2024 Davis Pond Freshwater Diversion Operations and Monitoring Summary

DPAC: 12/12/2025

Primary Purpose of the DPAC

Advise CPRA's Executive Director (DPAC Chair) on information relative to the diversion's operational management.

- Information includes recommendations from TWG, O&M reports, state and federal agency comments, public comments, and other relevant information

Primary Purpose of the TWG

Develop draft Davis Pond and Caernarvon operations plans to recommend to the DPAC/CIAC for the upcoming year.

Davis Pond Freshwater Diversion Background

- Constructed by USACE between 1997–2002 (start of operations)
- Located on the west bank of Miss. R. in St. Charles Parish near RM118 above Head of Passes
- Four gated 14 ft^2 culverts; maximum discharge: 10,650 cfs; gravity driven
- Ponding area (~ 9,400 acres) for nutrient uptake and sediment deposition
- OM&M cost-shared between the USACE (75%) and CPRA (25%)
  - 50-year OM&M plan; 2025: project year 24
- CPRA is responsible for managing diversion operations.

Goal & Objectives: Davis Pond Freshwater Diversion

Goal

Utilize a controlled Mississippi River diversion to reduce saltwater intrusion in the Barataria Basin; maintain estuarine gradient in the basin

Objectives

1. Enhance emergent marsh vegetation growth

2. Reduce marsh loss

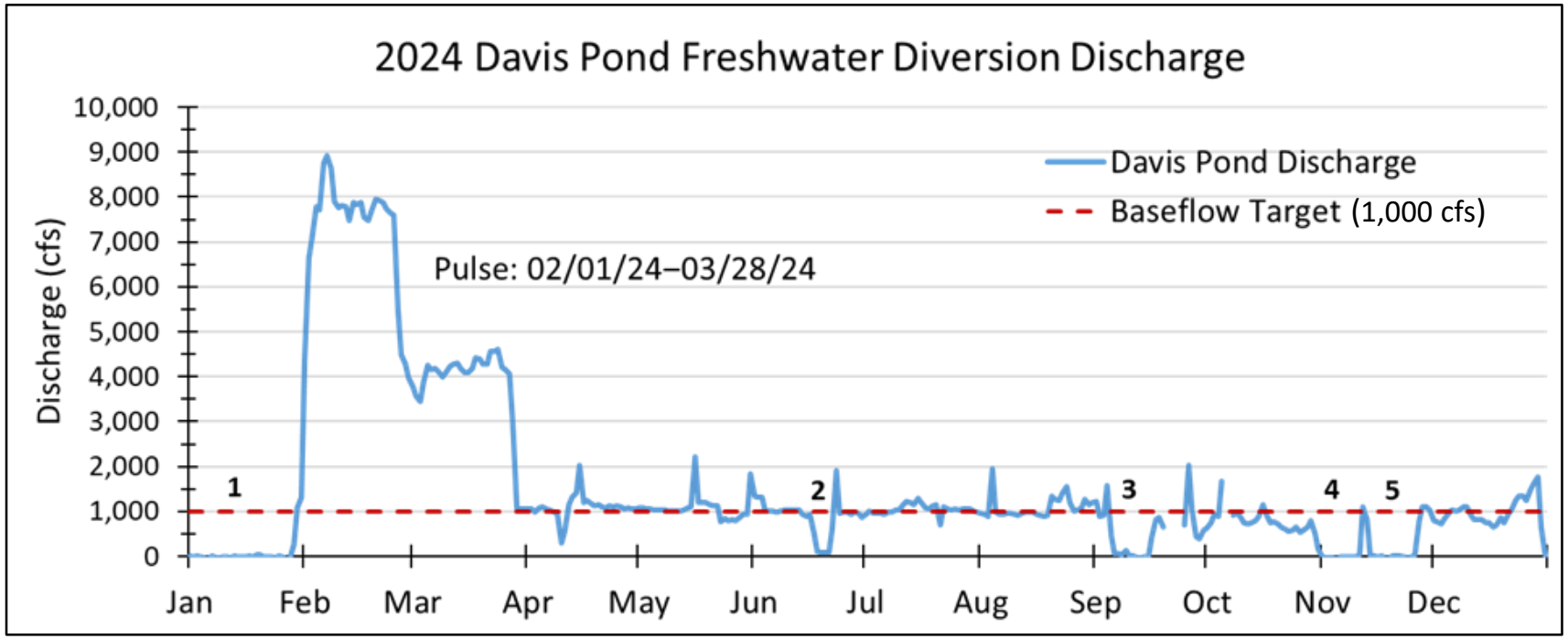
3. Increase productivity of significant commercial and recreational fish and wildlife

Davis Pond Freshwater Diversion

2024 Operations Summary

2024 Davis Pond Operations

- One pulse: **57 days** (16% of year).
- Diversion closed **74 days** (20% of the year)



Mean Discharge

Annual: 1,564 cfs

Entire Pulse: 5,764 cfs
1st half (25 days): 7,763 cfs
2nd half (32 days): 4,176 cfs

