



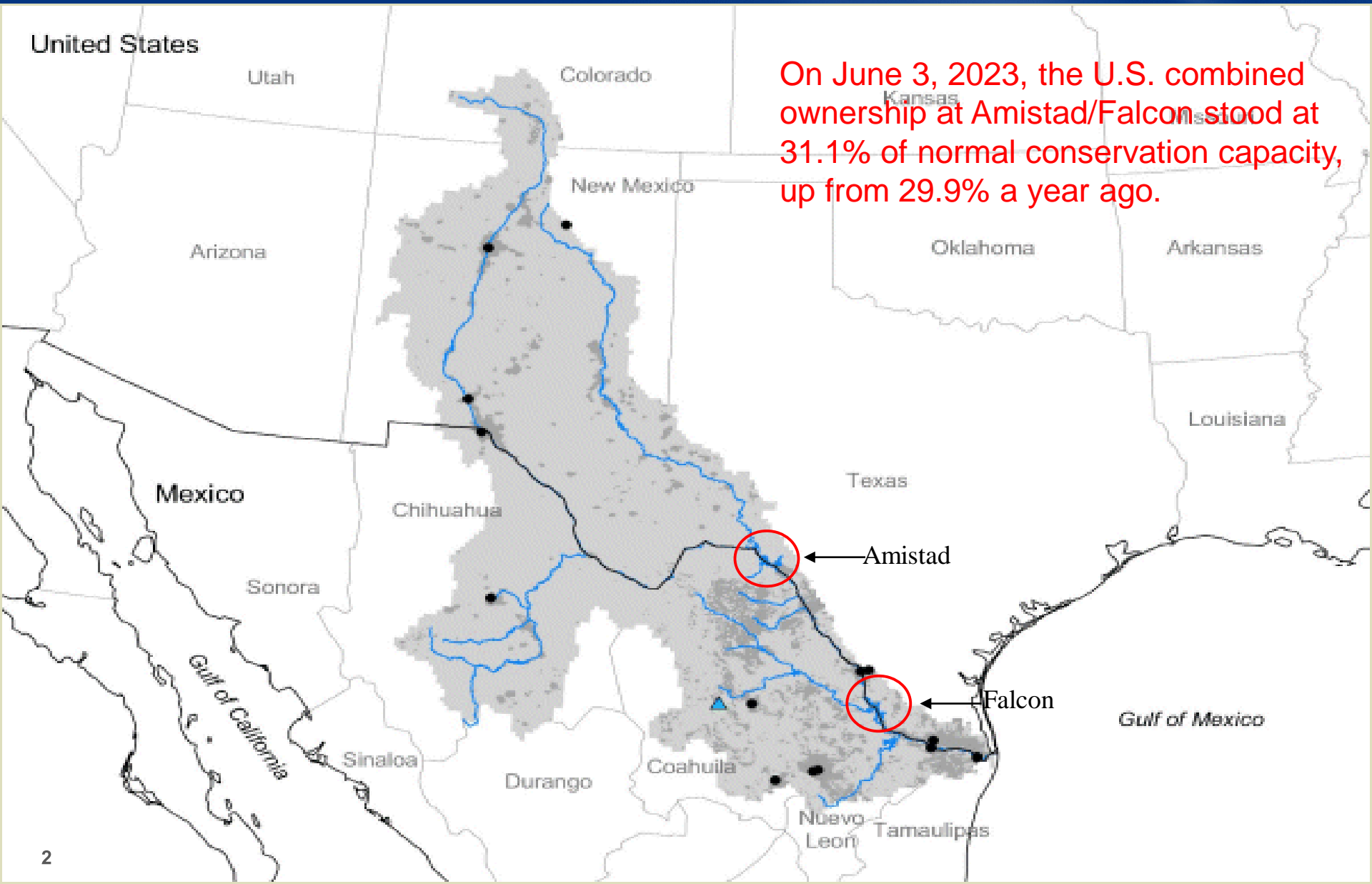
# Drought Update

*Brownsville Public Utilities Board*

*Board Meeting*

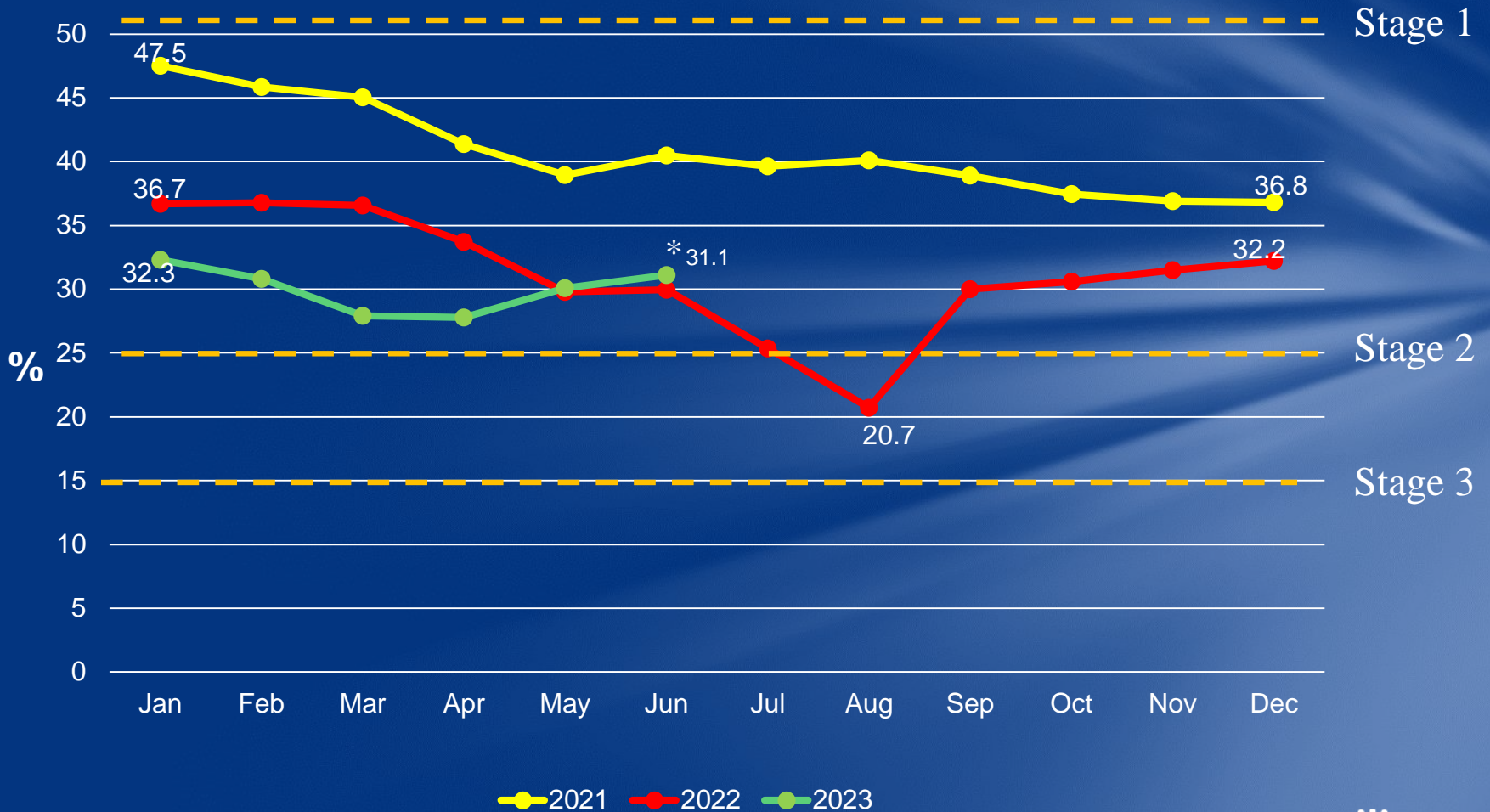
*June 15, 2023*

# Rio Grande Watershed



On June 3, 2023, the U.S. combined ownership at Amistad/Falcon stood at 31.1% of normal conservation capacity, up from 29.9% a year ago.

