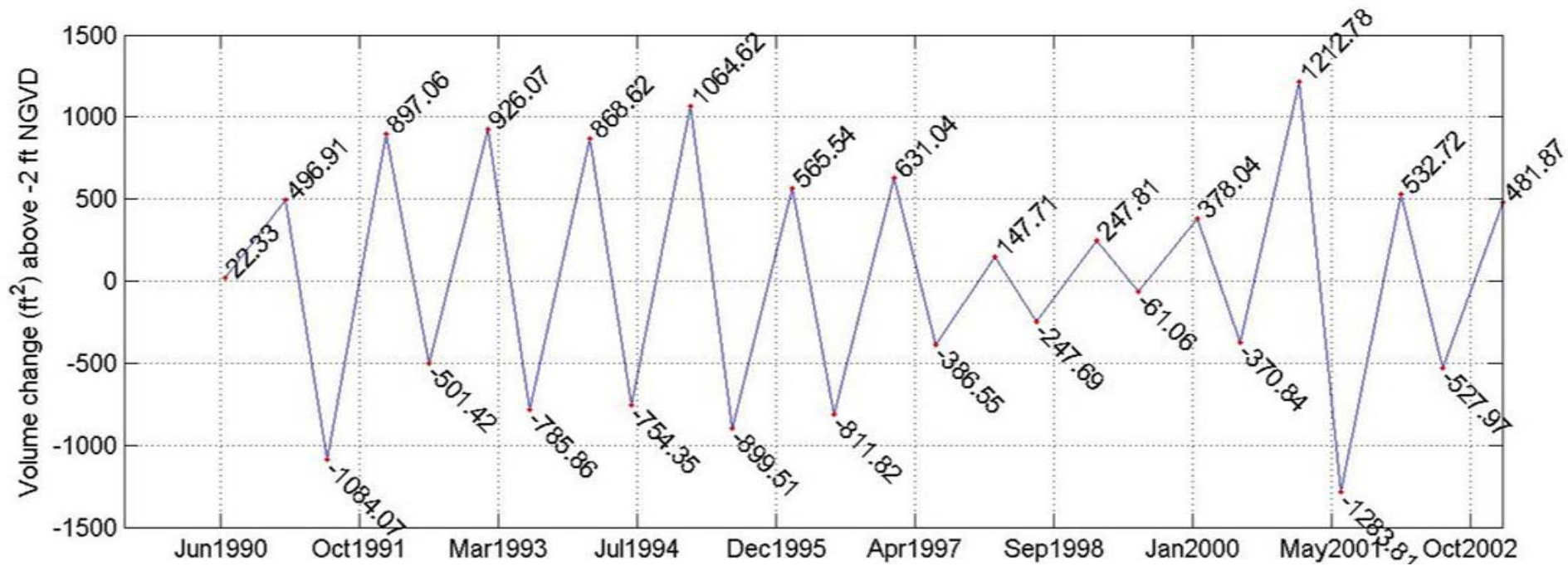
Sebastian Inlet



Brevard R-219 Beach Profiles

Surveys at R-219







Additional option: 'dry-fillet' bypassing

1. Harvest north fillet above MLW.
2. Truck-haul across inlet.
3. Deposit south of south fillet.

Date of photography: 6/14/2001

Martin County



R-34 ▲

R-35 ▲

THE END

October 26, 1948