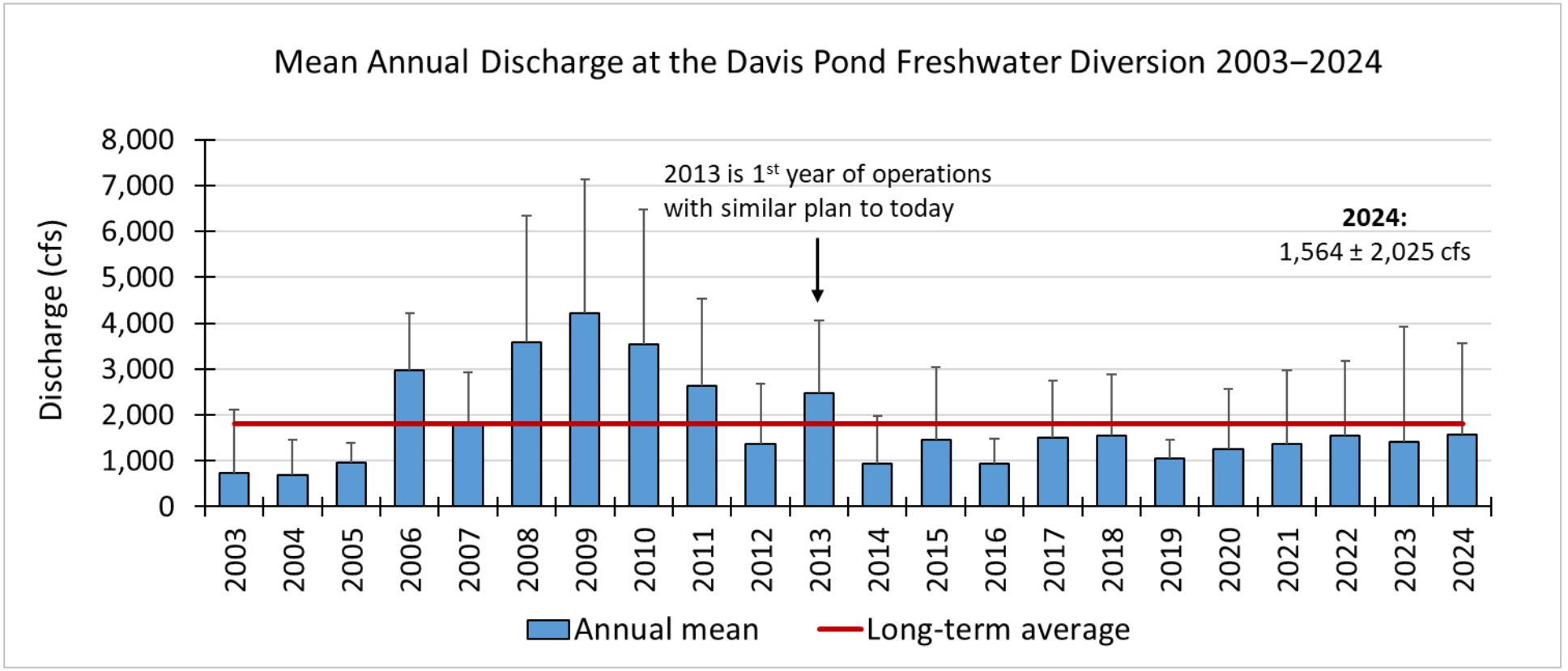
Max Discharge

9,650 cfs on 02/08/2024

1. saltwater intrusion in Miss. R, 2. NWS Coastal Flood Advisory (CFA), 3. NWS CFA/warning; Hurricane Francine, 4. low river, and 5. culvert dewatering/inspection

Annual Davis Pond Operations

- Pulsed **19 more days** in 2024 (57 days) than in 2023 (38 days)
- 2024 annual mean discharge **increased 11%** from 2023 (1,405 cfs)
- Long-term average of 1,808 cfs last exceeded in 2013