# U.S. Combined Ownership at Amistad/Falcon



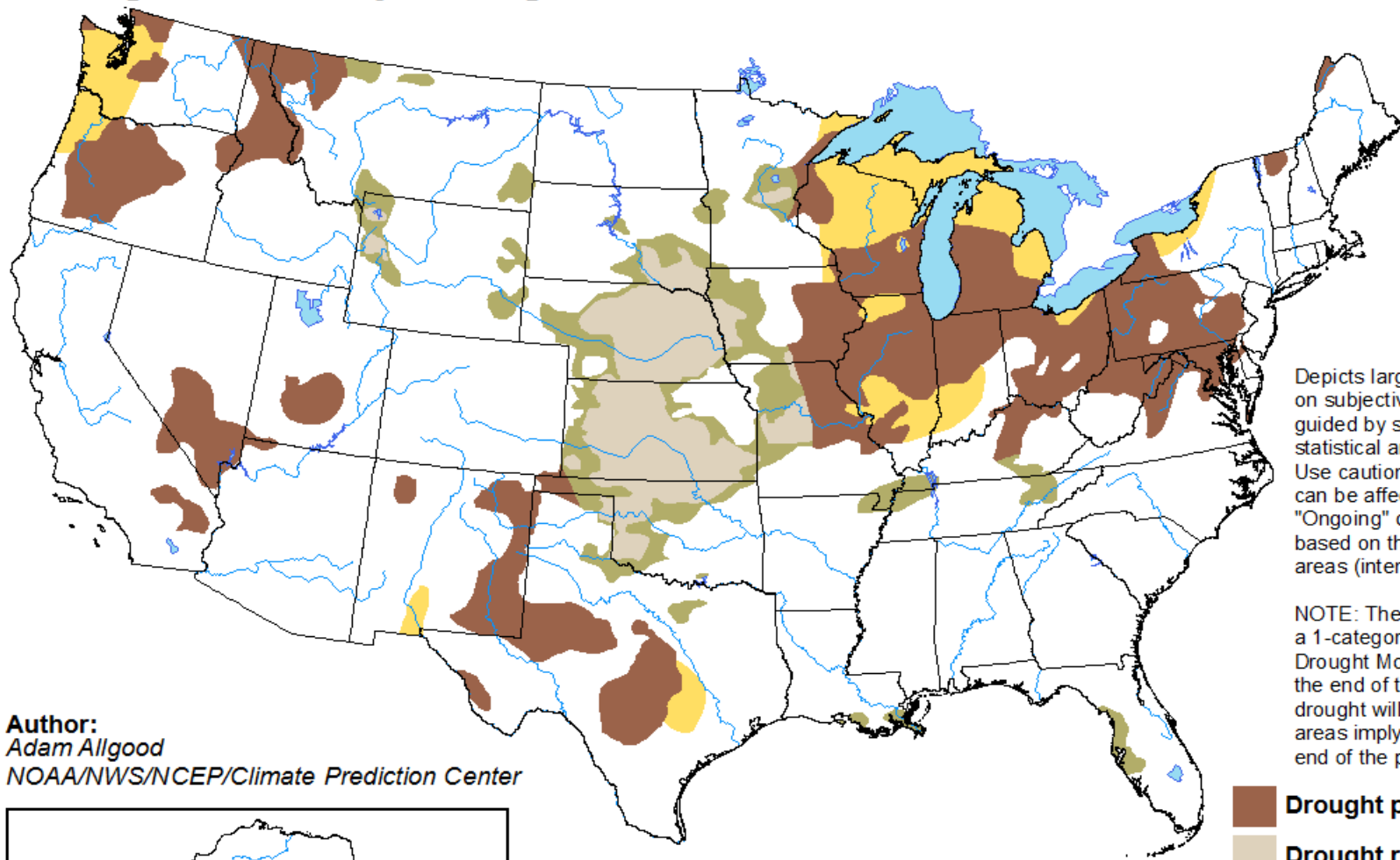
\* On June 3, 2023



# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period





Valid for June 15 - September 30, 2023  
Released June 15

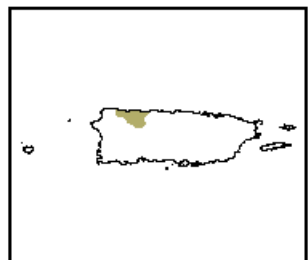
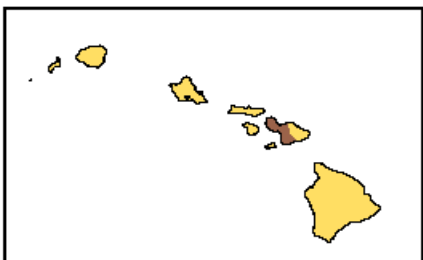
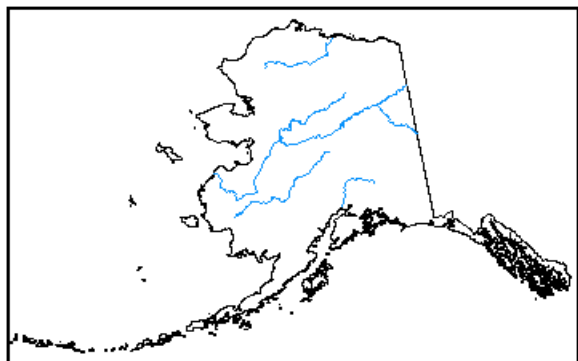


