

# ECONOMIC CONSIDERATIONS

## BENEFITS AND COST

### WHY WIDEN OR DEEPEN SAN JUAN HARBOR?

#### THE NEED

San Juan Harbor serves a varied fleet of vessels, ranging from container and bulk vessels to both large (cruise) and small passenger vessels. The last construction effort that significantly deepened and widened San Juan Harbor was in 2001. Since that time, the trend in the maritime industry, across all categories of vessels, has been to increase vessel dimensions to achieve transportation efficiencies with more fully loaded vessels and less transits.

This study will determine the need for navigational improvements in San Juan Harbor including deepening main channels up to 50 feet and widening main channels up to an additional 50 feet. Lesser increments of widening and deepening and other alternatives will also be evaluated.

#### EVOLUTION OF MODERN CRUISE SHIPS



Year	Class	Gross Tonnage (GT)	Cabins	Length (ft)	Beam (ft)	Design Draft (ft)
2009	Oasis of the Sea **	220,000	2,712	1,181	154	30
2006	Freedom of the Sea	158,000	1,816	1,112	127	28
1999	Voyager of the Sea *	137,300	1,557	1,021	127	28
1996	Grandeur of the Sea	74,000	975	918	106	25
1990	Fantasy	70,400	1,028	856	103	26
1982	Song of America	37,600	707	704	93	22
1970	Song of Norway	18,400	377	552	79	22

\* Largest cruise vessel size referenced in the San Juan Harbor 2002 Limited Reevaluation Report  
 \*\* Mega Cruise ship classes allowed to call San Juan Harbor in 2016

Puerto Rico's economy is mainly driven by manufacturing followed by the service industry, including tourism. It is not surprising then, that the cruise industry has become a driving force for development at San Juan Harbor. The passenger/cruise market has been a source of growth (major destinations include the Caribbean, Florida, Mexico and Venezuela) a significant factor to consider, especially with the arrival of mega-cruise ships at the harbor

2002 USACE Navigation Study for San Juan Harbor, Limited Reevaluation Report and Environmental Assessment

#### THE BENEFITS

Transportation Savings Benefits may result from the following:

- 1) Use of larger vessels
- 2) More efficient use of existing vessels
- 3) Reduction in transit time
- 4) Lower cargo handling and tug assist costs for commodities
- 5) More efficient use of waterway transportation

#### SAN JUAN HARBOR TRADE LANES



#### 2013 SAN JUAN HARBOR VESSEL TRANSITS

VESSEL TYPES (not including dredge plant vessels; offshore support/transport/tug vessels; tug units; utilities vessels)	NUMBER OF TRANSITS (travel inbound or outbound)
Passenger Vessels	872
Container Vessels	869
RO/RO Vessels	754
Barge Carrier Vessels/Bulk/Shldrift	303
Chemical/Products Tanker Vessels	281
Refrigerated Cargo Vessels (Dedicated)	231
General Cargo Vessels	122
Other Vessels	108
Bulk Carrier Vessels	79
Tanker Vessels	68
Gaseous Tanker Vessels/LPG	26
Barge Carrier Vessels/Tanker/Shldrift	8

Source: USACE/WR

#### 2013 COMMODITIES DISTRIBUTION (% OF TOTAL)



#### THE ANALYSIS

##### NATIONAL ECONOMIC DEVELOPMENT (NED) PLAN

Four accounts are established to facilitate the evaluation and effects of alternative plans:

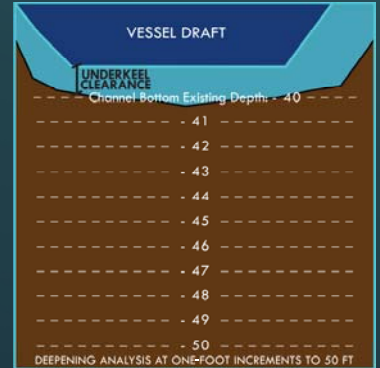
- 1) THE NATIONAL ECONOMIC DEVELOPMENT (NED) ACCOUNT captures changes in the economic value of the national output of goods and services measured in dollars.
- 2) THE ENVIRONMENTAL QUALITY ACCOUNT captures non-monetary effects on significant natural and cultural resources.
- 3) THE REGIONAL ECONOMIC DEVELOPMENT (RED) ACCOUNT registers the changes in distribution of the regional economic activity that results from each alternative.
- 4) THE OTHER SOCIAL EFFECTS (OSE) ACCOUNT registers plan effects from perspectives that are relevant to the planning process, but not reflected in the other three accounts.

$$\frac{\text{BENEFITS}}{\text{COSTS}} > 1$$

$$\text{BENEFITS} - \text{COSTS} = \text{NET BENEFITS}$$

The depth that maximizes net benefits is identified as the NED Plan.

Federal interest is established based on the justification of the NED benefits that are in compliance with environmental laws and regulations.



#### EXISTING PROJECT (Authorized Project Depths/Widths)

PROJECT CONTACT:  
 Milan Mora, Project Manager  
 U.S. Army Corps of Engineers, Jacksonville District  
 Phone: 904-232-1454  
 Email: millan.a.mora@usace.army.mil  
 Jacksonville District Website: www.saj.usace.army.mil

