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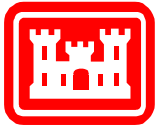


Performance-based Budgeting with the Channel Prioritization Tool

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Coastal and Hydraulics Lab
Coastal Inlets Research Program (CIRP)

Briefing to the
Office of Management and Budget
Washington, D.C.
September 29th, 2009



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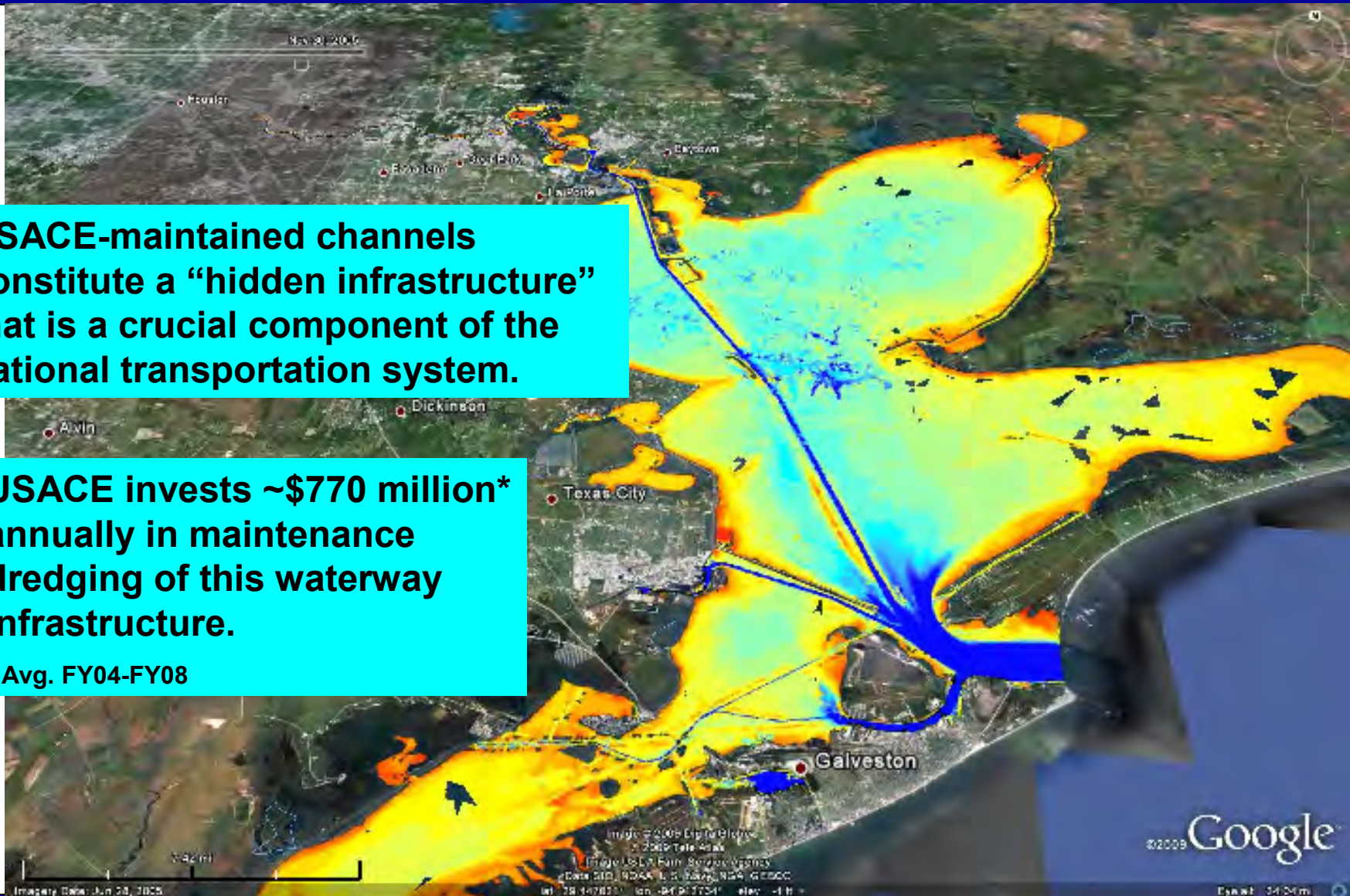
Channel Prioritization Tool (CPT)

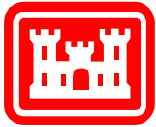


**USACE-maintained channels
constitute a “hidden infrastructure”
that is a crucial component of the
national transportation system.**

**USACE invests ~\$770 million*
annually in maintenance
dredging of this waterway
infrastructure.**

*** Avg. FY04-FY08**



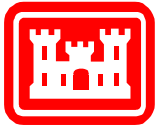


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Channel Prioritization Tool (CPT)



- **Responsible stewardship of this annual investment must be demonstrated through objective, consistent performance-based budgeting for Navigation O&M.**
- **CPT provides a means of analyzing the commercial traffic that is directly dependant upon USACE dredging activities:**
 - **cargo transiting at marginal depths kept open by O&M dredging**
 - **potentially disrupted shipments if dredging is not conducted and channel shoaling continues**

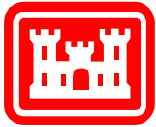


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- CPT accesses the dock-level, Corps-use-only tonnage database from IWR's Waterborne Commerce Statistics Center to analyze extent to which commercial traffic utilizes maintained channel depths.
- Commodity codes are cross-referenced with Dept. of Commerce import/export figures to obtain \$-value estimates for the cargo transiting at each 1-ft increment of maintained depth.
- Navigation channels are ranked in terms of tons and \$-value of cargo transiting at depths that experience shoaling.



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Channel Prioritization Tool (CPT)