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:  
Adam Allgood  
NOAA/NWS/NCEP/Climate Prediction Center

-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZ73>

ANY  
QUESTIONS  
?

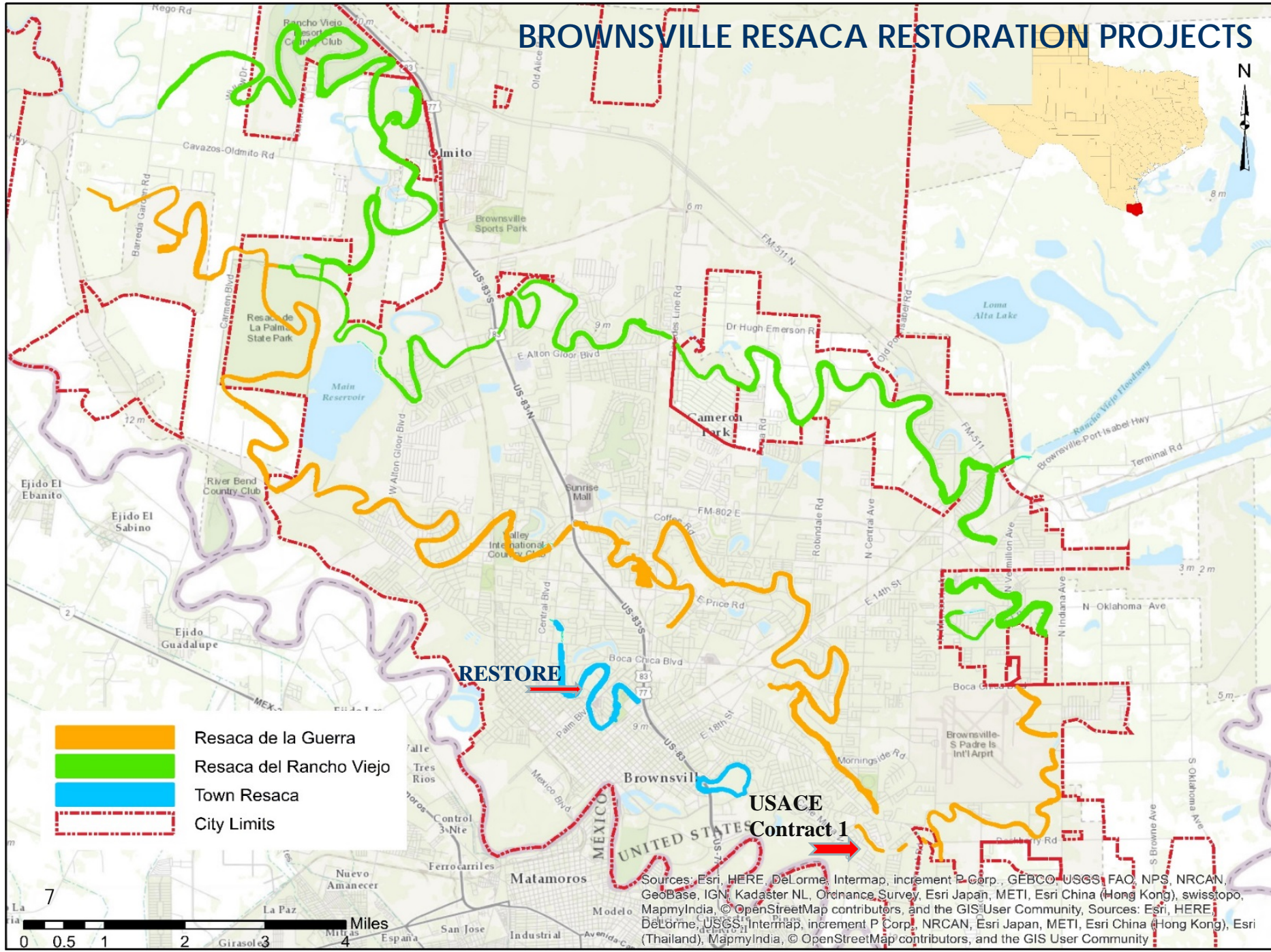


BROWNSVILLE  
PUBLIC UTILITIES BOARD



## RESACA RESTORATION PROGRAM UPDATE BOARD MEETING JUNE 2023

# BROWNSVILLE RESACA RESTORATION PROJECTS



- Resaca de la Guerra
- Resaca del Rancho Viejo
- Town Resaca
- City Limits

**RESTORE**

**USACE  
Contract 1**



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swiss topo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

