

HOUSTON SHIP CHANNEL

Expansion Channel
Improvement Project

**US Army Corps
of Engineers®**
Galveston District

Study Guide Fall 2017

About the Study

The Environmental Impact Statement (EIS) and Feasibility Study for the proposed Houston Ship Channel Expansion Channel Improvement Project (HSC ECIP) are intended to identify and evaluate a combination of modifications to improve the efficiency and safety of the Houston Ship Channel.

The U.S. Army Corps of Engineers, or the Corps, is leading this study in collaboration with the non-federal sponsor, Port Houston. The Corps leads the development of the EIS and their own Feasibility Study. The EIS preparation and Feasibility Study are being conducted concurrently to result in a single integrated Feasibility Study and EIS document, or a Draft Integrated Feasibility Report and Environmental Impact Statement (DIFR-EIS). The DIFR-EIS documents the planning process undertaken for the HSC ECIP Feasibility Study. Currently, the study has formulated and screened alternatives to identify the Tentatively Selected Plan (TSP), which is a proposed preferred plan put forth for concurrent public, policy, agency technical, and independent external peer review.

About the Houston Ship Channel

The ongoing efficiency, safety, and navigability of the HSC are vital to maintaining the health of the regional and state economy.

- ▶ The Houston Ship Channel is approximately 50 miles in length, and it serves a complex of diversified public and private facilities collectively known as Port Houston.
- ▶ Port Houston is a strategic gateway for cargo originating in or destined for the United States West or Midwest. Each year, more than 200 million tons of cargo moves through Port Houston, carried by more than 9,000 vessels and 200,000 barges.
- ▶ A Water Resources Development Act (WRDA) section 905b report was prepared recommending further studies for the improvement of the Houston Ship Channel in 2014.

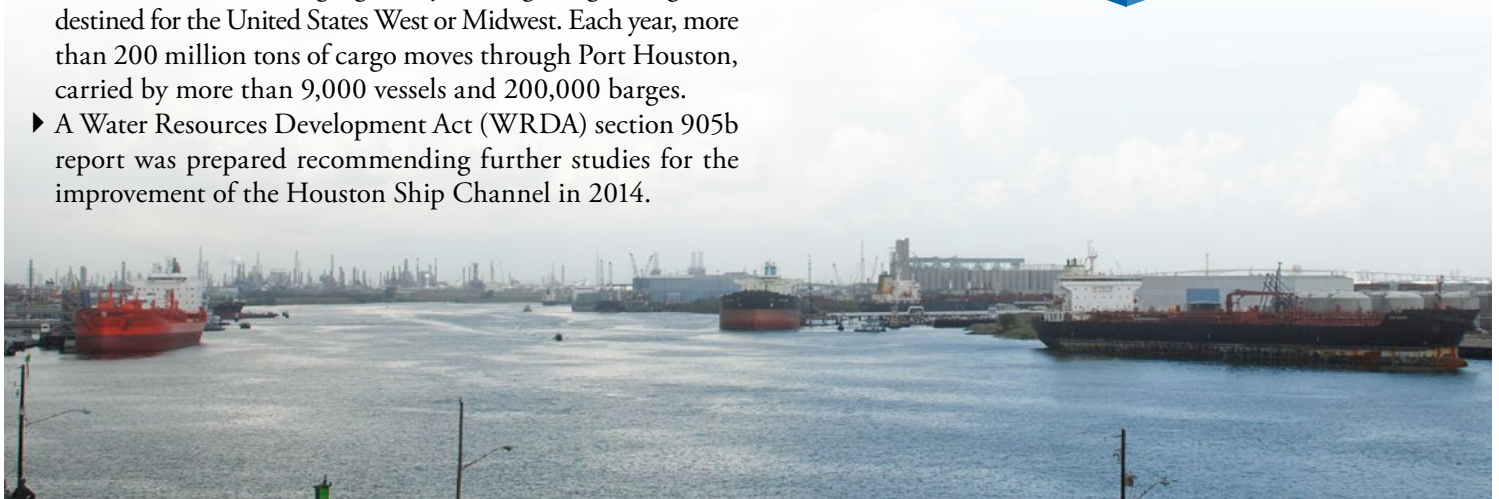
Fast Facts:

The Port of Houston is:

- ▶ 1st in U.S. foreign waterborne tonnage
- ▶ 3rd in total foreign cargo value
- ▶ Largest Gulf Coast container port, handling 68% of U.S. Gulf Coast container traffic in 2016
- ▶ 2nd in U.S. in total tonnage
- ▶ The largest Texas port with 46% of market share by tonnage and 95% market share in containers by total units in 2016

The Port of Houston is:

- ▶ Ship-channel related businesses contribute nearly 1.2 million jobs throughout Texas, generating over \$264.9 billion in statewide economic impact.
- ▶ \$5 billion in state and local tax revenue are generated by business activity related to the port each year.



What is an Environmental Impact Statement (EIS)?