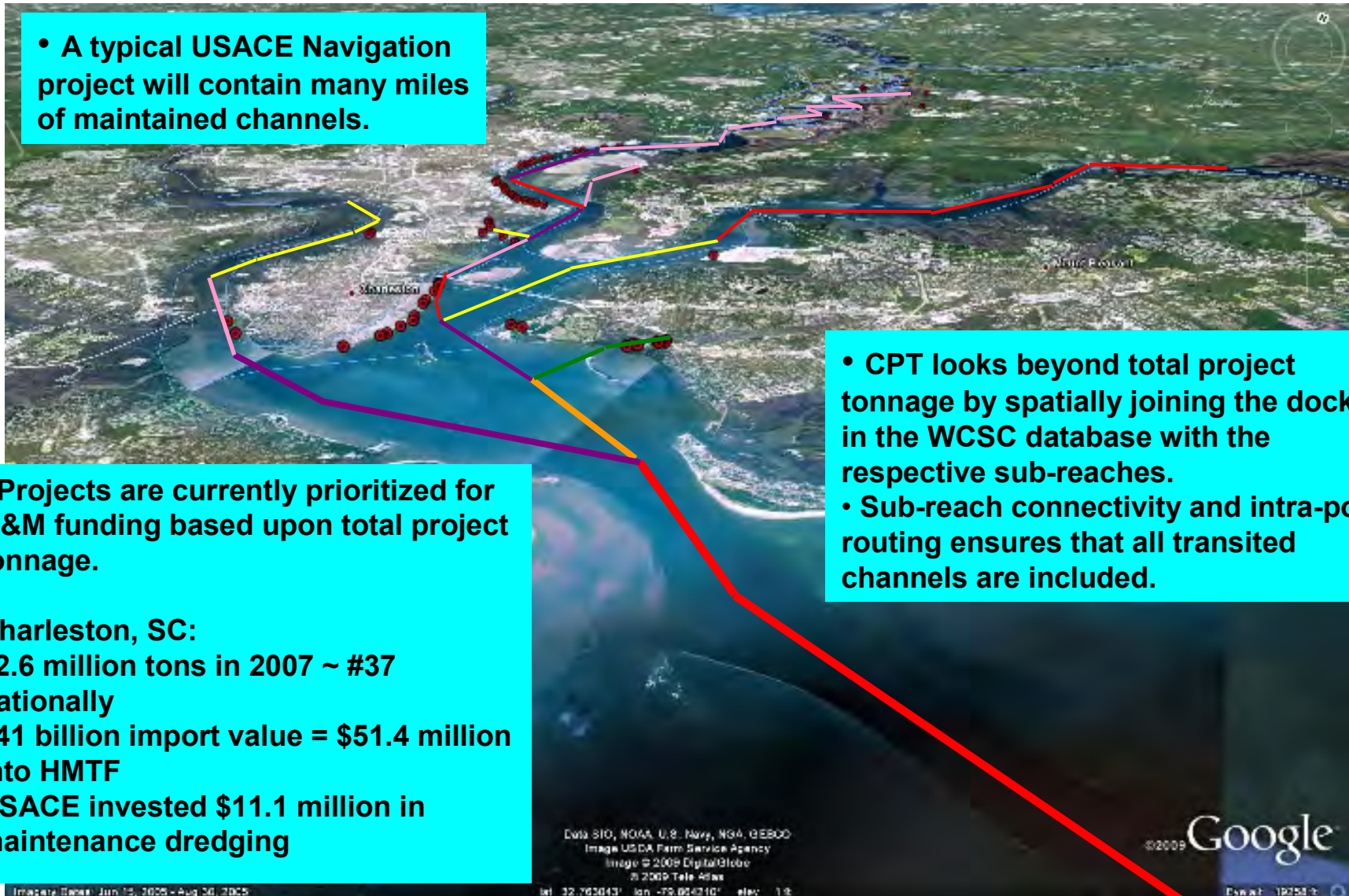


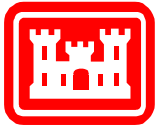
- A typical USACE Navigation project will contain many miles of maintained channels.

- Projects are currently prioritized for O&M funding based upon total project tonnage.

Charleston, SC:
22.6 million tons in 2007 ~ #37
nationally
\$41 billion import value = \$51.4 million
into HMTF
USACE invested \$11.1 million in
maintenance dredging

- CPT looks beyond total project tonnage by spatially joining the docks in the WCSC database with the respective sub-reaches.
- Sub-reach connectivity and intra-port routing ensures that all transited channels are included.



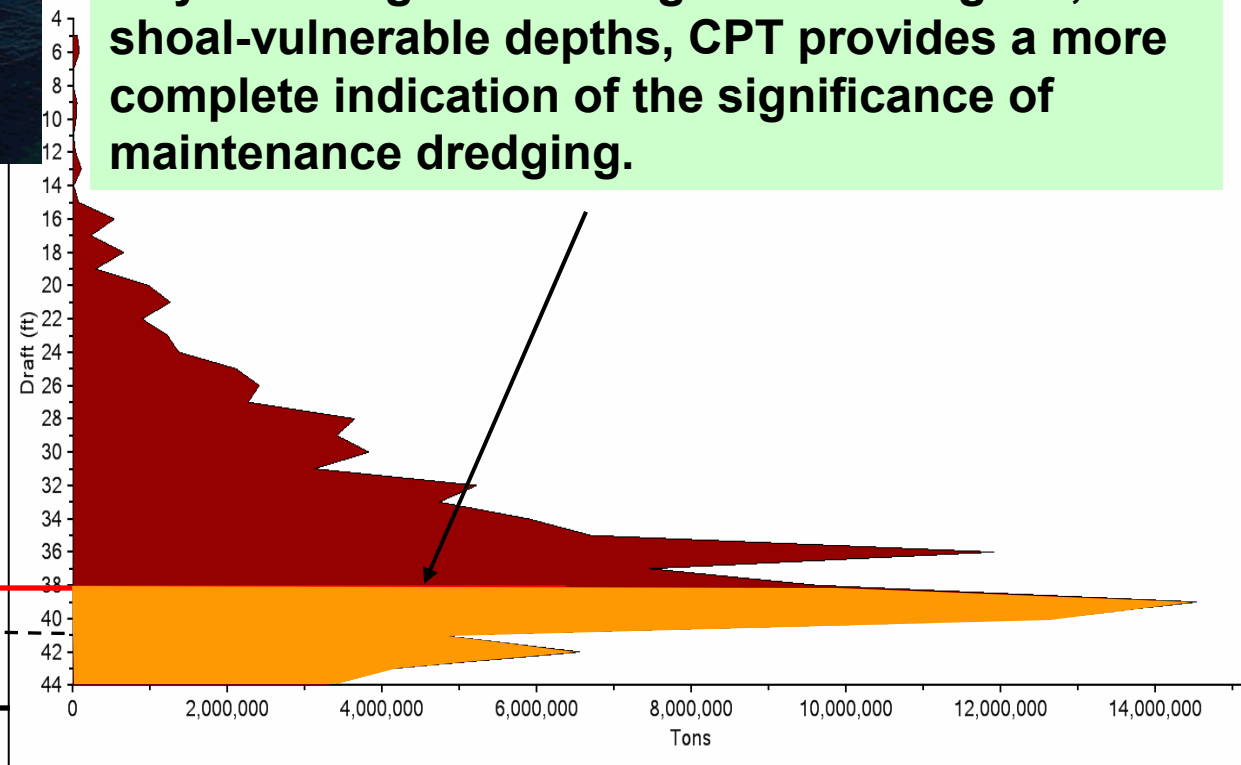


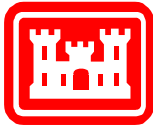
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- Portfolio management for USACE navigation channels should account for both physical condition and depth utilization in prioritizing projects for O&M funding.
- By focusing on the cargo at the marginal, shoal-vulnerable depths, CPT provides a more complete indication of the significance of maintenance dredging.





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Channel Prioritization Tool (CPT)



CPT

File Help

Input Preferences Ranking Mobile Bar Channel Houston Ship Channel--Deer Park Reach (Carpenters Bayou to Greenis Bayou) Oakland Outer Harbor

Limiting Depth / Anticipated Shoaling

☒ Do not calculate a cutoff depth

☐ Use full width values (if available)

☐ Use half width values (if available)

If limiting depth and/or anticipated shoaling values are not available, please supply default values to use.