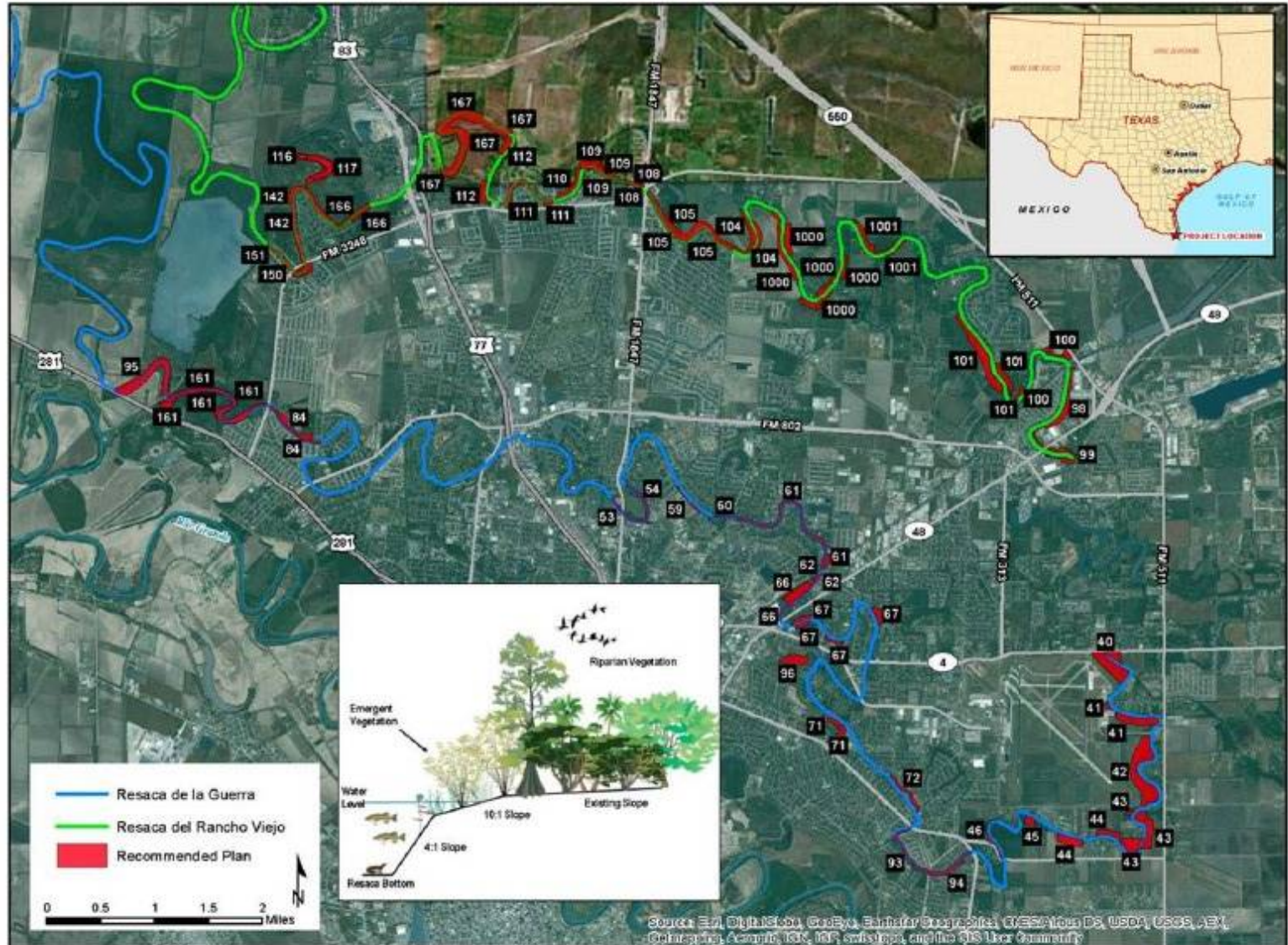
# Restoration Measures

- Dredging/excavation
- Incorporate dredge material as a soil supplement
- Planting native aquatic/emergent/riparian vegetation
- Re-shaping banks
- Install/modify water control infrastructure
- Invasive plant species management





# U.S. Army Corps of Engineers (USACE) National Ecosystem Restoration (NER) Plan



# Brownsville Resacas Feasibility

## \*NER Plan Project Cost Estimates

Item	NER Plan Cost Estimate	Cost Share
USACE	\$202,275,010	65%
Non-Federal (COB/BPUB)	\$108,917,313	35%
Total Cost (USACE & Non-Federal)	**\$311,192,323	

\* Updated cost estimate provided by USACE in 2022. USACE recertifies cost every 5 years

\*\* Total cost to be spread over 16 contracts

# Brownsville Resacas Feasibility Vegetation Communities



← Subtropical Texas Palmetto  
Woodland

Texas Ebony Snake-Eyes  
Shrubland →



→ Texas Ebony Resaca  
Forest

# Brownsville Resacas Contract 1

## Background

- March 5, 2021 - Project Management Plan (PMP) executed
- March 26, 2021 - Design Agreement (DA) executed
- April 2021 to Present – Pre-construction, Engineering and Design (PED) underway
  - Contract 1 Design Total cost: \$2,080,000
  - Contract 1 Design Non-Federal share: \$728,000

# USACE Contract 1



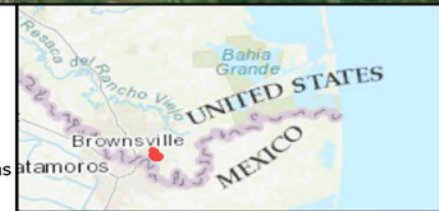
## Legend

 Resaca Construction Limit – September 2022



0 0.1 0.2 Miles

Spatial Reference  
Name: NAD 1983 2011 StatePlane Texas  
South Central FIPS 4204 FtUS



# Brownsville Resacas Contract 1 Cost Estimates\*

- Contract 1 Construction: \$3,102,470\*\*
  - Breakdown:
    - Federal Share: \$2,016,605
    - Non-Federal Share: \$1,085,864

\*Estimate update provided by USACE on May 8, 2023

\*\* Includes USACE construction management and oversight expenses

# Contract 1

## Resaca Banks



# Brownsville Resacas Contract 1 Status

## Moving Forward

- USACE engineering design 95% complete
- Irrigation/Drainage District Agreements
- USACE/City of Brownsville MOU
- Construction pending congressional funding to proceed
- Project in the in FY24 Energy and Water Development Bill (Community Project Fund)



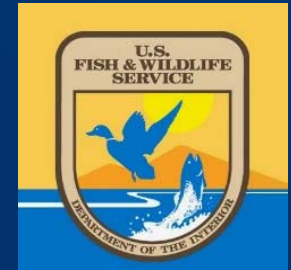


# Brownsville Resacas Feasibility National Ecosystem Restoration Plan Summary

- Project focus primarily on ecosystem restoration
  - Includes elements that improve city drainage and provide economic benefit to the city through potential increase in eco-tourism
- Recommends improvements to Resaca De La Guerra and Resaca Del Rancho Viejo systems
- 16-contract construction/improvement schedule
- Each contract completion (design to construction) may be > 2 year
- Design and bidding to be performed and managed by USACE
- Construction of improvements to be performed by private contractors
- USACE requires that land to be improved be acquired in fee simple
  - Land to be acquired via purchase and/or condemnation
- Improved land must be maintained for 75 years

