St. Joseph Sound/Clearwater Harbor Historic Tidal Circulation Changes and Recent Solutions

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Little Pass, Big Pass, and…

the old switcher-oo!

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1879 Coast Chart No. 177
U.S. Coast & Geodetic Survey

[Map Image: Comparison of 1879 and 2005 charts, showing changes in coastline and landmarks such as Hurricane Pass, Dunedin Pass, and Clearwater Pass.]
Outline

• Background
• Tidal circulation changes due to:
  – Hurricane impacts
  – Dredging (ICW, causeways, fingers)
• Barrier island & inlet changes
• Modern coastal management
• Summary
Background

- Geologic setting
- Low energy coast
- Longshore sediment transport
Natural Tidal Circulation Changes

- Longshore sediment transport
- Hurricanes
  - 1848: Little Pass
  - 1921: Hurricane Pass
- Multiple inlet system
Circulation Changes 1926

- 1921 Hurricane
- Multiple inlets
- Dredging
  - Causeway Construction
  - Finger canals
Circulation Changes 1965

ICW

Dunedin Causeway
Tidal Circulation Changes

ICW

Finger canals

Memorial Causeway
Barrier Island/Inlet Changes
Natural and Human

• Honeymoon Island
• Caladesi Island & Dunedin Pass
• Clearwater Pass
Honeymoon Island Modifications

1926

1973
Clearwater Pass 1970’s
Overview of Natural and Human Changes

1873 Chart

2005 Aerial
Modern Coastal Management

- Honeymoon Island Beach Restoration Project
- Hurricane Pass
- Clearwater Pass
- Dunedin Pass
2007 Honeymoon Island Beach Restoration Project
Clearwater Pass 2006
Summary

• Two inlets breached by hurricanes of 1848 and 1921

• Dredging in St. Joseph Sound & Clearwater Harbor contributed to inlet instability
  – ICW, causeways, finger canals.

• Closure of Dunedin Pass

• Stabilization of Clearwater Pass
Thank You!