A Federal agency must prepare an EIS if it is proposing a major federal action that may significantly affect the quality of the natural and human environment to comply with the National Environmental Policy Act, or NEPA. NEPA established our country's national environmental policies in 1969. The environmental review process strives to facilitate better informed decisions and involve citizens, and the Corps will seek to involve the many ship channel stakeholders throughout this study process.

What is a Feasibility Study?

All major Federal water resource projects, including navigation, must follow a study process that evaluates proposed solutions to problems, such as inefficient navigation, by analyzing the engineering, economic, environmental, cost, real estate, and other impacts and

aspects of alternative solutions. This study process, consisting of six major steps, is used to identify a plan of most value to the national economy, consistent with protecting the nation's environment and follows principles and guidelines in Federal water resource law and Corps regulations.

Where are we in the study process?

We are mid-way through the study process. We have formulated and analyzed alternatives to identify a TSP regarding channel improvements for review and comment by the public and agencies. This has resulted in a DIFR-EIS. After reviewing comments received from the public and through agency coordination, we will consider these comments during the next phase of detailed analysis and refinement of the TSP.


The Study Process



U.S. Army Corps of Engineers
(the Lead Agency)



Port Houston
(The Non-Federal Sponsor)



You
The Public and Local Stakeholders

The EIS preparation and Feasibility Study are being conducted concurrently to result in a single integrated Feasibility Report and EIS document, or a DIFR-EIS.

1 It's my responsibility to maintain navigability of the Houston Ship Channel, and it's time to look at improving the ship channel.

We would like to participate as the non-Federal sponsor.

2 I'm going to prepare an EIS and Feasibility Study, and I need your help!

Public Notice Methods

News: Study is Coming!


TV: Study is Coming!

Computer: Study is Coming!


3 Scoping Meeting

Please consider the following:


4 Potential Effects




Socioeconomic



Natural Environment



Air and Water Quality



Historic and Cultural

5 Please consider...

Draft EIS

Feasibility Study

6 Here are the proposed Alternatives.

Draft Study Report

No Action Alternative	Tentatively Selected Plan
Alternative 2	Alternative 3

2017

My comments on the Draft Study Report are:

7 Further Analysis of TSP

Here are my comments...

Final EIS

Feasibility Study

8 Here are the proposed Alternatives.

Final Study Report

No Action Alternative	The Recommended Plan
Alternative 2	Alternative 3

2019

I see that you included my comments in the summary.

9 I have a Record of Decision about the EIS and Feasibility Study. Now I can construct the plan.







Feasibility Study

Record of Decision

The Houston Ship Channel

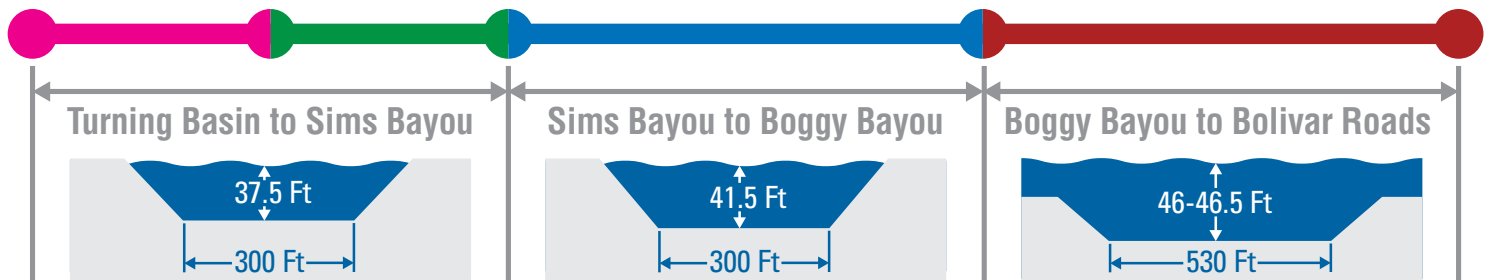
For this study effort, the ship channel has been divided into six segments:

Diagram is representational and not to scale.

-  Segment 1 - Bolivar Roads to Boggy Bayou
-  Segment 2 - Bayport Ship Channel
-  Segment 3 - Barbours Cut Channel
-  Segment 4 - Boggy Bayou to Sims Bayou
-  Segment 5 - Sims Bayou to the 610 Bridge
-  Segment 6 - 610 Bridge to the Main Turning Basin



Currently Authorized Channel Dimensions *(Depths in Mean Lower Low Water)*



What is the focus of the study?

The study is focusing on the feasibility of improving navigation on the 50-mile-long HSC. In general, the entire ship channel, except the entrance channel in the Gulf of Mexico, is being evaluated.