Default Limiting Depth (ft)

Default Anticipated Shoaling (ft)

Years

☐ Query all years

☒ Query selected years

Commodities

☒ Query all commodities

☐ Query selected commodities

Traffic

☐ Query all traffic types

☒ Query selected traffic types

☐ Export ☐ Domestic Outbound

☒ Import ☐ Domestic Inbound

Font Size

Tonnage Mode

☐ Docked ☒ Transit

Reach Details

☒ Show Traffic Breakdown on Table

☒ Show Traffic Breakdown on Histogram

☒ Show Commodity Breakdown on Histogram

☐ All ☒ Top N

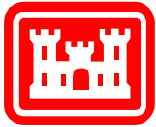
Select Open Screens

Ranking

Mobile Bar Channel

Houston Ship Channel-Deer Park Reach (Carpenters B

Oakland Outer Harbor

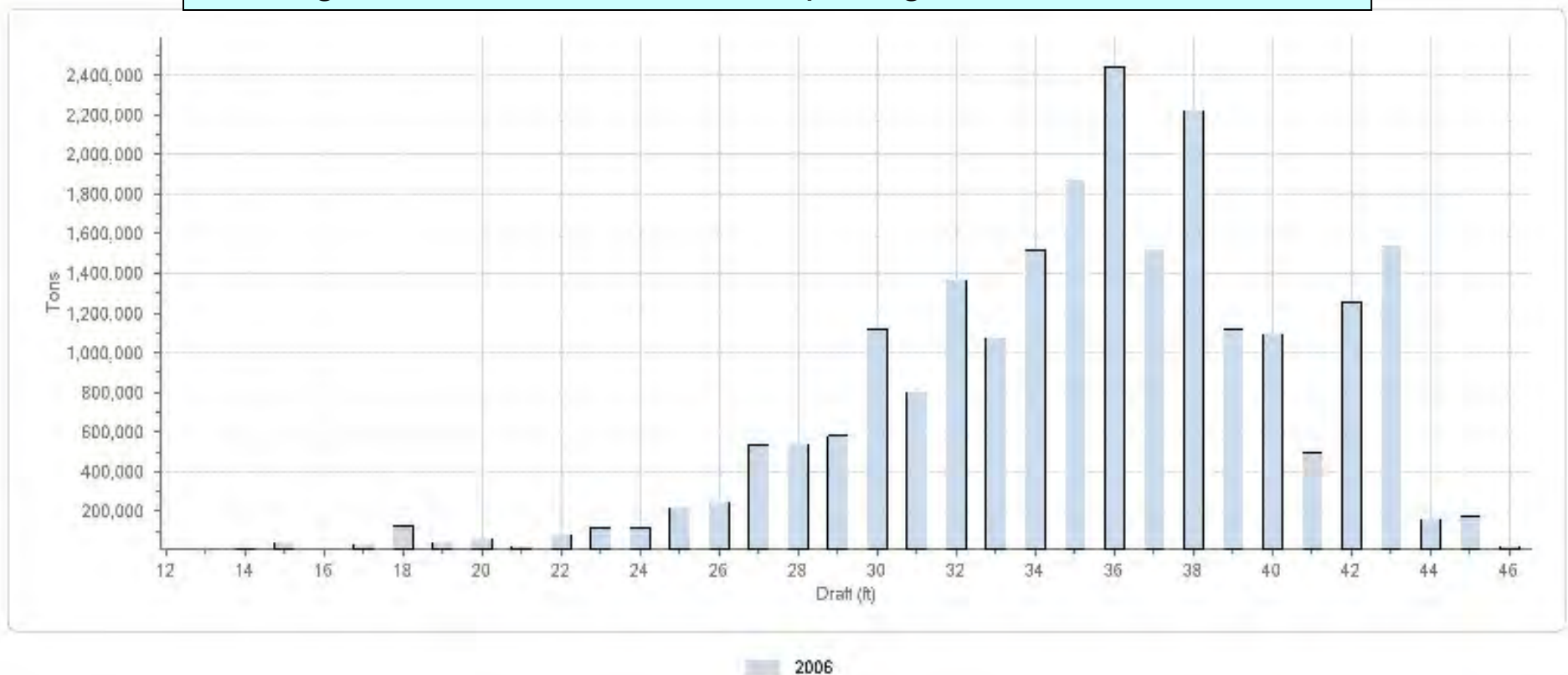


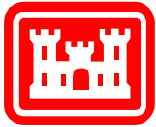
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Tonnage-draft breakdown for sample high-use entrance channel.



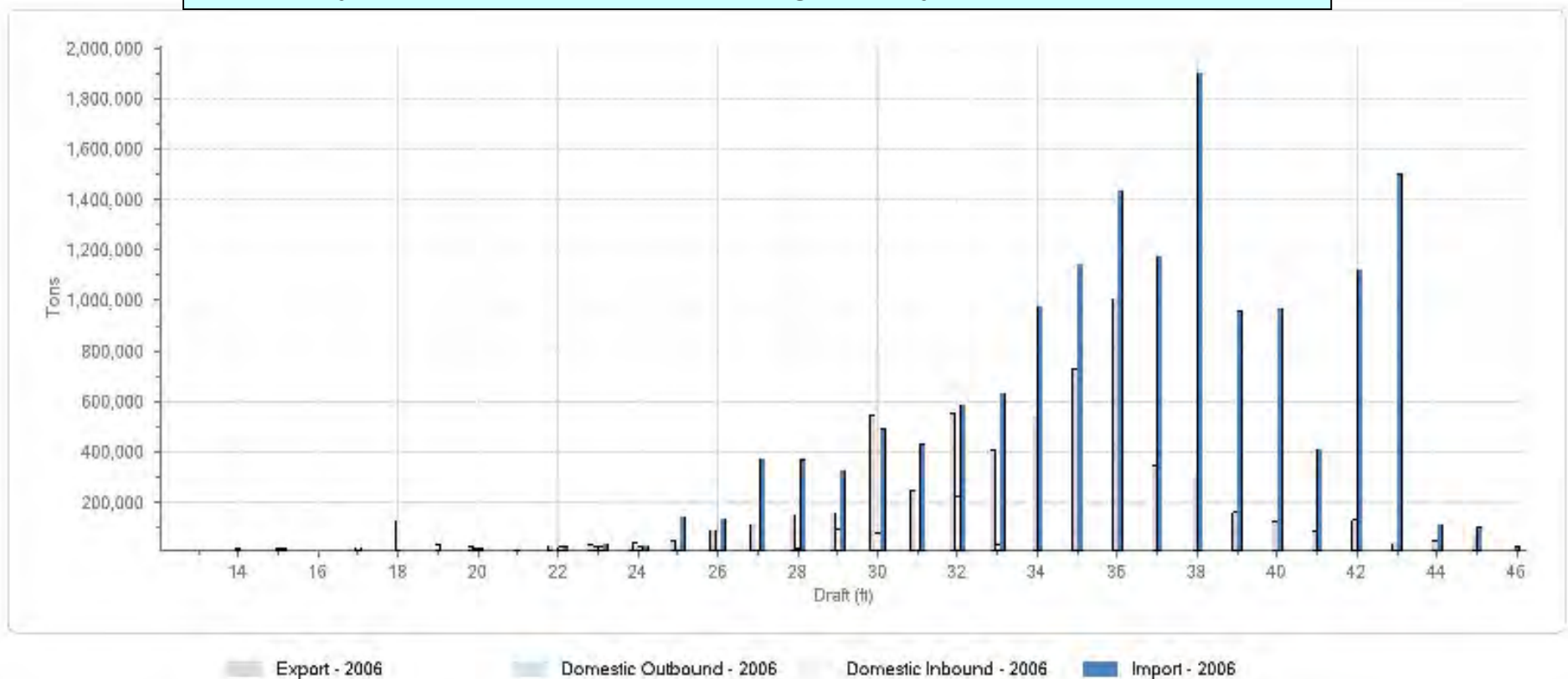


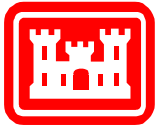
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Traffic-type filter enabled, showing mostly imports and exports.