2024 Davis Pond Operations Gages for Salinity (USGS)

- **Primary gages:**

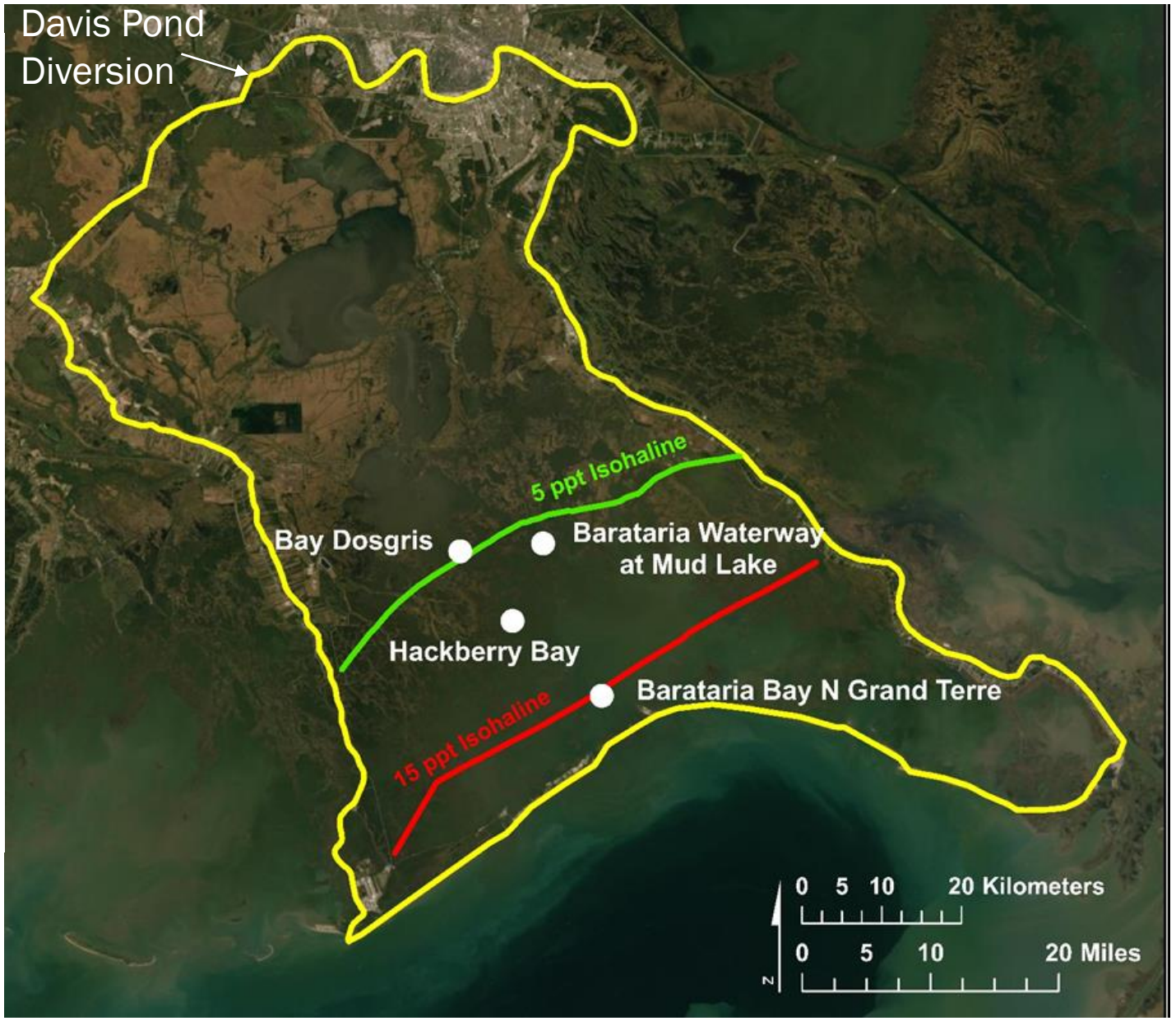
  Grand Terre

  - January–May, December
  - 15 ppt isohaline

  Bay Dosgris

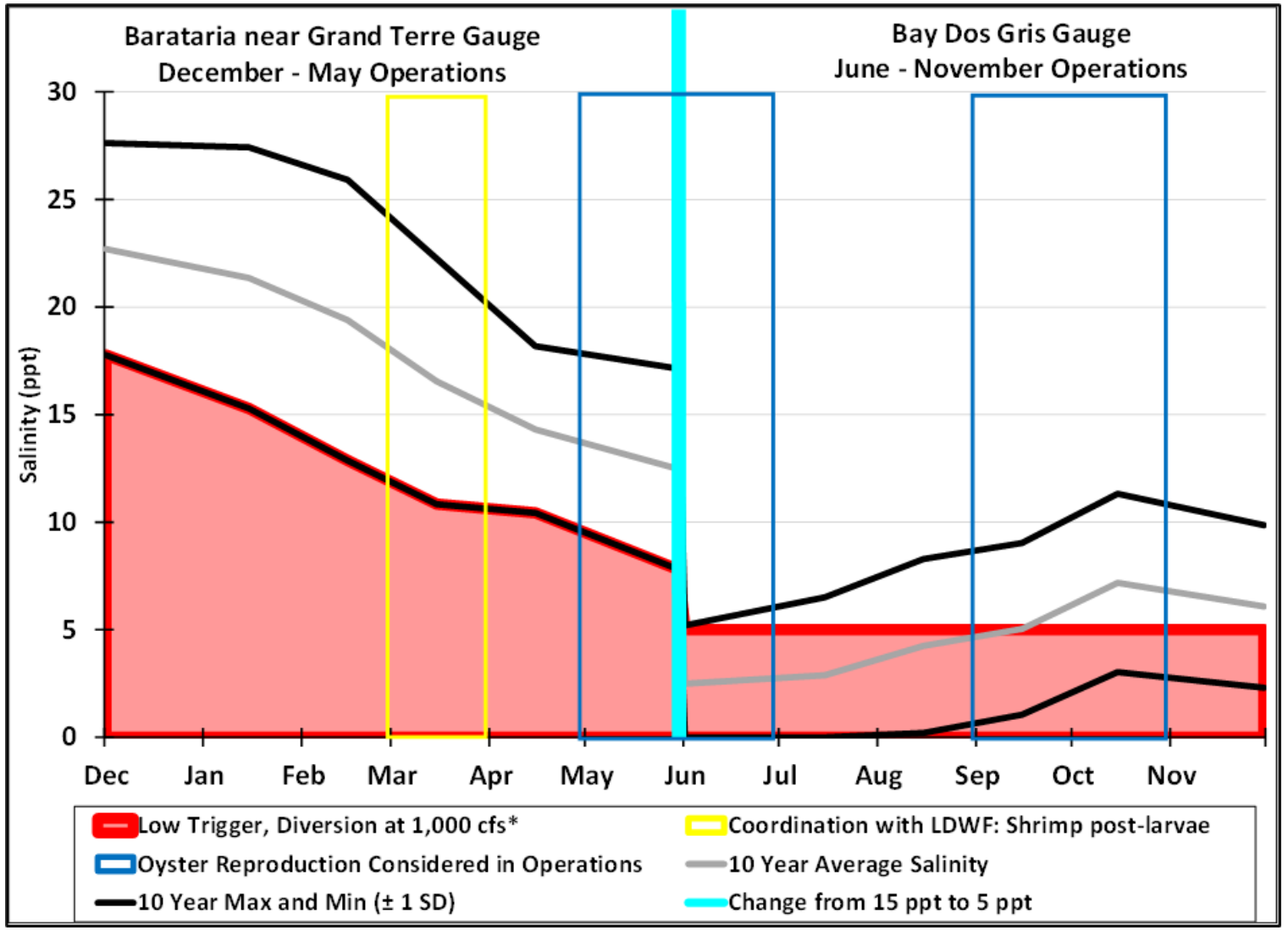
  - June–November
  - 5 ppt isohaline

- **Reference gages:** Mud Lake and Hackberry Bay