# Brownsville Resacas Community Project Funding Support

- Feasibility Study Collaborators
  - USFWS, TPWD, TNC
- Letters of Support
  - City of Brownsville
  - Brownsville Independent School District
  - Cameron County Judge
  - Brownsville Community Improvement Corporation
  - Healthy Communities of Brownsville
  - Sabal Palm Sanctuary
  - The Nature Conservancy
  - Children's Museum of Brownsville
  - Brownsville Historical Association
  - Lower Rio Grande Valley Development Council
  - Texas Southmost College
  - Texas Master Naturalist RGV Chapter



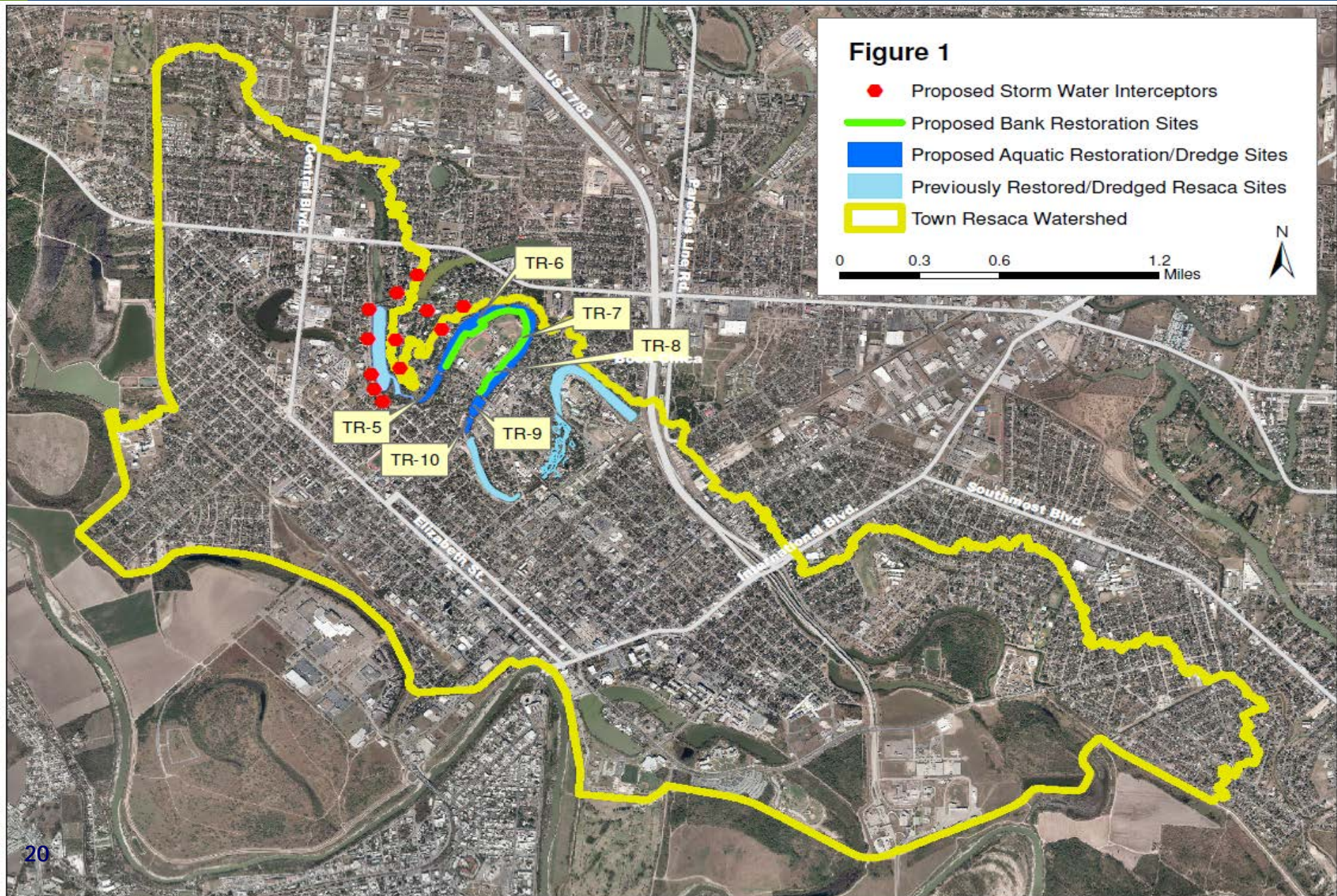
# Town Resaca Watershed Restoration Project



- \* RESTORE Act Funding
  - Project phased out over 9 years = total of \$41 Million
  - Phase I request of \$4.6 Million
    - Phase 1 = 2 year period
    - Scope = dredging, bank improvements, staffing, weirs, stormwater interceptors
- Award notification (2020)
- Dredging Begins(2021)
- Infrastructure/bank improvements Begins (2022)