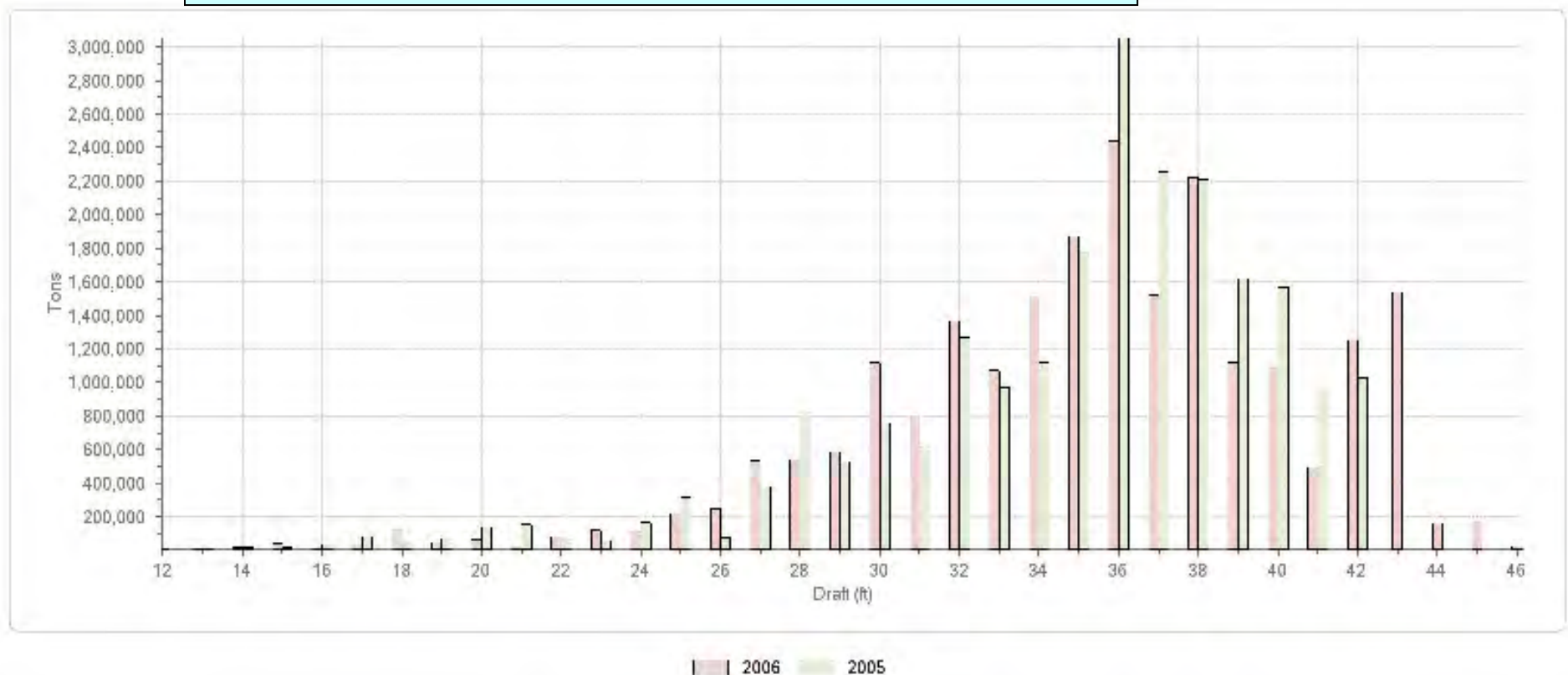


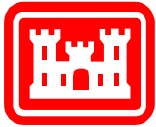
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Data from multiple years can be considered as well.



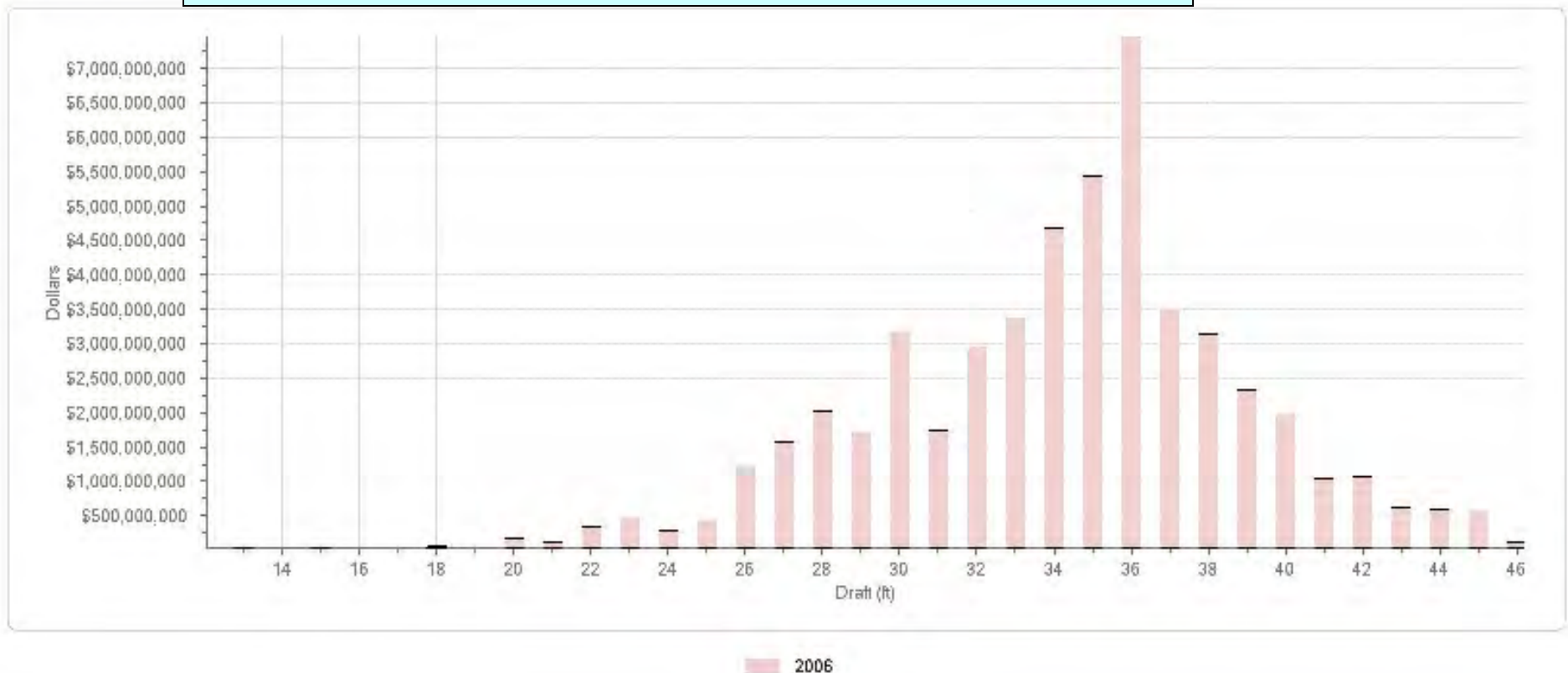


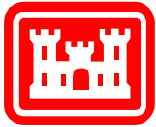
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\$-value-draft breakdown for high-use entrance channel