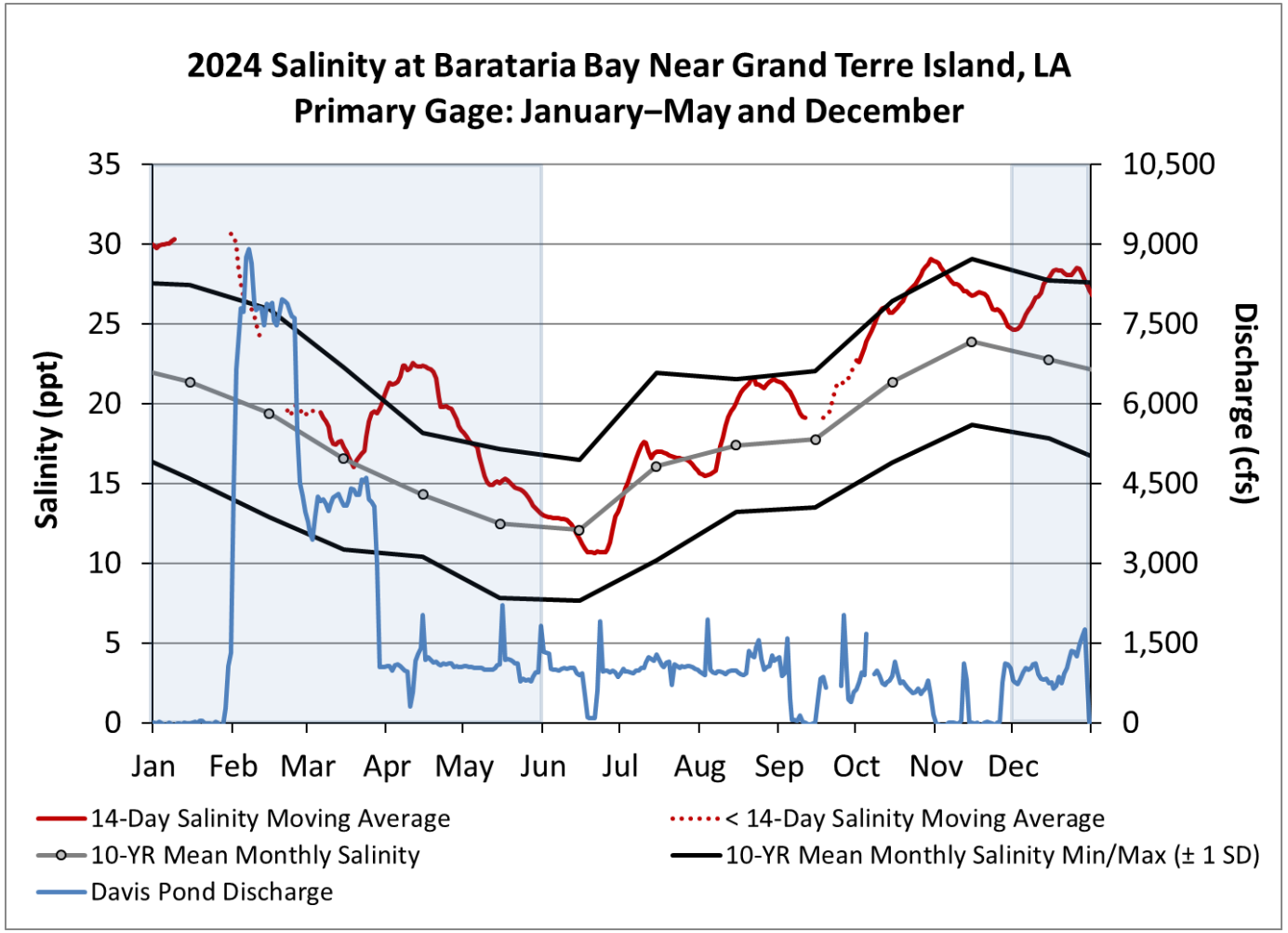
2024 Davis Pond Operations Plan

- 14-day salinity moving average
- 10-year monthly mean salinity with range (± 1 SD)
- Low salinity trigger: **higher** of -1 SD of 10-year monthly mean, or 5 ppt
- 1,000 cfs baseflow
- 3 LDWF consult periods