\*Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act

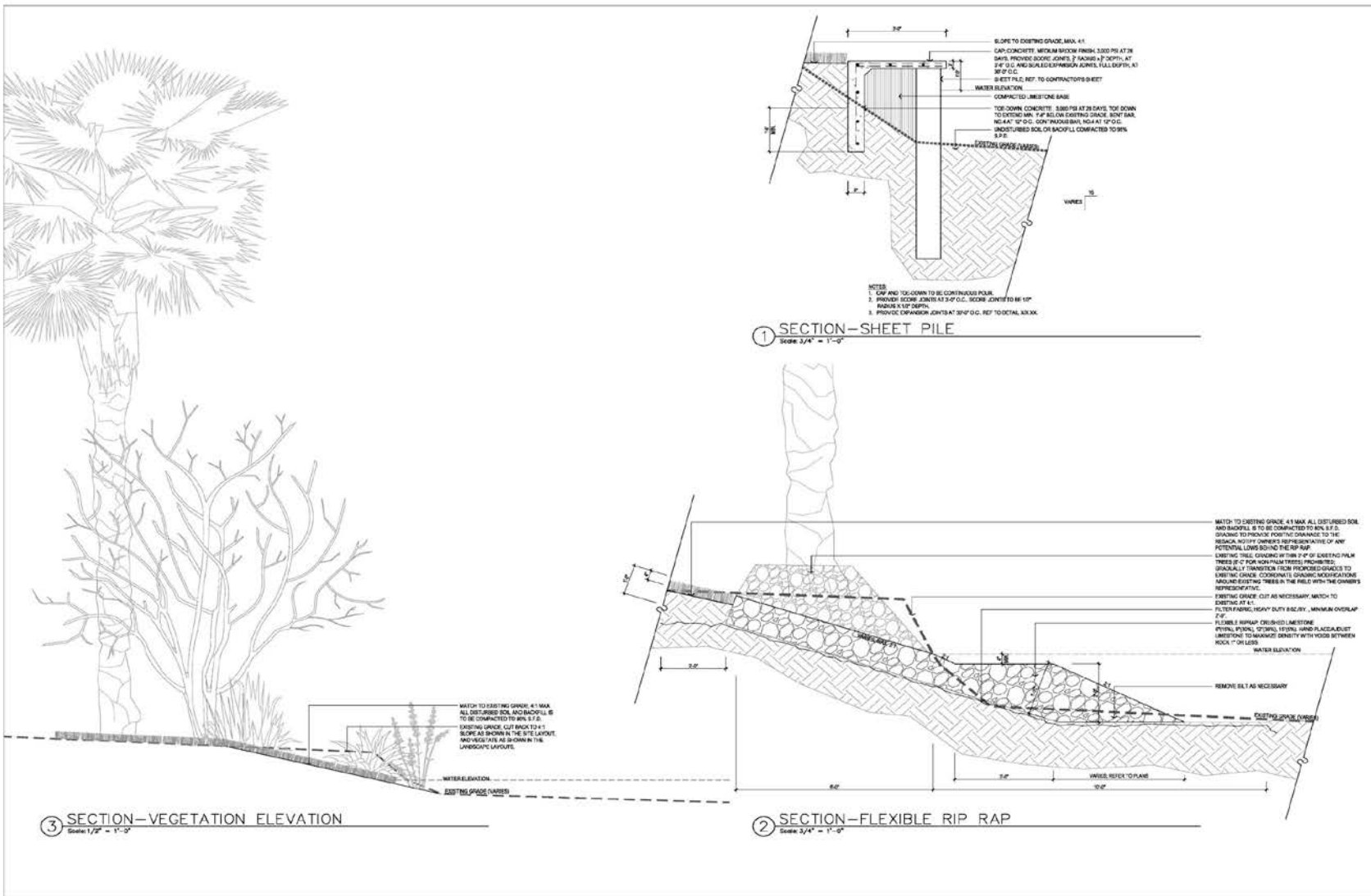
# RESTORE Phase I Scope





# RESTORE STATUS

Infrastructure/Bank Design = 90% Complete



# RESTORE Funding

Description	**Amount
Phase I Reimbursement Award	\$4,680,939
Reimbursement Requested	\$1,493,047
Reimbursement Received	\$1,068,875
Reimbursement Pending	\$424,172
Non-reimbursable Expenses	\$198,644

\* As of June 9, 2023

# RESTORE Summary

- RESTORE project focused on Town Resaca system improvements
- Total RESTORE project consists of 4 phases estimated over 9 years
- Phase 1 estimated completion is November 2024
- BPUB will have to apply for funding for each phase
- Dredging performed by BPUB staff
- Design of infrastructure/bank improvements performed by engineering consulting firm
- Construction of infrastructure/bank improvements to be completed by private contractor(s)
- RESTORE project land to be improved does not require fee simple acquisition



# Resaca Restoration Program Action Items

- Gather feedback from City Commission and community
  - Inform impacted stakeholders of project progress
  - Grow informational campaign
  - Habitat/wildlife assessments to monitor impacts of restoration effort
  - Measure/calculate siltation rate of dredged segments



# RESACA FEE

Description	Amount
Fees collected FY22 to present	*\$3,059,671
Fees collected in FY23	*\$2,438,067
Fee expensed in FY23 to present	**\$305,679

\* As of May 31, 2023

\*\* As of April 30, 2023



**Rene Mariscal**

Water Resource Manager

Office: (956) 983-6256

RMariscal@Brownsville-pub.com

# Supplemental Information

# \*RESTORE

PROJECT PHASE	REQUEST	BPUB MATCH	TOTAL	TIMELINE
I	\$3,950,939	\$730,000	\$4,680,939	2 YRS
II	\$7,783,457	\$1,069,004	\$8,852,461	2 YRS
III	\$13,740,584	\$1,750,000	\$15,490,584	2 YRS
IV	\$10,876,328	\$1,804,686	\$12,681,014	3 YRS
<b>TOTAL</b>	<b>\$36,351,308</b>	<b>\$5,353,690</b>	<b>\$41,704,998</b>	<b>9 YRS</b>

