Historic Western view of lower Green Bay

- Expansive emergent marshes (e.g. Duck Creek delta)
- Numerous small islands
- Beaches and mud flats
- Submerged aquatic plant beds

Photo Courtesy of Tom Erdman, 1966
1966 during low water levels
Islands extend 2.5 miles into Green Bay

Photo Courtesy of Tom Erdman, 1966
Islands survived historical water level fluctuations – Why not now?

- Water levels rose rapidly to record highs and remained elevated for two decades
- Repeated severe spring storms
- Shorelines hardened by riprap deflect wave energy and exacerbate erosion
- Poor water clarity from runoff pollution reduced aquatic vegetation and their wave dampening benefits
Rising Great Lakes water levels and severe storms in 1970s caused wetland and island erosion
90% of Coastal Wetlands Lost from Southern Green Bay

Photo by WDNR, 1969
Green Bay islands during high water levels in 1976

Photo Courtesy of Tom Erdman, 1976
The Cat Island Chain project developed out of the 1988 Lower Green Bay Remedial Action Plan (RAP) and was the top priority project for habitat restoration.

Members of the Citizens Advisory Committee and DNR staff worked together to develop the Lower Green Bay Remedial Action Plan. (Photo by Dave Crehore)
Dredging Crisis

- No Open Water Placement
- Renard Island CDF at Capacity
- Expansion Denied
- Upland Site Limited
- Port Recognizes Cat Island Project as Potential Win-Win Solution in late 1990s
Annual Dredging

- In order to maintain an active Port annual maintenance dredging is necessary.
- Annual dredging of 100,000 to 250,000 cy of sediment that has settled into the 14 mile long navigational channel.
## Disposal Capacity

<table>
<thead>
<tr>
<th>Island</th>
<th>Area (acres)</th>
<th>Storage Capacity (yards$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Island</td>
<td>74</td>
<td>630,000</td>
</tr>
<tr>
<td>Central Island</td>
<td>92</td>
<td>720,000</td>
</tr>
<tr>
<td>East Island</td>
<td>106</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

- Only outer harbor “clean sediments” will be placed onto the islands.
- Spine of islands will be initially constructed and provide immediate wave protection and environmental benefits.
Strategic Communication Plan

- 2007 initiated a multi-faceted strategic communication plan (public relations, billboards, radio ads, sponsored events, riverfront signs, trail signs, ads, school curriculum, etc.)
Today the project’s primary focus continues to be habitat restoration and now has added the beneficial reuse of dredge material as a means of accomplishing the project.

The project is a partnership between Brown County, WDNR, WDOT, US Fish & Wildlife Service, US Army Corps of Engineers, USEPA, UW-Sea Grant, UW-Green Bay, Port Operators and the Fox River Group of paper mills.
Goals

- Disposal Capacity
- Beneficial use of dredged material for maintenance of the Port of Green Bay
- Restore Islands and their diverse aquatic habitats
- Recreate 1960s island “footprint”
- Enhance spawning and nursery grounds for various fish species (e.g. yellow perch, musky, pike, walleye, sunfish)

Photo by WDNR 1969
Lost habitat affects:

- Colonial Nesting Water Birds
- Shorebirds
- Waterfowl
- Fish Spawning
- Fish Nurseries
- Turtles
- Amphibians
- Invertebrates
Improved Nursery Habitat

- Fish species which rely on structure to hide juvenile fish will benefit from the increase in aquatic vegetation.
Sunfish Species

- Sunfish Species; bluegill, largemouth bass, pumpkinseed

- Feeding shift
  - Insectivore → planktivore
  - Insectivore → piscivore

- Adapted to forage in vegetation during insectivore phase
Muskellunge Spawning Habitat
Improved Predation

- Visual predators
  - Increased efficiency

- Reduced recruitment of Common Carp

- Reduction in
  - Bullheads
  - Gizzard Shad

Photo from E. Engbretson
Contributing Factors to Project Implementation

- Established a Win-Win Project Demonstrating Economic Initiatives and Environmental Benefits
- Collaborated with Diverse # of Agencies, Port Businesses, Politicians and Not-for-Profits
- Built Community Awareness and Support
- Secured Local Cost Share Funding
- Collaboration contributed to a Legislative Lakebed Grant and all Necessary Permits
Project Outcomes

- 30-50 years worth of disposal capacity
- Beneficial reuse of dredged material
- Sustain jobs, industries and economic outputs of the Port of Green Bay for NE Wisconsin
- 2.5 mile wave barrier and re-establishment of 272 acres of islands
- Wave barrier will protect 1,225 acres and provide critical habitat for birds, fish and mammals
- Improved water clarity increasing weed grown for fish spawning and serve as a nursery and improved migratory bird sanctuary/lay over
Questions?

Cat Island Chain Restoration Project

Brown County Port & Resource Recovery Department
Port of Green Bay, WI