

# BRAZOS RIVER FLOOD GATES AND COLORADO RIVER LOCKS (BRFG-CRL), TX

## INLAND WATERWAYS USERS BOARD MEETING NO. 99

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US Army Corps  
of Engineers®



Brazos River Crossing



Colorado River Crossing



# BRFG-CRL PROJECT –IWUB MEETING AND SITE VISIT, DECEMBER 2023

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# BRFG-CRL PROJECT – OVERVIEW



**Authorization:** Water Resources Development Act of 2020 at an initial total project cost of \$414,144,000 (FY19 price level). Current estimate is \$844,123,195.

**Purpose/Description:** Purpose is to improve navigation safety and efficiency by upgrading the existing outdated facilities at Brazos and Colorado Rivers with new:

	<u>Brazos River</u>	<u>Colorado River</u>
Control house	1	2
Sector gate	1	2
Admin office	1	1
Warehouse & Boathouse	1 each	1 each
Channel realignment	Y	Y

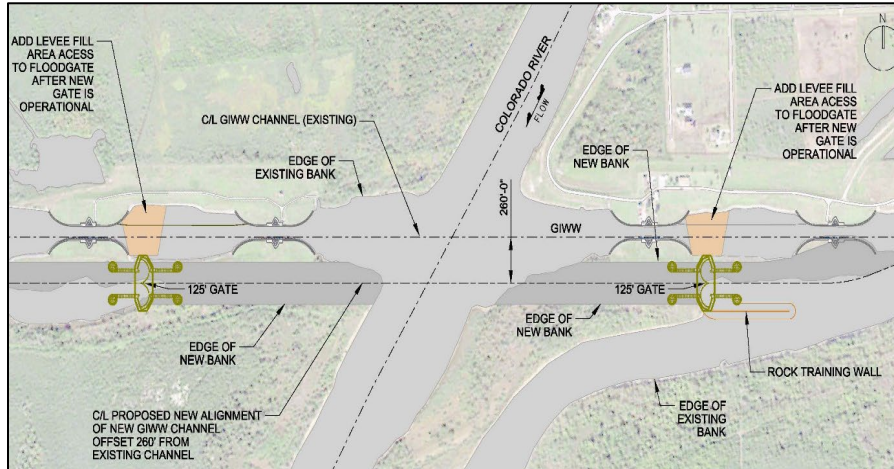
**Schedule:** Forecasted date when gates would be operational. Assumes FY24 construction contract award for Brazos River Crossing facility.

	<u>Brazos River</u>	<u>Colorado River</u>
Schedule at authorization	2025	2025
Current schedule	2028	2032

**Cost:** Fully-funded, including design, real estate, construction, and contract administration and supervision

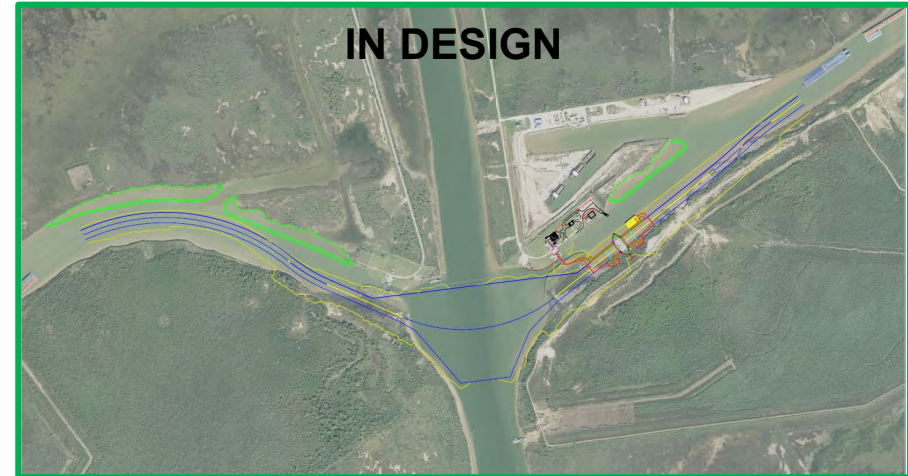
	<u>Brazos River</u>	<u>Colorado River</u>	<u>BR &amp; CR</u>
Authorization	\$159,800,000	\$254,200,000	\$414,000,000
Current *	\$324,023,195	\$520,100,000	\$844,123,195

\* Escalated cost estimates, pending FY23 cost estimates certification.