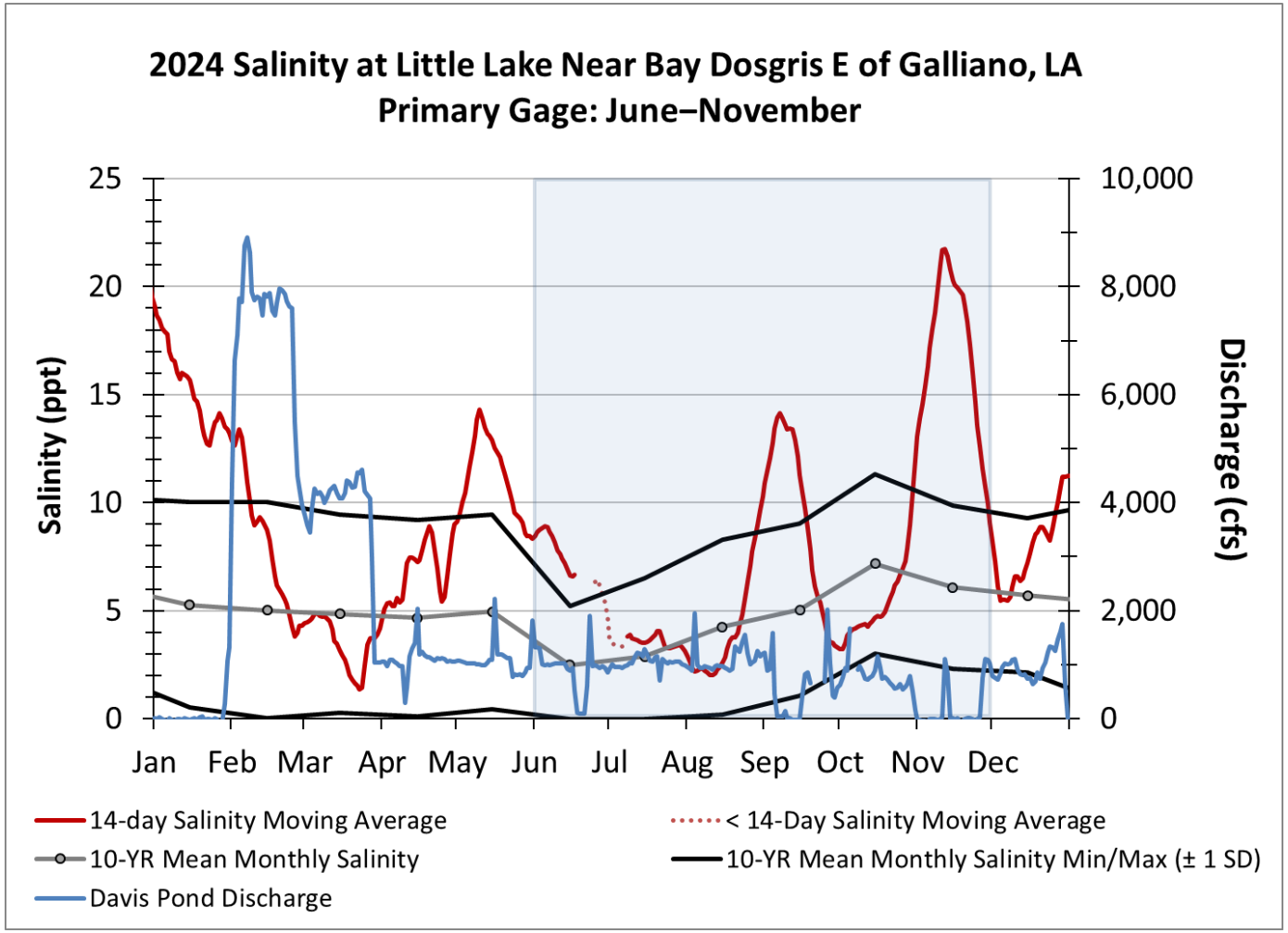
2024 Davis Pond Operations–Grand Terre (15 ppt)

- 14-day salinity moving average:
  - Annual mean: **20.8** ppt
  - Mean when used for operations: **21.2** ppt
- 14-day salinity related to range <u>when used for operations:</u>
  - In range: 54%
  - > upper range: 46%
- Considering operational constraints, could have pulsed approximately **64 additional days** (maximum).



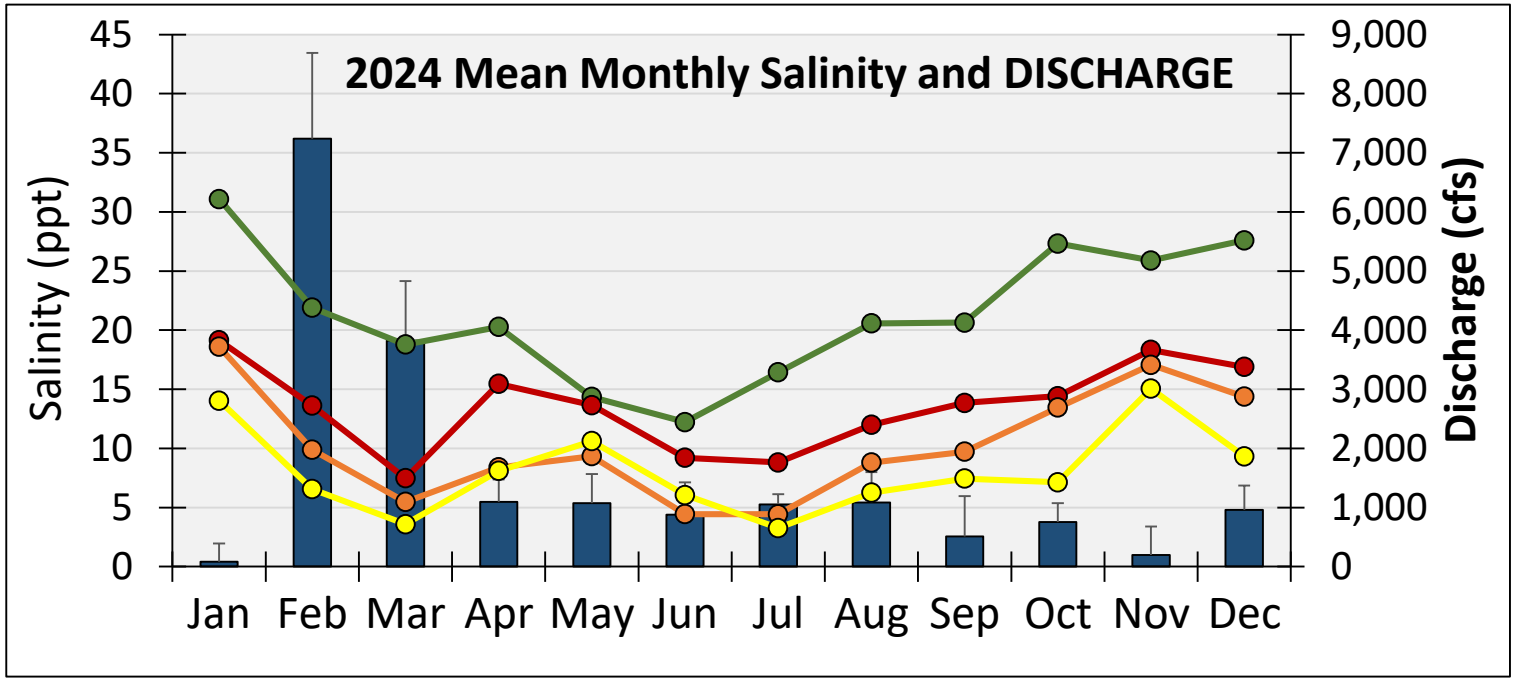
2024 Davis Pond Operations–Bay Dosgris (5 ppt)