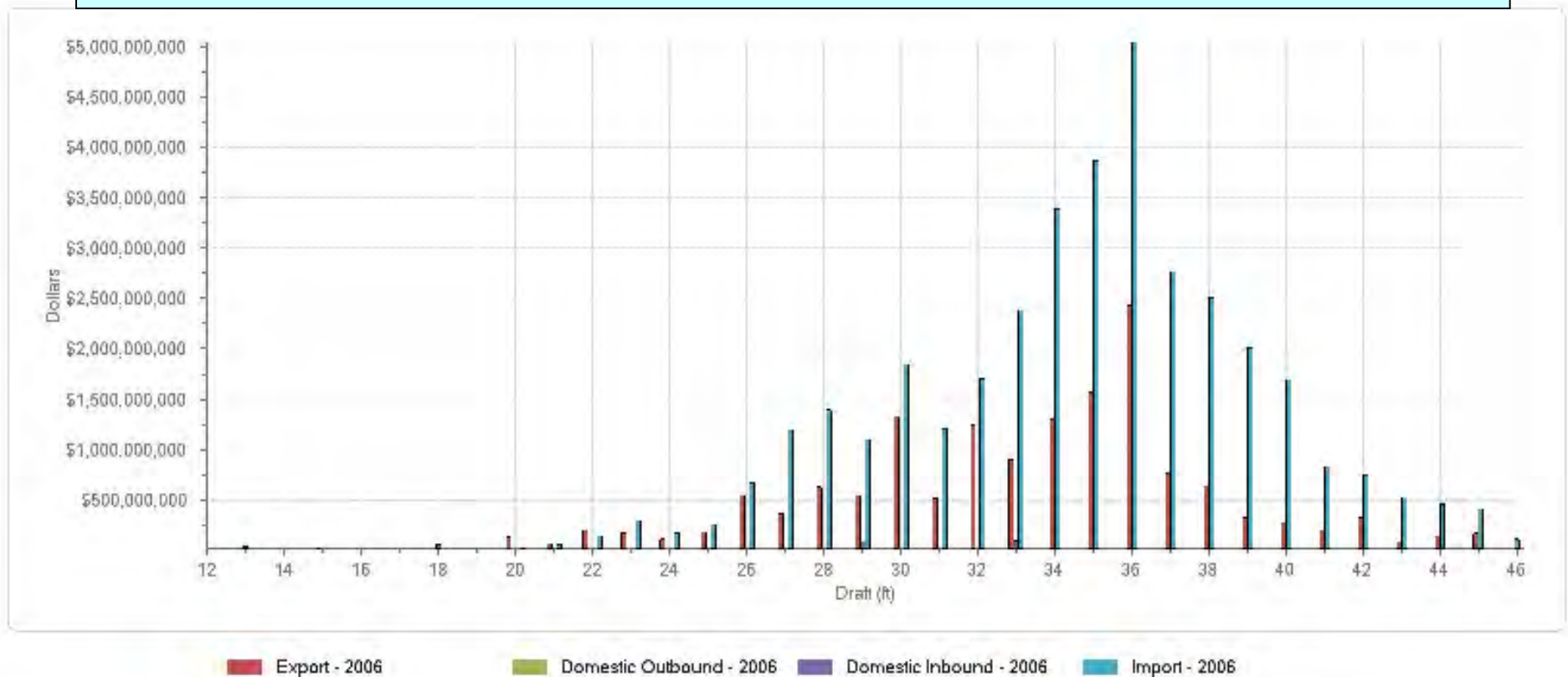


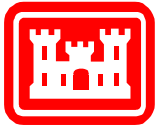
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As with tonnage, traffic-type filter shows \$-value dominated by imports/exports.