# Colorado River Crossing Plan

- **Removal of all existing buildings and 75-ft locks on both sides of the river**
- **Construction of 125-foot channel from east to west, realigned**
- **Construction of two new 125-foot gates (east and west)**
- **Construction of new control houses, administration building, warehouse, boathouse**
- **Creation of ~ 1 acre of tidal wetlands**



# Brazos River Crossing Plan

- **Removal of existing buildings and 75-ft gates on both sides of the river**
- **Construction of 125-foot channel from east to west, realigned**
- **Construction of a new 125-foot gate at the east side**
- **Construction of a new control house, administration building, warehouse, boathouse**
- **Creation of ~ 14 acres of tidal wetlands**



# BRFG-CRL PROJECT – LOCAL, STATE, NATIONAL INTERESTS



- **GIWW is a high use waterway; Energy (Petro/Chemical and its derivatives, )**
- **Upgrade infrastructure (constructed in the 1940s)**
- **Increase navigation industry efficiency:** Wider gate openings, realigned channels will allow wider tow/barge configurations, cross faster, eliminating/decreasing impact to navigation industry of \$10M+ per year, 2019 estimate
- **Increase safety:** Wider gate openings, realigned channels will eliminate/reduce collisions to gates significantly
- **Partnership efforts (GICA Captains involved; Briefings to local, state, federal governments; External stakeholder briefings)**
- **High Benefit-to-Cost Ratio (5.03 BRC; 1.65 CRC; 3.25 BRC & CRC; 2019 estimates)**
- **Category # 2 project (authorized and awaiting construction funds)**



Tows must break into a single row of barges to pass narrow gates opening which creates substantial economic impacts to the industry translating into local, state, and national economic impacts.



# BRFG-CRL PROJECT – COMPREHENSIVE TECHNICAL ANALYSIS CONDUCTED



## Tools

- 2 Numeric Models (2D and 3D)
- 1 Physical Model
- Over 350 Ship Simulations with Navigation Working Group
  - Golding – Captains Miller (24y), Hundley (15y)
  - Enterprise – Captains LeBeouf (35y), Leonard (15y)
  - Kirby – Captains Grasser (22y), Comeaux (13y)

## Calibrations / Modeled Scenarios

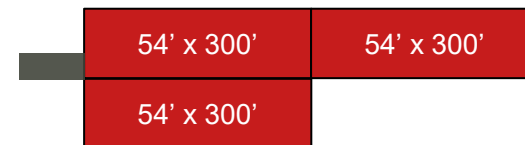
- Sunny days – Jan and Sep 2020, <5,000 cfs
- Moderate flows – May-Jul 2020, 55,000 cfs; Sep-Nov 2021, 60,000 cfs
- High flows – Aug-Sep 2017 Hurricane Harvey, >120,000 cfs
- 1-y simulations (Jul 2020 – Jul 2021) with both numerical models, focusing on sedimentation



USACE's ERDC Ship Tow Simulator



1x3 loaded (54' x 900') – Rakes forward on the front barge and backwards on the back barge.



2x2 empty (108' x 600') – All rakes forward. Three barges in this configuration. Barge position vary depending on eastbound or westbound transits.