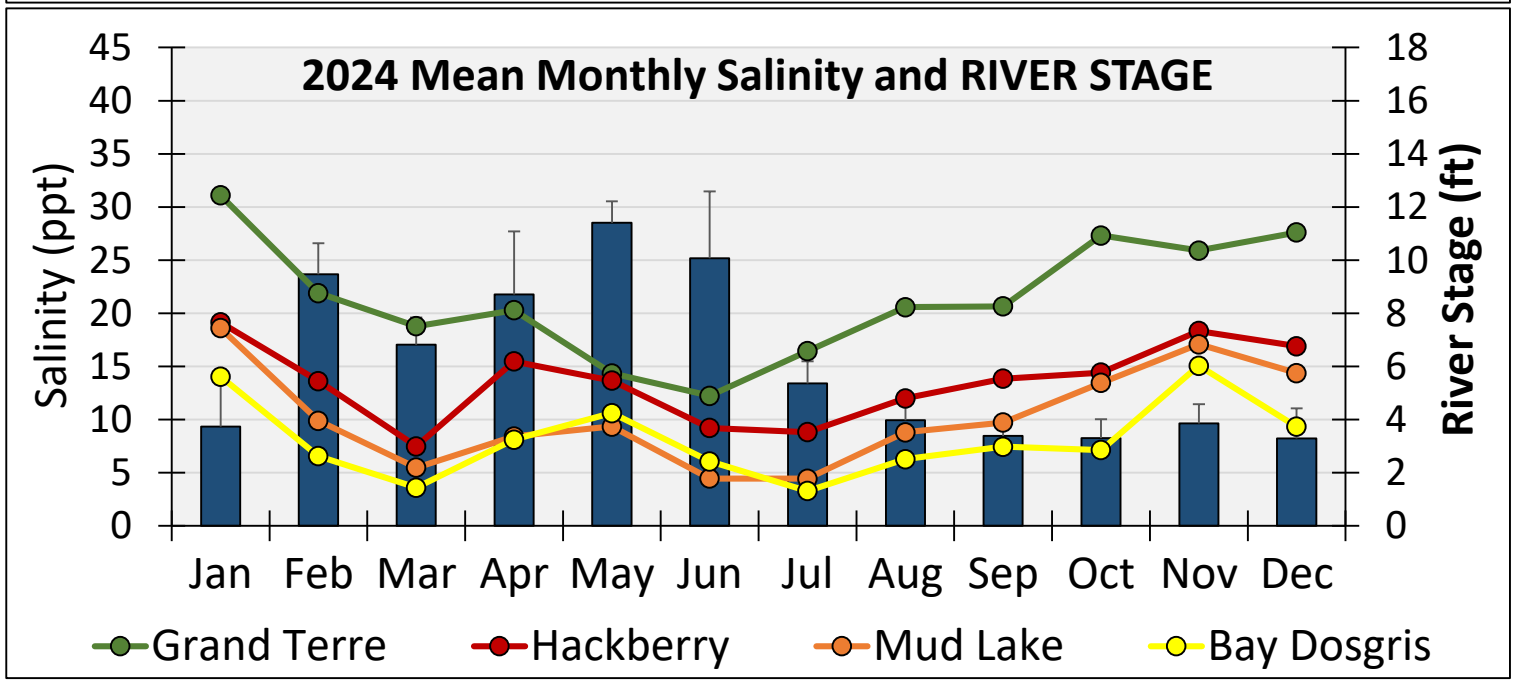
- 14-day salinity moving average:
  - Annual mean: **8.4** ppt
  - Mean when used for operations: **8.0** ppt
- 14-day salinity related to range <u>when used for operations:</u>
  - In range: 59%
  - > upper range: 41%
- Considering operational constraints, could have pulsed approximately **28 days** (maximum).