The study focus includes:

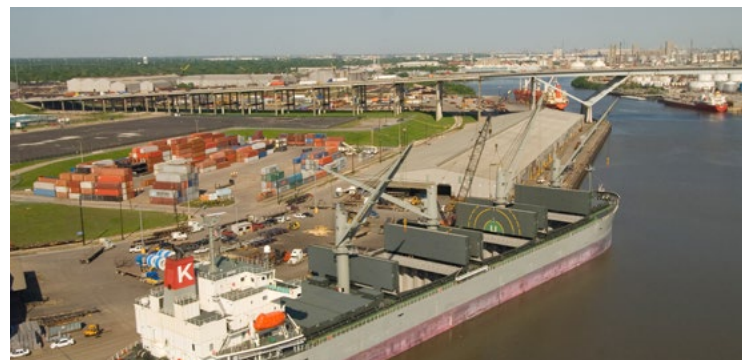
- ▶ Deepening and widening opportunities from Boggy Bayou to the Main Turning Basin;
- ▶ Safety improvements to side channels at the Bayport Ship Channel and the Barbours Cut Channel through widening; and
- ▶ Enhancements to the Galveston Bay Reach safety and efficiency to include widening and easing of channel turns.

Study Objectives

1. Investigate improving deep-draft navigation efficiency to accommodate for current and future, larger vessels.
2. Evaluate ways to reduce vessel traffic delays.
3. Increase channel safety.
4. Establish environmentally suitable placement areas for dredged material.

For this effort, the ship channel has been divided into six segments:

- ▶ **Segment 1** – the HSC from Bolivar Roads through Galveston Bay and the San Jacinto River to Boggy Bayou
- ▶ **Segment 2** – the Bayport Ship Channel
- ▶ **Segment 3** – the Barbours Cut Channel
- ▶ **Segment 4** – the HSC from Boggy Bayou to Sims Bayou, near the Washburn Tunnel
- ▶ **Segment 5** – the HSC from Sims Bayou to the 610 Bridge
- ▶ **Segment 6** – the HSC upstream of the 610 Bridge to the Main Turning Basin



About the Study Process

Plan Formulation

The HSC system is highly complex, serving many different types of users. To best address the navigation problems identified within the HSC, the channel was divided into six segments and each segment was assigned with a “design vessel” to help formulate and ultimately select the appropriate measures. The measures, which are the building blocks of alternatives, were developed and evaluated through several iterations of screening, after which alternative plans were formulated. Consistent with SMART (Specific, Measurable, Attainable, Risk-informed, Timely) Planning concepts, screening and evaluation of these measures relied largely on available existing information.

In total, 45 measures were identified during this planning process and 15 measures were screened out based on environmental, engineering, and economic reasons. The remaining 30 measures were forwarded and combined into alternative plans.

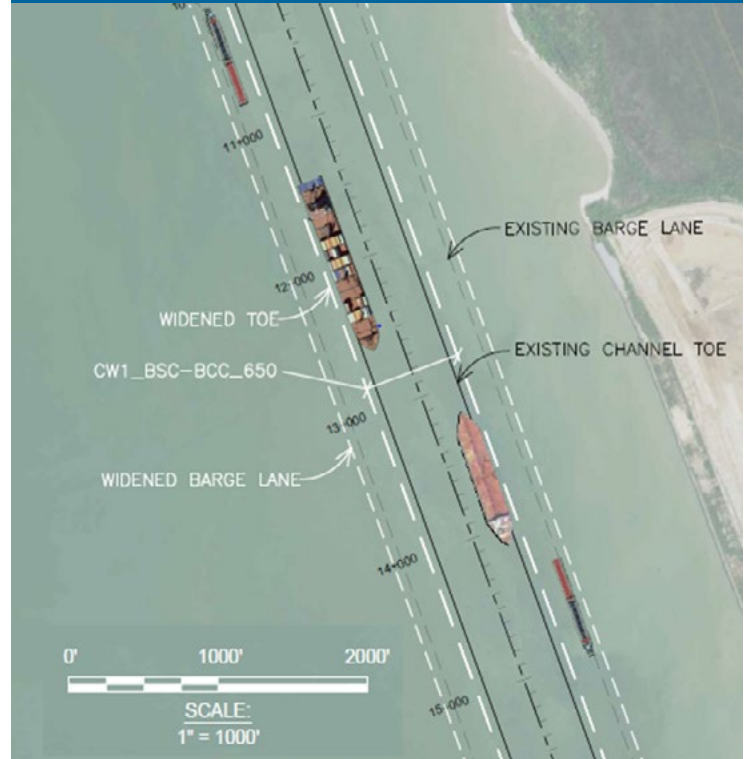
Study Alternatives

Eight alternative plans were developed to evaluate improved navigation as measured by reduced transportation costs for the projected vessel fleet forecast. The eight alternatives were developed around addressing the unique problems, restrictions, and needs of each design vessel, and combinations of them. The study analyzed these alternatives against the No-Action Alternative to determine which plan maximized transportation cost savings on the HSC system. That plan, identified as the TSP, would be carried forward in the study process for further refinement and evaluation. The eight alternative plans include:

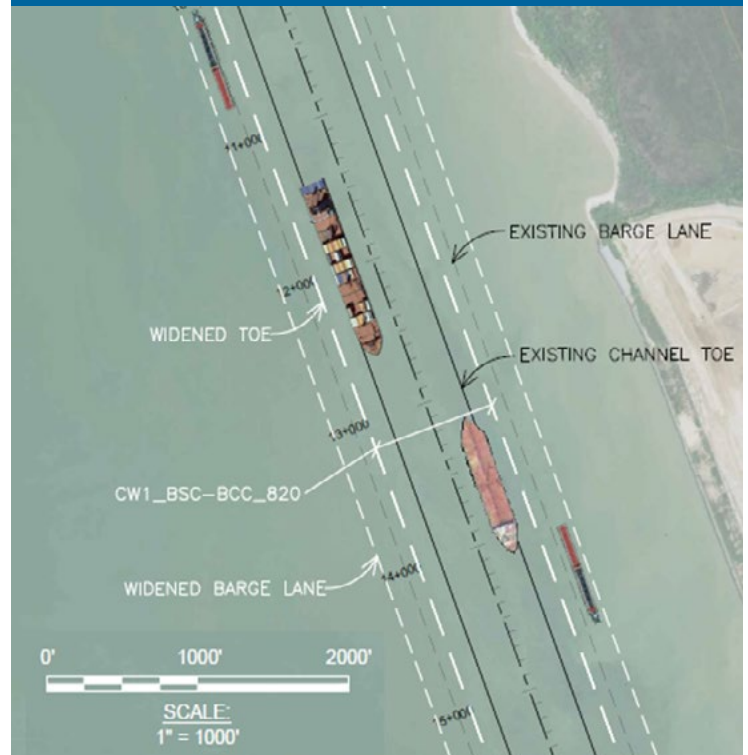
- ▶ **Alternative 1** – Minimum System Wide Plan
(No Bay Widening)
- ▶ **Alternative 2** – Bay Plan
- ▶ **Alternative 3** – Suezmax Plan
- ▶ **Alternative 4** – Aframax Plan
- ▶ **Alternative 5** – Bulk, Tankers, & Vehicle Carriers Plan
- ▶ **Alternative 6** – Bay Mooring Plan
- ▶ **Alternative 7** – Upper Channel Mooring Plan
- ▶ **Alternative 8** – The Comprehensive Plan