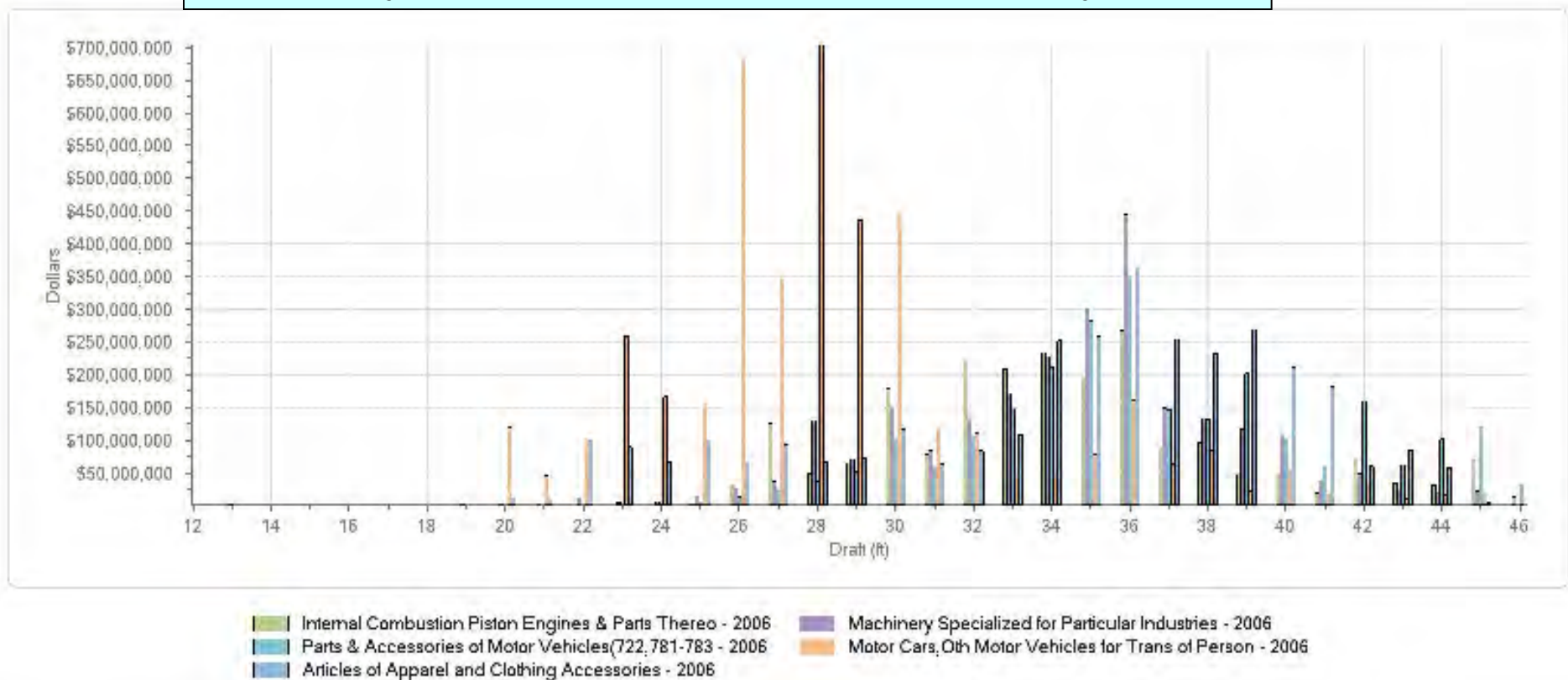


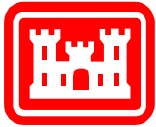
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Commodity filter shows the Top 5 commodities, by \$-value.



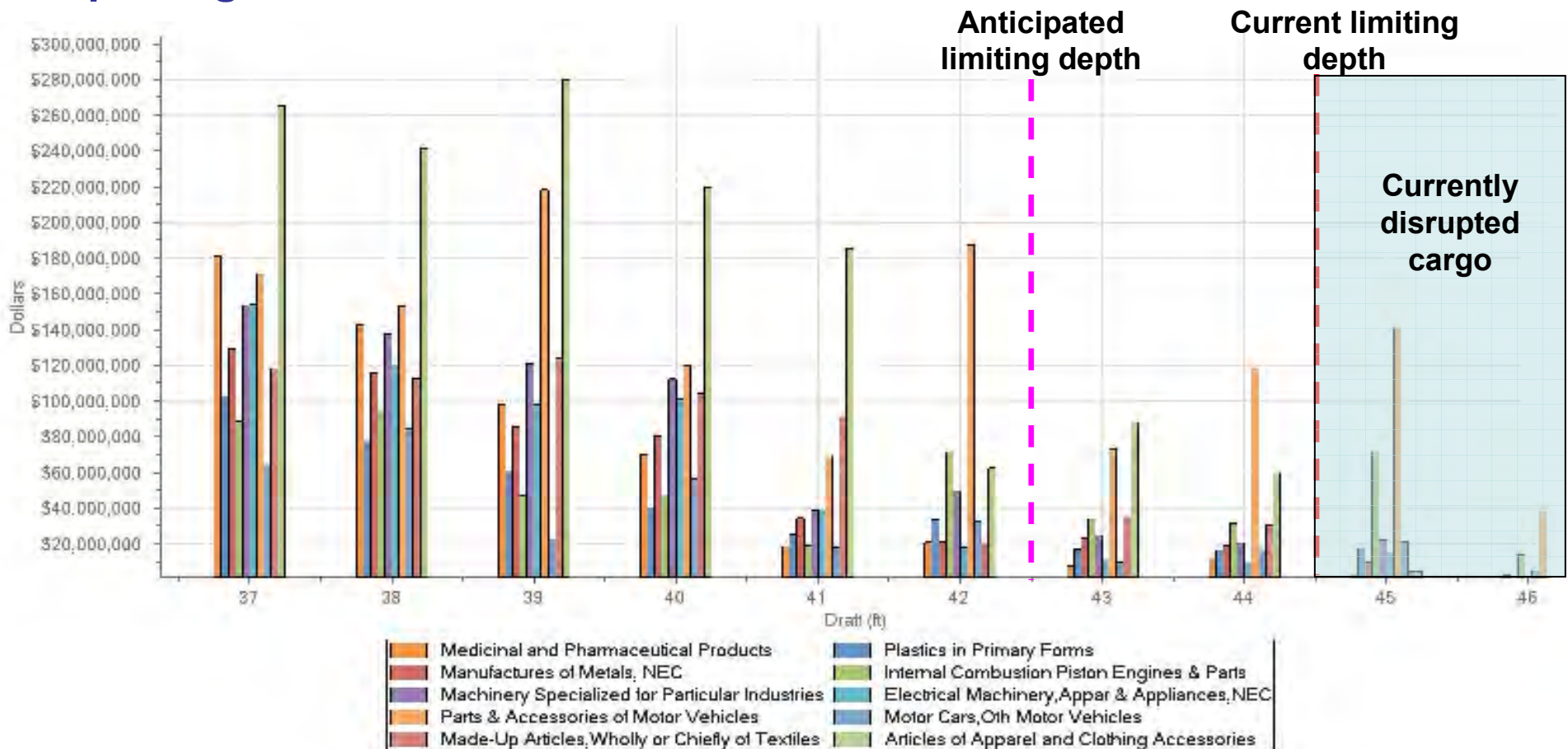


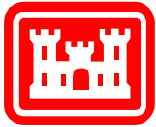
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- Key point: historical tonnage records are combined with anticipated shoaling rates to determine the relative importance of dredging work packages.