Monthly Salinity, Discharge and River Stage

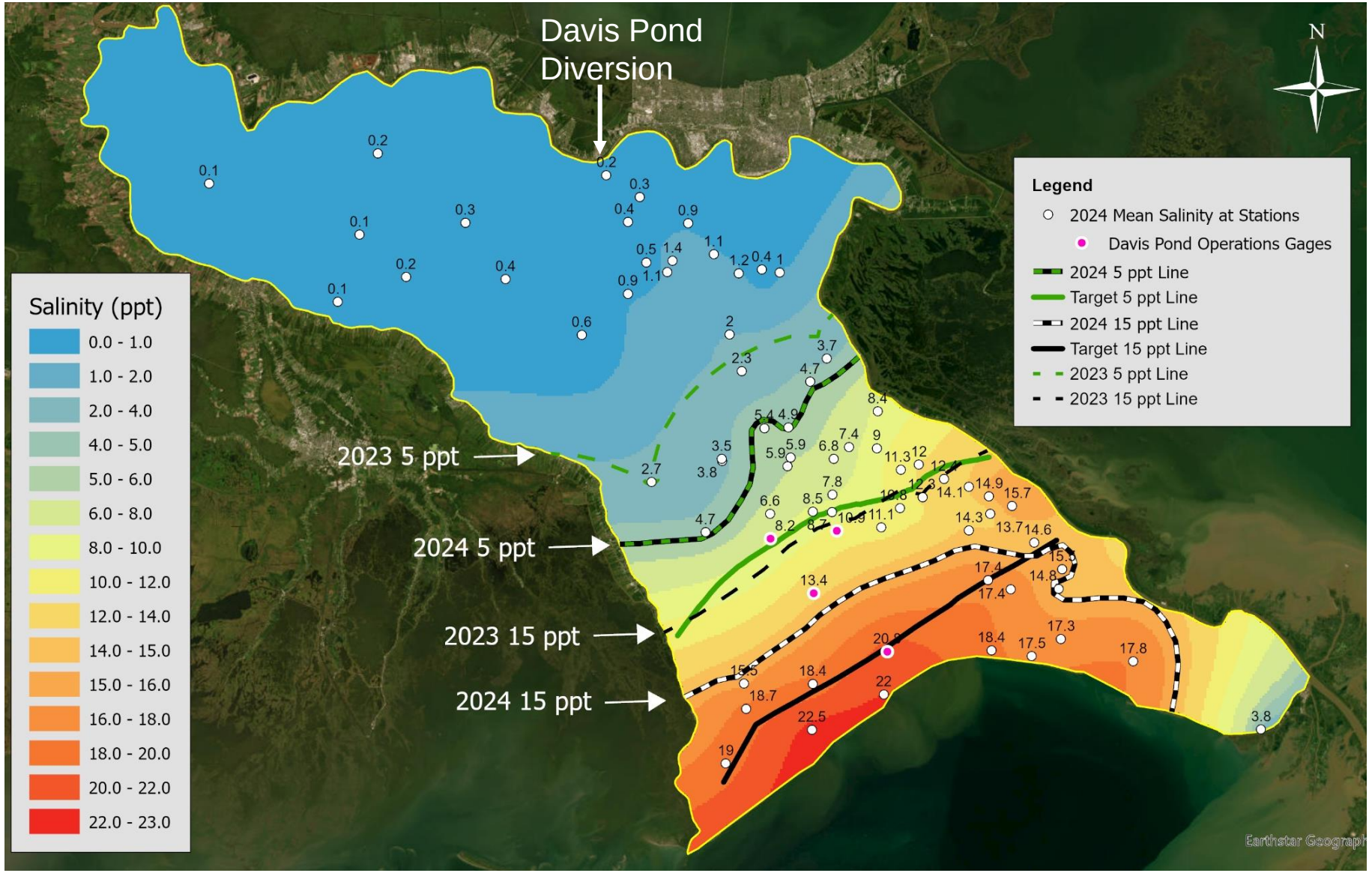
- **Jan:** diversion closed; low river–**HIGHEST SALINITY**
- **Feb/Mar: HIGHEST DISCHARGE**; river rises; salinity declines
- **Discharge:** baseflow or < April–Dec
- **May/June: HIGHEST RIVER STAGE;** salinity declines
- **River stage:** ≤ 4 ft Aug–Dec salinity increases summer–fall
- Tides, wind speed/direction, precipitation also impact salinity.





2024 Davis Pond Annual Interpolated Salinity

- **Freshest** in NW (0.1 ppt); **saltiest** in SW (22.5 ppt)
- Miss. R impacts in SE
- <u>2024 **5 ppt** line:</u> 3–13 miles upbasin of target; **more saline**
- <u>2024 **15 ppt** line:</u> ~ 5 miles upbasin of target; **more saline**
- Basin was **fresher** in 2024 than in 2023.