Channel widening with associated barge lane relocation: 650 feet

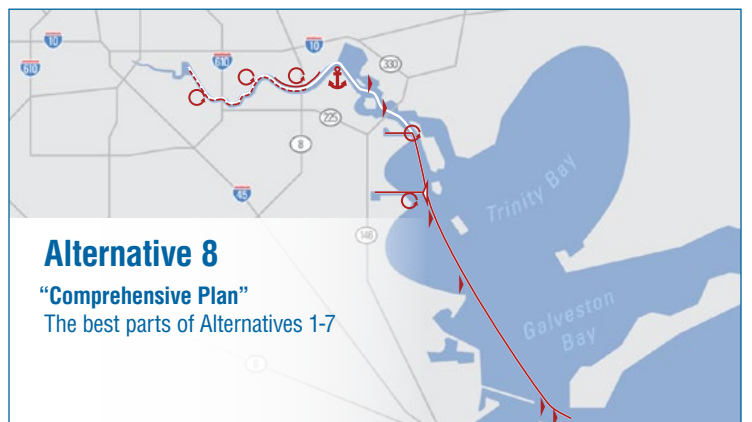
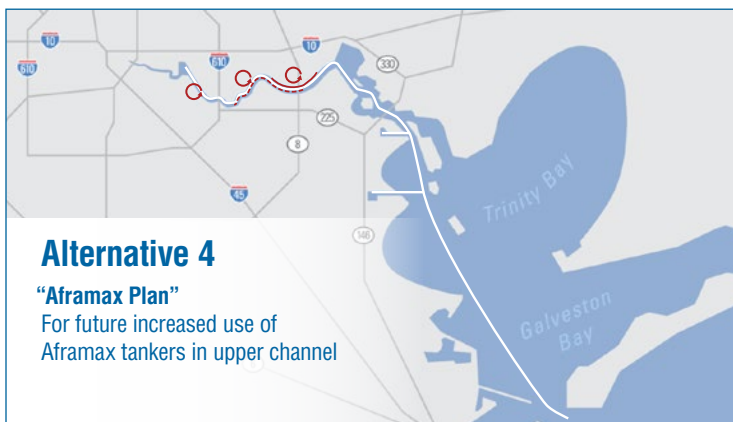
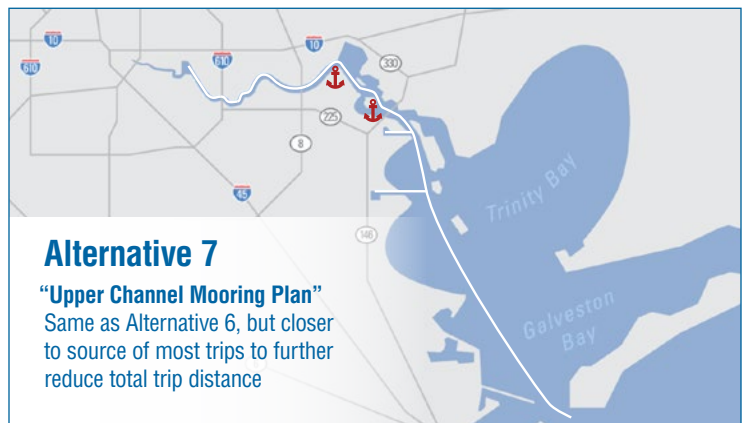
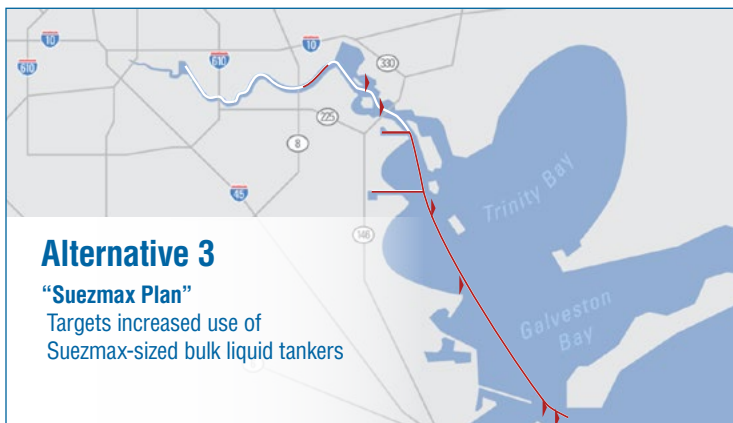
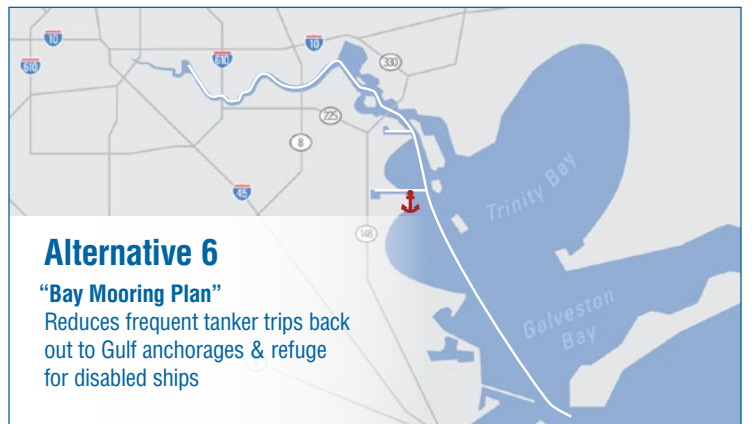
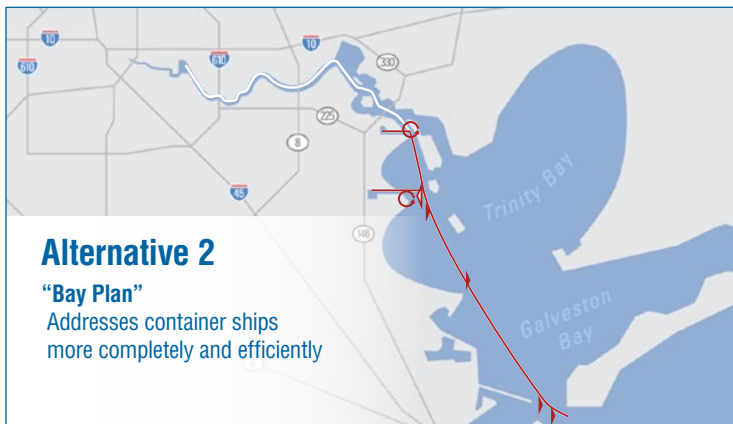
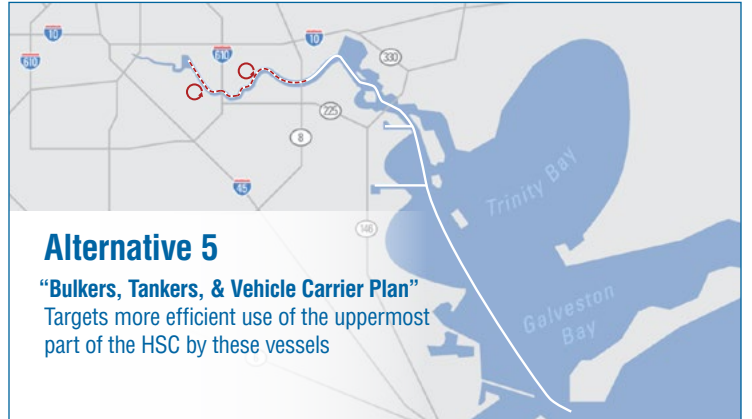