\* Cost estimates at 2017 prices

Year (Hypothetical)	Construction of Resaca Areas	Total Cost (In 2022 \$\$)	Cost Less USFWS (In 2022 \$\$)	Federal	Non-Fed	Schedule (Calendar Days)		Award (Hypothetical)	Complete	TOTAL BY CONTRACT (Fully Funded less USFWS)	01 Lands	02 Relocations	06, 30, 31 Construction; Design Engineering; Con Management; Design Contingency	06, 30, 31 Inflation and Contingency from 2022 to Finish
		221,520,801.96	\$ 199,954,599.65	\$ 129,970,489.77	\$ 69,984,109.88	5760		30-Sep-24	16-Dec-40	\$311,192,323.17	\$64,908,382.89	\$ 8,840,173.01	\$ 152,002,923.80	\$ 85,440,843.47
2024	72, 93, 94	7,827,058.09	\$ 8,291,599.56	\$ 5,389,539.71	\$ 2,902,059.85	250	263.00	30-Sep-24	20-Jun-25	\$12,908,425.97	\$2,527,264.68	\$ 372,623.82	\$ 6,407,104.20	\$ 3,601,433.27
2025	149, 150, 151	8,111,232.61	\$ 8,532,066.34	\$ 5,545,843.12	\$ 2,986,223.22	94	238.00	20-Jun-25	13-Feb-26	\$13,319,243.09	\$1,134,464.81	\$ 437,363.26	\$ 7,520,270.80	\$ 4,227,144.22
2026	116, 117, 142	27,073,327.63	\$ 11,497,743.71	\$ 7,473,533.41	\$ 4,024,210.30	487	737.00	13-Feb-26	20-Feb-28	\$17,922,596.85	\$2,586,749.73	\$ 550,468.46	\$ 9,465,065.40	\$ 5,320,313.26
2027	166	3,597,553.68	\$ -	\$ -	\$ -	125	125.00	10-Dec-26	14-Apr-27	\$0.00	\$0.00	\$ -	\$ -	\$ -
2027	167	22,085,090.60	\$ 23,383,494.04	\$ 15,199,271.12	\$ 8,184,222.91	445	445.00	13-Jul-27	30-Sep-28	\$36,411,043.75	\$6,828,033.52	\$ 1,061,859.45	\$ 18,258,210.60	\$ 10,262,940.18
2028	108, 109, 110, 111, 112	18,505,243.67	\$ 19,566,639.20	\$ 12,718,315.48	\$ 6,848,323.72	428	622.00	1-Aug-28	15-Apr-30	\$30,483,705.18	\$5,070,675.30	\$ 912,181.20	\$ 15,684,558.40	\$ 8,816,290.28
2029	104, 105	15,796,849.20	\$ 16,739,769.74	\$ 10,880,850.33	\$ 5,858,919.41	425	441.00	19-Jul-29	3-Oct-30	\$26,057,372.55	\$5,232,134.71	\$ 747,505.93	\$ 12,853,038.80	\$ 7,224,693.11
2030	98, 99, 100, 101, 201, 202	23,695,818.20	\$ 25,316,063.16	\$ 16,455,441.05	\$ 8,860,622.11	750	902.00	4-Jul-30	22-Dec-32	\$39,283,516.28	\$12,892,958.88	\$ 947,268.80	\$ 16,287,874.40	\$ 9,155,414.20
2031	161	13,141,417.26	\$ -	\$ -	\$ -	400	405.00	29-Jun-31	7-Aug-32	\$0.00	\$0.00	\$ -	\$ -	\$ -
2032	84	7,845,990.08	\$ 8,267,093.08	\$ 5,373,610.50	\$ 2,893,482.58	196	196.00	7-Aug-32	19-Feb-33	\$12,897,094.02	\$1,441,237.69	\$ 411,199.17	\$ 7,070,390.60	\$ 3,974,266.56
2033	75, 95	20,953,671.85	\$ 22,105,935.10	\$ 14,368,857.81	\$ 7,737,077.28	525	600.00	25-Jun-33	15-Feb-35	\$34,469,670.51	\$4,526,812.02	\$ 1,074,775.92	\$ 18,480,303.80	\$ 10,387,778.77
2034	53, 54, 59, 60	8,668,890.24	\$ 9,123,206.57	\$ 5,930,084.27	\$ 3,193,122.30	280	348.00	26-Jun-34	9-Jun-35	\$14,239,302.90	\$1,323,967.17	\$ 463,586.06	\$ 7,971,160.40	\$ 4,480,589.26
2035	61	9,181,455.22	\$ 9,703,093.67	\$ 6,307,010.88	\$ 3,396,082.78	275	275.00	21-Jun-35	22-Mar-36	\$15,119,866.53	\$2,393,848.22	\$ 456,790.66	\$ 7,854,316.40	\$ 4,414,911.25
2036	62, 66, 67, 71, 96	12,461,428.61	\$ 13,228,072.25	\$ 8,598,746.97	\$ 4,629,825.29	540	508.00	26-Jun-36	16-Nov-37	\$20,577,285.05	\$4,686,571.86	\$ 570,384.95	\$ 9,807,520.80	\$ 5,512,807.44
2037	45, 46	2,155,758.86	\$ 2,288,728.50	\$ 1,487,673.52	\$ 801,054.97	90	105.00	27-Jul-37	10-Oct-37	\$3,560,086.52	\$819,194.07	\$ 98,382.23	\$ 1,691,639.60	\$ 950,870.62
2038	40, 41, 42, 43, 44	20,419,628.21	\$ 21,911,094.75	\$ 14,242,211.59	\$ 7,668,883.16	450	902.00	28-Jun-38	16-Dec-40	\$33,943,113.98	\$13,444,470.24	\$ 735,783.08	\$ 12,651,469.60	\$ 7,111,391.06

Brownsville Public Utilities Board  
 Estimated Resaca Cost of Service Projections  
 June 2022 Through September 2038

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
Water Customers	54,524	55,065	55,612	56,164	56,722	57,285	57,854	58,429	59,010	59,596	60,186
New Accounts		541	547	552	558	563	569	575	581	586	590
Avg. Annual Growth		0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%

	Eff. 6/1/22	Eff. 1/1/23	Eff. 1/1/24	Eff. 1/1/25	Eff. 1/1/26						
<b>FEE</b>											
Resaca Fee - RESTORE	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50
Resaca Fee - USACE	\$ 2.00	\$ 3.75	\$ 7.50	\$ 7.50	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00
Resaca Fee - Combined	\$ 4.50	\$ 6.25	\$ 10.00	\$ 10.00	\$ 12.50*	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50

	4 months										
<b>REVENUE</b>											
Resaca Revenue - RESTORE	\$ 545,240	\$ 1,637,370	\$ 1,664,258	\$ 1,680,780	\$ 1,697,475	\$ 1,714,328	\$ 1,731,353	\$ 1,748,558	\$ 1,765,943	\$ 1,783,485	\$ 1,801,155
Resaca Revenue - USACE	\$ 436,192	\$ 2,177,170	\$ 4,373,291	\$ 5,042,340	\$ 6,368,670	\$ 6,857,310	\$ 6,925,410	\$ 6,994,230	\$ 7,063,770	\$ 7,133,940	\$ 7,204,620
Resaca Revenue - Combined	\$ 981,432	\$ 3,814,540	\$ 6,037,549	\$ 6,723,120	\$ 8,066,145	\$ 8,571,638	\$ 8,656,763	\$ 8,742,788	\$ 8,829,713	\$ 8,917,425	\$ 9,005,775
Less: 10% COB Transfer	\$ (98,143)	\$ (381,454)	\$ (603,755)	\$ (672,312)	\$ (806,615)	\$ (857,164)	\$ (865,676)	\$ (874,279)	\$ (882,971)	\$ (891,743)	\$ (900,578)
Revenue Available for Resaca Project	\$ 883,289	\$ 3,433,086	\$ 5,433,794	\$ 6,050,808	\$ 7,259,531	\$ 7,714,474	\$ 7,791,086	\$ 7,868,509	\$ 7,946,741	\$ 8,025,683	\$ 8,105,198