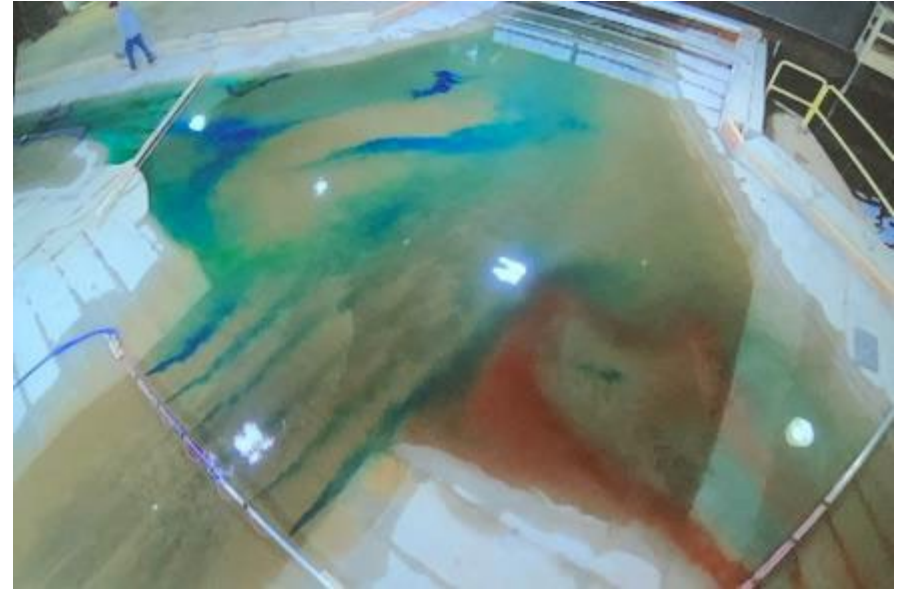
Tow configurations tested based on most common configurations used by GIWW users. Testing included two gate locations (35% design only) and different guide-walls lengths, during construction and post-construction conditions at 2 and 5 mph river flows (35% and 65% designs).





# BRFG-CRL PROJECT – PHYSICAL MODELING CONDUCTED

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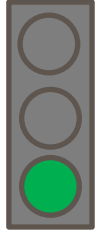
**Key Finding: Physical modeling confirms the findings from the extensive 2D and 3D numerical modeling and ship simulations conducted during 2021-2022. The authorized plan for the Brazos River Crossing is fully validated.**



# BRFG-CRL PROJECT – BLUF STATUS / DASHBOARD



## PROJECT SAFETY



NA. In Design

## PROJECT STATUS SUMMARY



**Schedule:**

	<u>Orig.</u>	<u>Last</u>	<u>Current</u>
Design	Mar 2023	Mar 2023	Jul 2023
Advertise	Apr 2023	Apr 2023	TBD

**Next Major Contract Award(s):**  
TBD

## FINANCIAL STATUS SUMMARY



Received PED	\$23,550,000
Obligated PED	\$22,869,000
Remaining PED	\$681,000
Received CONST	\$0

Data Date: 28 Feb 2023

Construction funds not appropriated in FY23

## EXECUTIVE SUMMARY:

- Design:
  - Large number of comments received for 95% design submittal, reviews are ongoing
  - Oct 2022 - H&H modeling completed
  - Mar 2023 - Physical modeling completed
  - Major design changes relative to authorized plan to date (same as previous):
    - ✓ Sector gate shifted closer to river to minimize forebay sediments deposits and avoid encroaching to nearby placement area
    - ✓ Adjusted guide-walls to aid navigation
    - ✓ Targeted mitigation areas changed, still providing requirement of 14 ac of tidal wetlands
- Construction funds not appropriated in FY23, delaying construction contract advertisement and award to FY24
- FY24 capability \$259,973,195 (BRFG only).