Channel widening with associated barge lane relocation: 820 feet

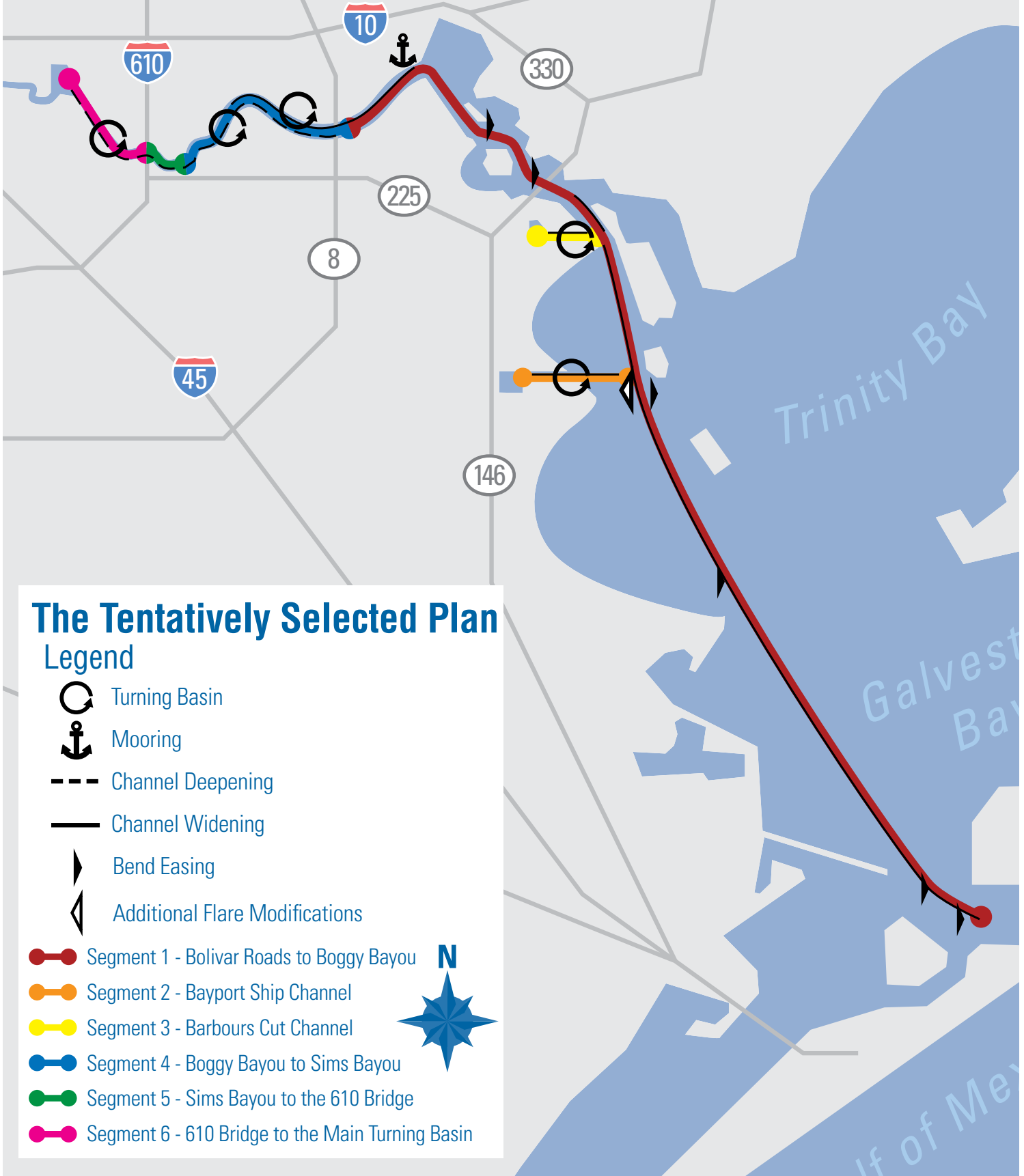


Study Alternatives

Legend  Turning Basin  Mooring  Channel Deepening  Channel Widening  Bend Easing 



The Tentatively Selected Plan (TSP)