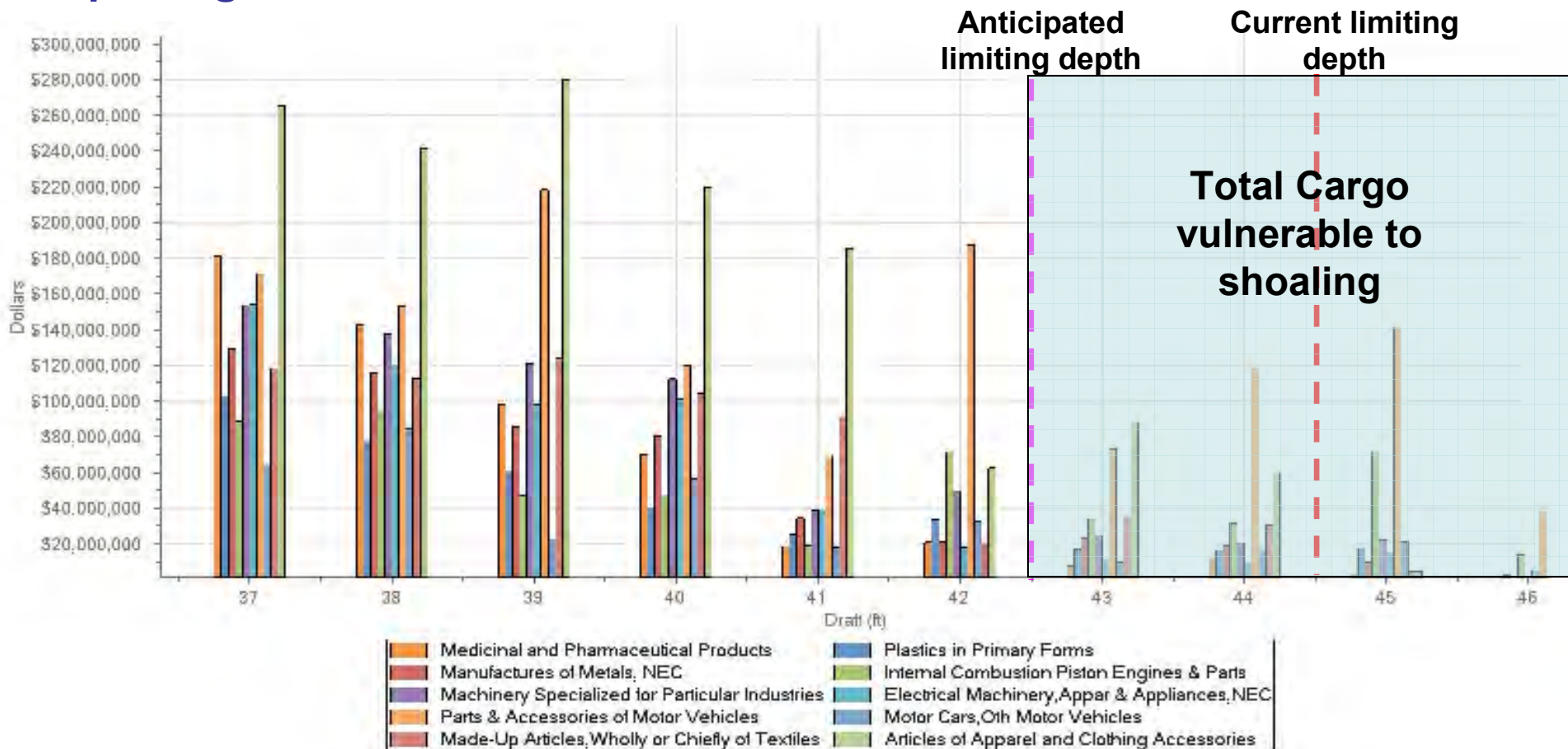


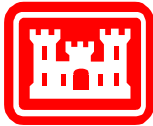
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Channel Prioritization Tool (CPT)



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CPT

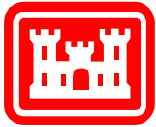
File Help

Input Rankins Galveston Bay Entrance Channel

Harbor	Reach	Tons
Galveston_TXCity_HSC	Galveston Harbor Channel	274,161,331.5
Galveston_TXCity_HSC	Galveston Bay Entrance Channel	274,161,331.5
Galveston_TXCity_HSC	Bolivar Roads Channel	262,124,478.5
Galveston_TXCity_HSC	Houston Ship Channel--Middle (Trinity River Channel to Bayport Channel)	213,226,530.5
Galveston_TXCity_HSC	Houston Ship Channel--Lower (Bolivar Rds. to Trinity River Channel)	213,226,530.5
Galveston_TXCity_HSC	Houston Ship Channel--Upper Bay (Bayport Channel to Cedar Bayou)	213,003,732.5
Galveston_TXCity_HSC	Houston Ship Channel--Baytown Bend (Fred Hartman Bridge to Goat Island)	189,690,340.5
Galveston_TXCity_HSC	Houston Ship Channel--Spillman's Island Reach (Cedar Bayou to Fred Hartman Bridge)	189,690,340.5
Galveston_TXCity_HSC	Houston Ship Channel--Peggy Lake Reach (Goat Island to San Jacinto Ferry Crossing)	150,646,587.5
Sabine	Sabine Pass Channel	149,550,866.5
Sabine	Sabine Outer Approach Channel	149,550,866.5
Sabine	Port Arthur Ship Channel	149,494,913.5
Galveston_TXCity_HSC	Houston Ship Channel--San Jacinto Reach (San Jacinto Ferry Crossing to Carpenters Bayou)	142,641,513.5
Galveston_TXCity_HSC	Houston Ship Channel--Deer Park Reach (Carpenters Bayou to Greens Bayou)	138,968,625.5
Sabine	Sabine-Neches Canal--Lower	114,513,674.5
Sabine	Sabine-Neches Canal--Upper	112,325,477.5
Sabine	Neches River--Below Reserve Fleet	102,068,451.5
Mobile	Mobile Lower Bay Channel	5,944,388.5
Mobile	Mobile Bar Channel	5,944,388.5
Calcasieu	Calcasieu Ship Channel (Mile 5 to Jetties)	0,622,320.5
Calcasieu	Calcasieu Pass and River Entrance Channel	0,622,320.5
Calcasieu	Lower Calcasieu River (Mile 17 to Mile 5)	0,579,132.5
Port Everglades	Port Everglades Entrance Channel	0,242,101.5
Calcasieu	Calcasieu Middle Reach (Mile 29 to 17)	0,477,876.5
Pascagoula	Pascagoula Channel	64,669,636.5
Mobile	Mobile Upper Bay Channel	63,226,843.5
Pascagoula	Bayou Casotte	63,201,768.5
Pascagoula	Bayou Casotte Approach	63,201,768.5
Honolulu	Honolulu Entrance Channel	58,159,322.5
Port Everglades	Port Everglades Harbor Middle Turning Basin (Lake Mabel)	58,711,133.5
Richmond	Outer Harbor Channel	56,808,435.5