# BRFG-CRL PROJECT – SCHEDULE

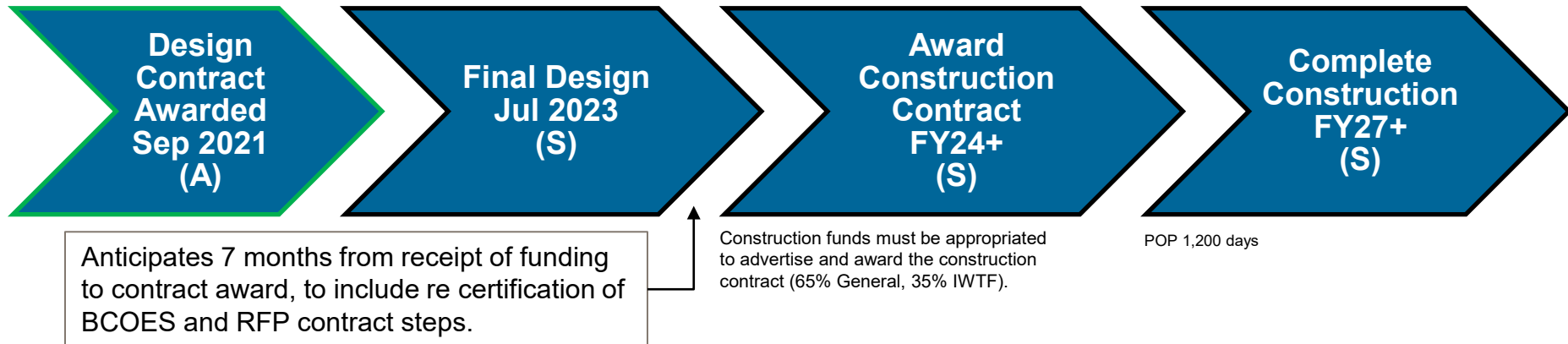


**Completed:** 65% design work Sep 2022; Numerical modeling Oct 2022; Physical Modeling Mar 2023

**Ongoing:** 95% design work still ongoing due to large number of review comments received

**Scheduled:** Complete 95% design Mar 2023, Final Design Jul 2023, Advertise FY 2024+

**Brazos River Crossing** (current schedule show completion of design and delayed contract solicitation)



**Colorado River Crossing** (current schedule shows delayed schedule due to delays for BRC)





# BRFG-CRL PROJECT – FUNDING



ITEM	TOTAL PROJECT COST ESTIMATE (Oct 2022)
Authorized Cost:	\$635,593,000
902 Limit:	\$717,548,000
Engineering & Design Cost:	\$84,959,000
Supervision & Admin Cost:	\$46,068,000
Mitigation Cost:	\$1,006,000

Source: FY23 budget estimates.

	PED	CONSTRUCTION		TOTAL (Oct 2022)
		CG (65%)	IWTF (35%)	
Total Project Cost (TPC) Estimate (Oct 2021):				\$572,342,000
FY2021 Allocation <sup>1)</sup>	\$16,618,000	\$0	\$0	\$16,618,000
FY2022 Allocation	\$6,932,000	\$0	\$0	\$6,932,000
FY2023 Allocation	\$0	\$0	\$0	\$0
Total Allocations to Date:				\$23,550,000
Remaining TPC Balance:				\$548,792,000

<sup>1)</sup> Includes \$178K reallocated feasibility funds to PED.

## Commentary:

- No construction funds appropriated in FY23. Schedule pushed to outyears as shown in previous slide.

## 5YR Fiscal Year Funding Capabilities (1) (65% CG and 35% IWTF combined; FY23 price level)

Facility	FY2024	FY2025	FY2026	FY2027	FY2028	Total (2,3)
BRC	\$ 22,000,000	\$ 12,000,000	\$ 6,500,000	\$ 0	\$ 0	\$ 40,500,000
Updated	\$ 259,973,195	\$ 22,000,000	\$ 12,000,000	\$ 6,500,000	\$ 0	\$ 300,473,195
CRC	\$ 14,223,000	\$ 15,600,000	TBD	TBD	TBD	TBD
Updated	\$ 0	\$ 25,000,000	\$ 20,100,000	\$ 2,795,000	\$ 417,225,000	\$ 465,120,000

- Capabilities are based on current escalated cost estimates, pending FY23 cost estimates certification.
- BRC total does not include \$23,386,805 of PED funds received.
- CRC total does not include \$54,980,000 estimated to complete construction.



# BRFG-CRL PROJECT – ISSUES/CHALLENGES



- **FY23 construction funds not appropriated.**
- **At least 1-yr of delay should be expected.**
  - **Depending on magnitude of delays, current conditions surveys will need to be redone.**
  - **If substantially different, design changes will be required.**
  - **Additional coordination with resource agencies may be required.**
  - **An AESVCS contract will need to be re-issued using a sole-source justification.**
- **Impacts to navigation industry to continue:**
  - **\$10M+ per year (FY2019 prices) impact to navigation industry will continue (local, state, national economic impacts to supply chain and products)**
  - **High safety risks (frequent allisions) will continue (oil and byproducts are main products)**





# BRFG-CRL PROJECT – CLOSING

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