The Tentatively Selected Plan

Legend

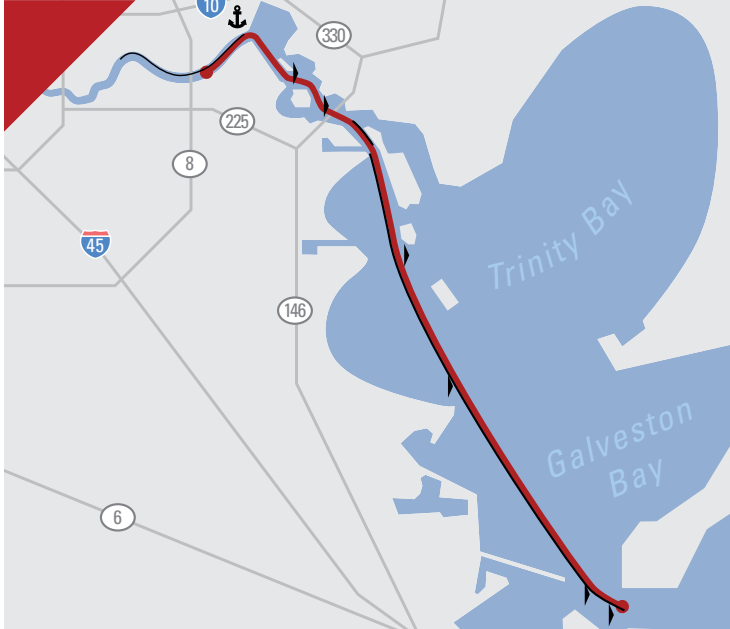
-  Turning Basin
-  Mooring
-  Channel Deepening
-  Channel Widening
-  Bend Easing
-  Additional Flare Modifications
-  Segment 1 - Bolivar Roads to Boggy Bayou
-  Segment 2 - Bayport Ship Channel
-  Segment 3 - Barbours Cut Channel
-  Segment 4 - Boggy Bayou to Sims Bayou
-  Segment 5 - Sims Bayou to the 610 Bridge
-  Segment 6 - 610 Bridge to the Main Turning Basin

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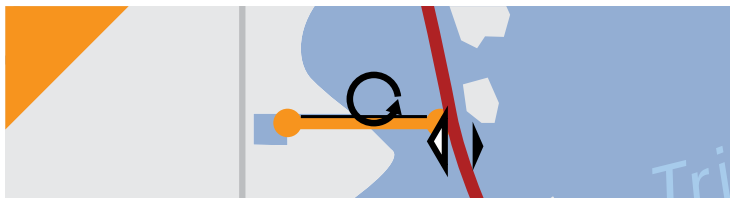
The Tentatively Selected Plan Continued...

Identified as Alternative 8, the TSP is a system-wide plan that best meets the study objectives. When compared to the other alternatives, this alternative most effectively reduces (and in some cases, could eliminate) Pilot Rule restrictions for transit on the HSC, while concurrently improving safety. The TSP would implement the following features:



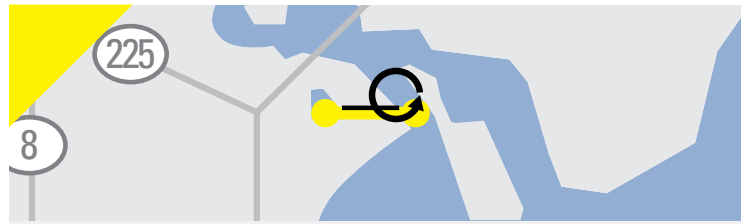
Segment 1

- ▶ Four bend easings on the HSC in the Bay Reach with associated relocation of barge lanes
- ▶ Widening, in whole or in part, of the HSC between Bolivar Roads and the Barbours Cut Channel from 530 feet to between 650 and 820 feet with the associated relocation of barge lanes
- ▶ A new multi-purpose mooring facility on the HSC near the San Jacinto Monument
- ▶ Re-evaluation of the size and depth of the barge lanes along the HSC to ensure proper continued use by barges
- ▶ Further examination of a minor widening near Hog Island and nearby bend easings to improve safety



Segment 2

- ▶ Flare expansion on the Bayport Ship Channel
- ▶ A shoaling attenuation structure near the Bayport Ship Channel flare
- ▶ Widening of the Bayport Ship Channel from 300 - 400 feet to 455 feet
- ▶ Addition of a turning basin at the mouth of the Bayport Ship Channel land cut



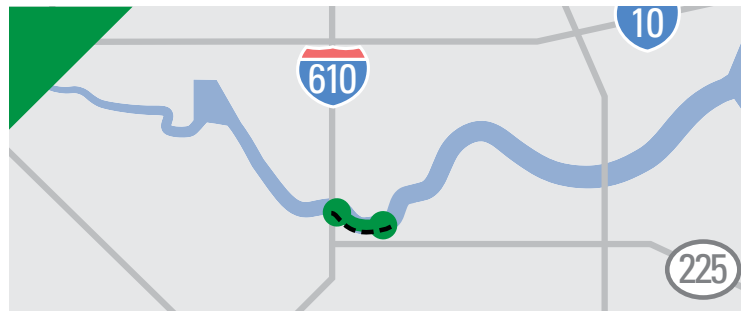
Segment 3

- ▶ Widening the Barbours Cut Channel from 300 feet to 455 feet
- ▶ Construction of a combination flare and turning basin at the entrance to Barbours Cut Channel