	4 months										
<b>COST</b>											
Resaca Cost of Service - RESTORE	\$ 421,536	\$ 1,305,902	\$ 1,435,202	\$ 1,384,558	\$ 1,729,583	\$ 1,707,741	\$ 1,445,291	\$ 1,464,415	\$ 1,431,562	\$ 1,605,137*	\$ 1,621,040
Resaca Cost of Service - USACE	\$ -	\$ -	\$ 4,517,949	\$ 4,661,735	\$ 6,272,909	\$ 12,743,865	\$ 10,669,297	\$ 9,120,080	\$ 13,749,231	\$ -	\$ 4,513,983
Resaca Maintenance - USACE	\$ -	\$ -	\$ -	\$ 25,718	\$ 52,254	\$ 87,962	\$ 160,505	\$ 221,239	\$ 273,154	\$ 351,420	\$ 351,420
Resaca Costs of Service - Combined	\$ 421,536	\$ 1,305,902	\$ 5,953,151	\$ 6,072,011	\$ 8,054,746	\$ 14,539,569	\$ 12,275,093	\$ 10,805,734	\$ 15,453,947	\$ 1,956,557	\$ 6,486,443

	4 months										
<b>NET REVENUE</b>											
Resaca Revenue - RESTORE, Net	\$ 69,180	\$ 167,731	\$ 62,630	\$ 128,144	\$ (201,856)	\$ (164,846)	\$ 112,926	\$ 109,287	\$ 157,786	\$ -	\$ -
Resaca Revenue - USACE, Net	\$ 392,573	\$ 1,959,453	\$ (581,987)	\$ (149,347)	\$ (593,360)	\$ (6,660,249)	\$ (4,596,933)	\$ (3,046,512)	\$ (7,664,992)	\$ 6,069,126	\$ 1,618,755
Resaca Revenue - Combined, Net	\$ 461,753	\$ 2,127,184	\$ (519,357)	\$ (21,203)	\$ (795,216)	\$ (6,825,095)	\$ (4,484,007)	\$ (2,937,226)	\$ (7,507,206)	\$ 6,069,126	\$ 1,618,755
Cummulative	\$ 461,753	\$ 2,588,937	\$ 2,069,580	\$ 2,048,377	\$ 1,253,161	\$ (5,571,934)	\$ (10,055,941)	\$ (12,993,166)	\$ (20,500,372)	\$ (14,431,246)	\$ (12,812,491)

\* Maintenance required for 75 years (estimated at \$620,000/yr by end of USACE project) Annual costs estimated based on completed annual contracts. \$620K not adjusted for inflation.

\* Pending correction of Scrivener's Error (fee approved by City Ordinance was \$12 in 2026 and should be \$12.50) This forecast reflects \$12.50 by 2026.

\* RESTORE grant funding ends (costs were adjusted to match RESTORE fee net revenue)

Brownsville Public Utilities Board  
 Estimated Resaca Cost of Service Projectio  
 June 2022 Through September 2038

	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038
Water Customers	60,782	61,384	61,991	62,605	63,225	63,851
New Accounts	596	602	608	614	620	626
Avg. Annual Growth	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%

FEE						
Resaca Fee - RESTORE	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50
Resaca Fee - USACE	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00
Resaca Fee - Combined	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50

REVENUE							
Resaca Revenue - RESTORE	\$ 1,818,986	\$ 1,836,994	\$ 1,855,181	\$ 1,873,547	\$ 1,892,095	\$ 1,870,546	\$ 28,917,292
Resaca Revenue - USACE	\$ 7,275,946	\$ 7,347,978	\$ 7,420,723	\$ 7,494,188	\$ 7,568,380	\$ 7,482,184	\$ 105,166,341
Resaca Revenue - Combined	\$ 9,094,932	\$ 9,184,972	\$ 9,275,903	\$ 9,367,735	\$ 9,460,475	\$ 9,352,730	\$ 134,083,633
Less: 10% COB Transfer	\$ (909,493)	\$ (918,497)	\$ (927,590)	\$ (936,773)	\$ (946,048)	\$ (935,273)	\$ (13,408,363)
Revenue Available for Resaca Project	\$ 8,185,439	\$ 8,266,475	\$ 8,348,313	\$ 8,430,961	\$ 8,514,428	\$ 8,417,457	\$ 120,675,269

COST							
Resaca Cost of Service - RESTORE	\$ 1,637,088	\$ 1,653,295	\$ 1,669,663	\$ 1,686,192	\$ 1,702,886	\$ 1,683,491	\$ 25,584,580
Resaca Cost of Service - USACE	\$ 12,064,385	\$ 4,983,756	\$ 5,291,953	\$ 7,202,050	\$ 1,246,030	\$ 11,880,090	\$ 108,917,313
<sup>1</sup> Resaca Maintenance - USACE	\$ 377,116	\$ 445,791	\$ 474,160	\$ 504,284	\$ 545,281	\$ 552,374	\$ 620,000
Resaca Costs of Service - Combined	\$ 14,078,588	\$ 7,082,842	\$ 7,435,776	\$ 9,392,526	\$ 3,494,197	\$ 14,115,955	\$ 138,924,572

35% of \$311,192,323.17. Costs escalated from \$202M.  
 add'l local match totals \$44,662,563  
 USACE maintenance for 75 years

NET REVENUE							
Resaca Revenue - RESTORE, Net	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Resaca Revenue - USACE, Net	\$ (5,893,149)	\$ 1,183,633	\$ 912,537	\$ (961,565)	\$ 5,020,231	\$ (5,698,498)	\$ (5,698,498)
Resaca Revenue - Combined, Net	\$ (5,893,149)	\$ 1,183,633	\$ 912,537	\$ (961,565)	\$ 5,020,231	\$ (5,698,498)	\$ (5,698,498)
Cummulative	\$ (18,705,640)	\$ (17,522,007)	\$ (16,609,470)	\$ (17,571,035)	\$ (12,550,804)	\$ (18,249,303)	\$ (18,249,303)

Resaca fees do not cover full grant matching due to escalation of costs.  
 Projects will need to be deferred to future periods to accommodate  
 available funding.

<sup>1</sup> Maintenance required for 75 years (estima

<sup>2</sup> Pending correction of Scrivener's Error (fe

<sup>3</sup> RESTORE grant funding ends (costs were a