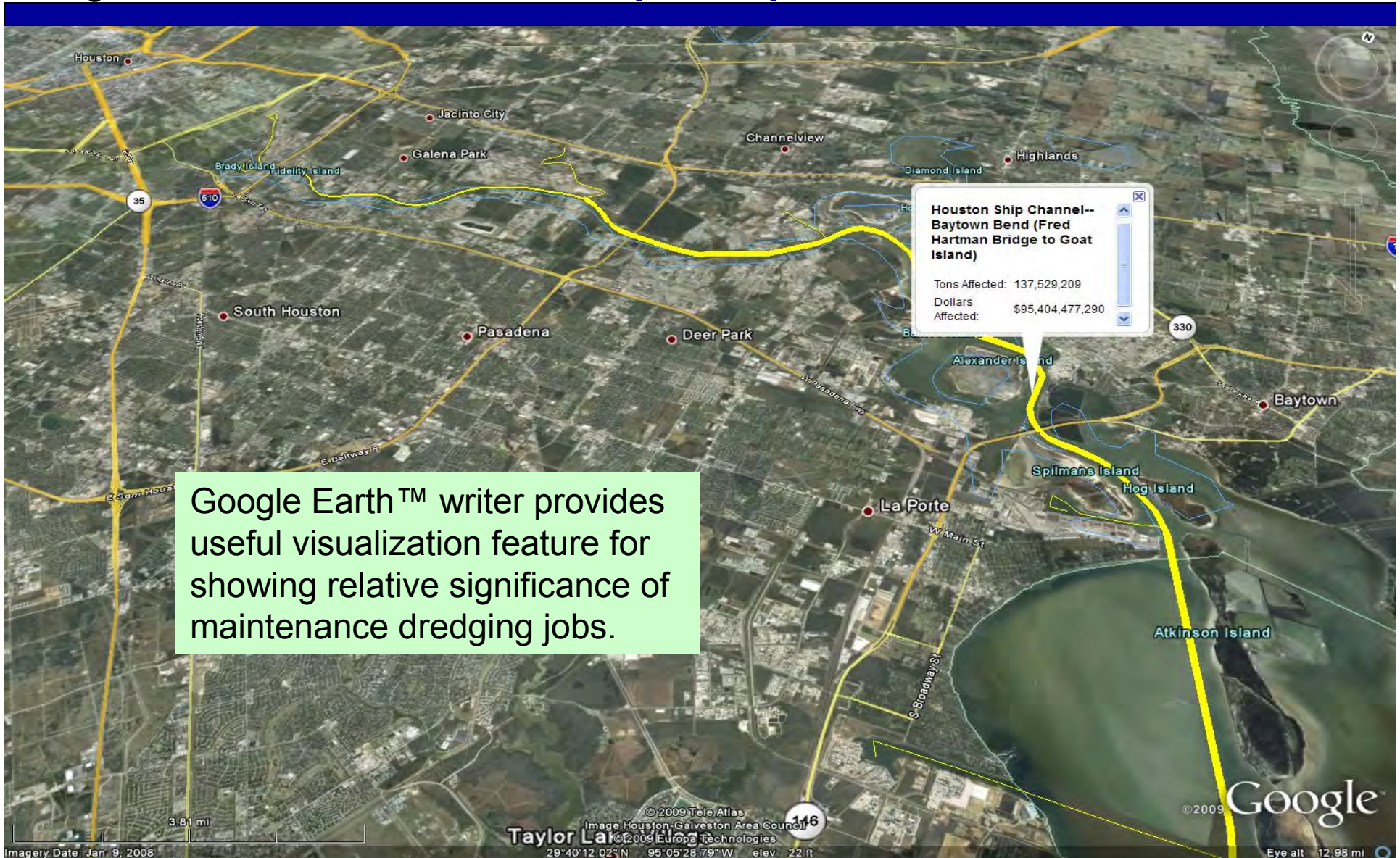
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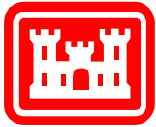
Sub-reaches from different projects
can be directly compared, and a
prioritized ranking of the entire project
portfolio generated.



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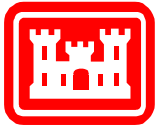


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Channel Prioritization Tool (CPT)



- CPT coverage will extend to entire USACE navigation portfolio.
- Currently 112 coastal projects are included, and extension to inland river system is under development.



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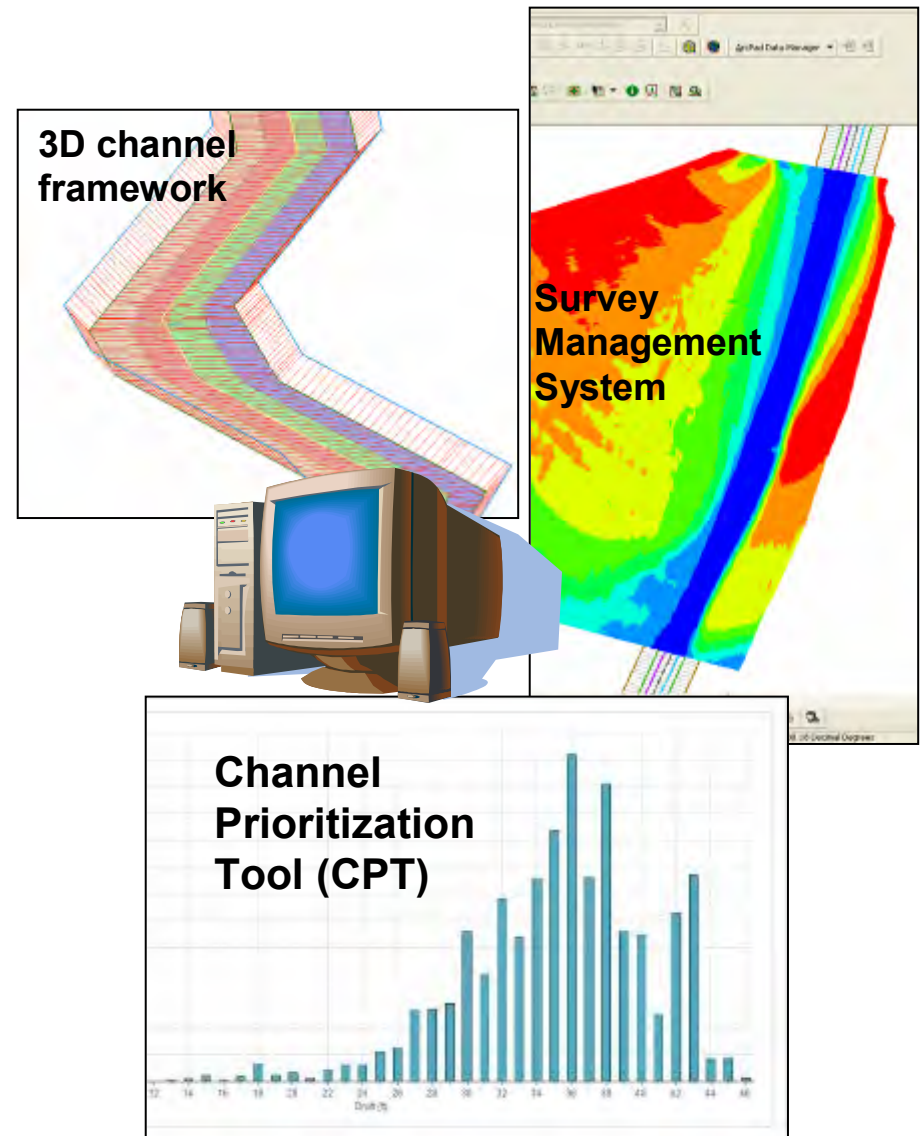


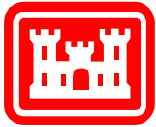
Next steps:

- Integrated suite of software tools, combining
 - Channel Prioritization Tool (CPT)
 - 3D channel framework with segment connectivity
 - Survey Management System

Goal:

- Portfolio-wide performance-based budgeting framework that includes depth-utilization and shoaling vulnerability.



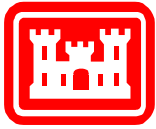


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CPT Implementation



- **Year 1**
 - Rollout CPT Alpha to Districts
 - Use to classify projects as high, med, low dredging need
 - Perform economic analysis for marginal projects
- **Year 2**
 - Same process at Division level, and include aggregation of projects
 - Include temporal trend lines, cost component, and AIS feature

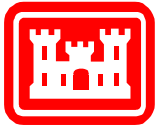


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CPT Implementation



- **Year 3**
 - CPT tested in all Districts and Divisions
 - Inclusion of shoal forecasting and survey management system
 - Aggregation to national level for HQ-level analysis
- **Year 4**
 - Full-scale, operational, web-based system used consistently across all Districts and Divisions, with HQ verification



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Questions?

POC: Dr. Kenneth Ned Mitchell
US Army Engineer Research and Development Center (ERDC)
Coastal and Hydraulics Laboratory

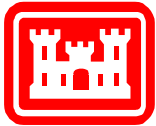
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Automatic Identification System (AIS)