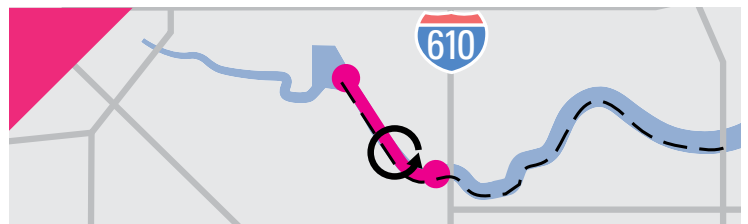
Segment 4

- ▶ Deepening the HSC from Boggy Bayou to Sims Bayou from 41.5 feet up to 46.5 feet
- ▶ Widening the HSC from San Jacinto to Greens Bayou from 400 feet to 530 feet
- ▶ Addition and improvement of turning basins



Segment 5

- ▶ Deepening the HSC from Sims Bayou to the I-610 Bridge from 37.5 feet up to 41.5 feet



Segment 6

- ▶ Deepening the HSC from the I-610 Bridge to the Main Turning Basin up to 41.5 feet
- ▶ Improvement of turning basin

Effects on Environmental Quality?

Effects of the TSP on significant natural resources include temporary impacts to unvegetated estuarine bay and river bottom and impacts to oyster reefs which will be mitigated. Between approximately 2,100 and 2,770 acres of estuarine river bottom in the upper HSC, and bay bottom in Galveston Bay, would be temporarily impacted by dredging, and would be expected to recolonize and recover following dredging. It is estimated that a range between 469 and 538-acres of oyster reef adjacent to the HSC in Galveston Bay would be permanently impacted but would be mitigated by restoring reefs in adjacent areas of Galveston Bay. Though these impacts are considered permanent, previous HSC improvements have experienced oysters recolonizing areas that were impacted. Other environmental impacts being evaluated are to threatened and endangered sea turtle species if hopper dredging is used. Hopper dredge use is expected to be limited. A biological assessment is being coordinated with the National Marine Fisheries Service and U.S. Fish and Wildlife Service. Standard best management practices currently used with hopper dredging in the Gulf of Mexico would be employed to avoid significant adverse impacts.

Dredged Material Management Plan (DMMP)

During feasibility-level analysis and design, a programmatic DMMP will be developed for the project. To develop the least cost placement plan, the most cost-efficient methods to dredge and place the material from each reach will be determined, and the plan will rely on existing placement areas (PAs), including the existing Offshore Dredged Material Disposal Site No. 1, as much as possible.

In consistency with the Corp's planning guidance, a DMMP will be developed once the TSP has been approved to allow greater focus on selecting the most appropriate channel improvement project alternatives. The study team expects to build upon the successes of the last Federal Study and beneficially use dredge materials to minimize impacts to the system to the extent practicable.

Due to the complexity of the HSC system, the study expects the use of multiple PAs near the channels spaced throughout the project area to allow significant flexibility and efficiency for dredging while minimizing impacts to the environment. New PAs that may be developed are generally desired to be within five miles of the HSC, Bayport Ship Channel, and Barbour's Cut Channel, but may range up to 7.5 miles or greater depending on the need and cost.

Construction of the TSP would generate an approximate range of 27.6- 52.5 MCY of dredged material. The 50-year incremental O&M quantity would generate an approximate range of 79.3-116.9 MCY of dredged material. The formulation of the DMMP for construction and O&M will require a programmatic approach to determine the least cost placement plan that utilizes the most cost-efficient methods to dredge and place the material from each reach.

What will happen next?

The study team will document and review the comments received and prepare responses to the comments. The TSP will be further analyzed and the DIFR-EIS will be refined. At this stage, the agency has considered all impacts of the proposed plan, and the input from public and agency comments before making the final recommendation and documentation. This is the stage where in-depth engineering and environmental analysis occurs. A Final IFR-EIS will be expected in July 2019. The Final IFR-EIS will then be submitted to Corps Headquarters for signature. A draft Record of Decision (ROD) is part of the Chief's Report package. The ROD will be signed by the Assistant Secretary of the Army for Civil Works.

How do I participate in the study process?

You may participate in this process by providing comments for consideration by the study team. Public involvement is integral to assessing the environmental consequences of the proposed project and improving the quality of the environmental and feasibility study decision making. The Corps is using this meeting to receive citizens' comments on the proposed Tentatively Selected Plan and to provide thoughts about the DMMP opportunities and potential options.

The Corps encourages full public participation to promote open communication on the issues surrounding the study. In addition, participation by federal, state, local agencies, and other interested organizations is encouraged.

Study Milestones:

- ▶ Final submittal for scoping comments – **May 26, 2016**
- ▶ Selection of focused alternatives – **July 2016**
- ▶ Identify a Tentatively Selected Plan (TSP) – **April 2017**
- ▶ DIFR-EIS/TSP made available for public review – **Sep. 2017**
- ▶ Final IFR-EIS published in the Federal Register for final comment – **July 2019**

Who do I contact for more information or to provide comments?

Mail: **U.S. Army Corps of Engineers, Galveston District**
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& Environmental Center
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Galveston, Texas 77553 1229

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*All comments must be received or postmarked by **November 13, 2017***

More information available online at:
<http://www.swg.usace.army.mil/Missions/Projects/HoustonShipChannelExpansion.aspx>