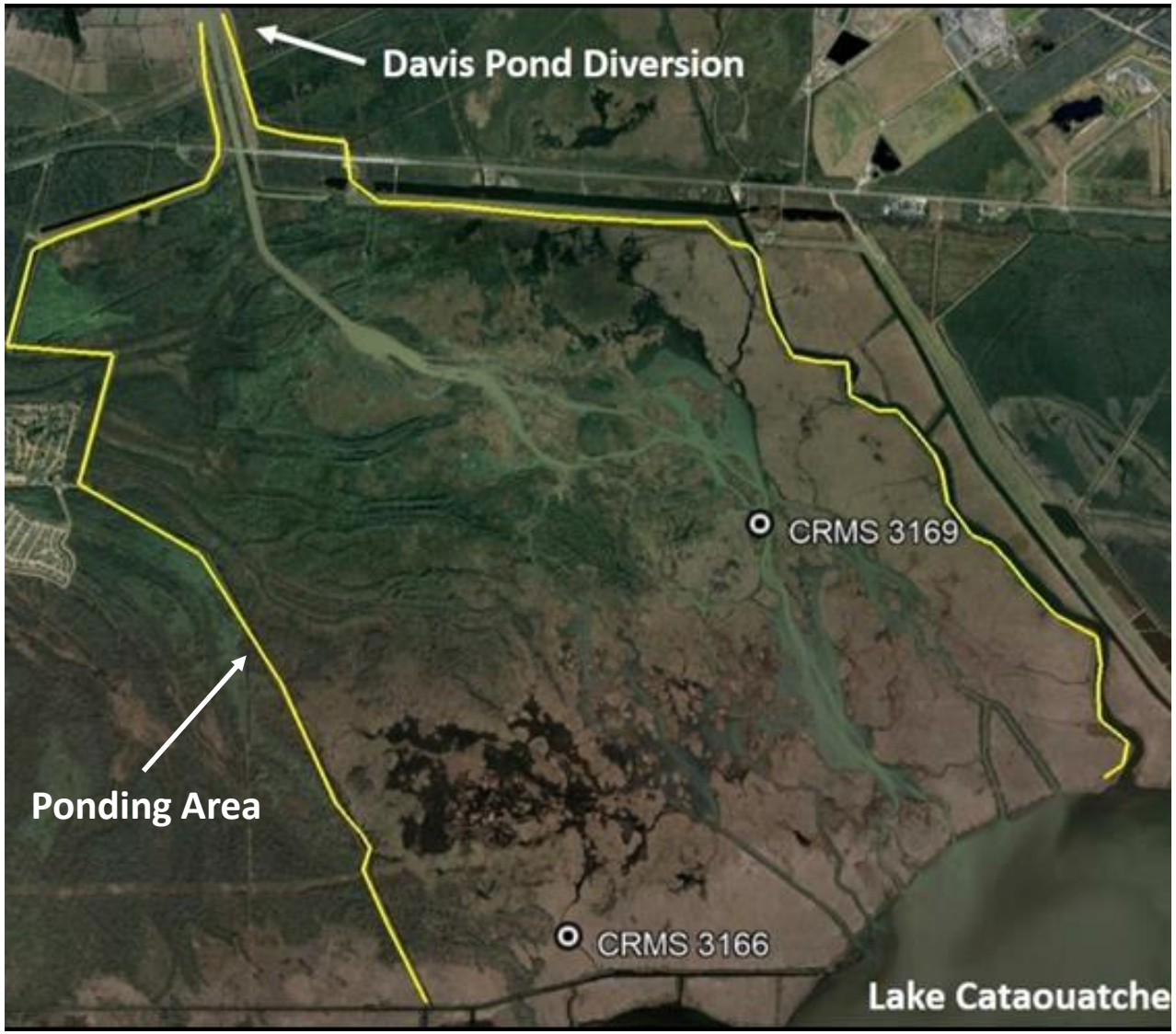


Davis Pond Freshwater Diversion

2024 Vegetation

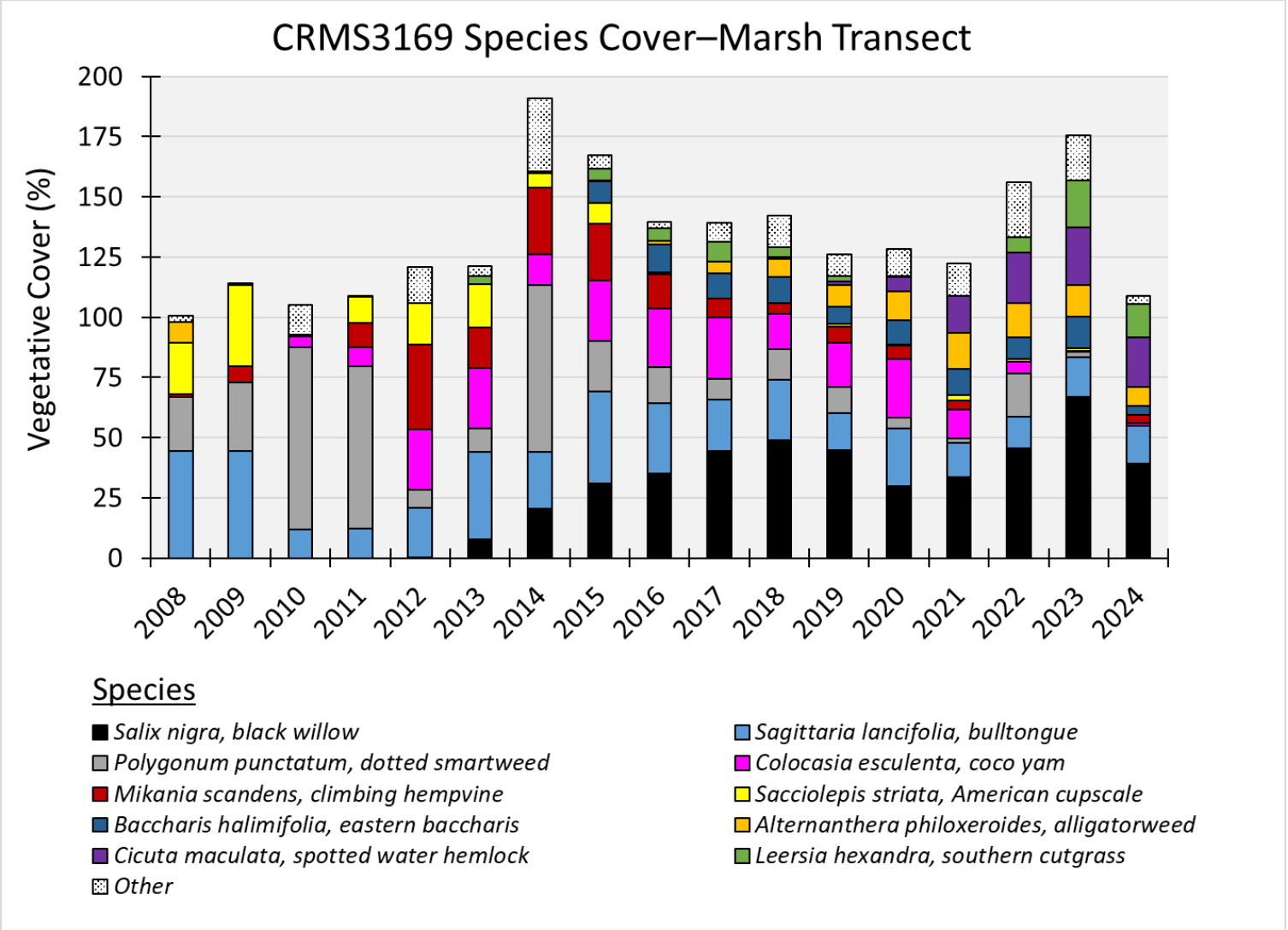
Vegetation Monitoring: Coastwide Reference Monitoring System (CRMS)

- Two CRMS sites in the ponding area (2008)
- **CRMS3169**: in direct flow path; 4.5 miles from diversion
  - Site transitioned from floating marsh, to attached marsh, to developing forest.
  - Forested transect added in 2021
- **CRMS3166**: out of direct flow path

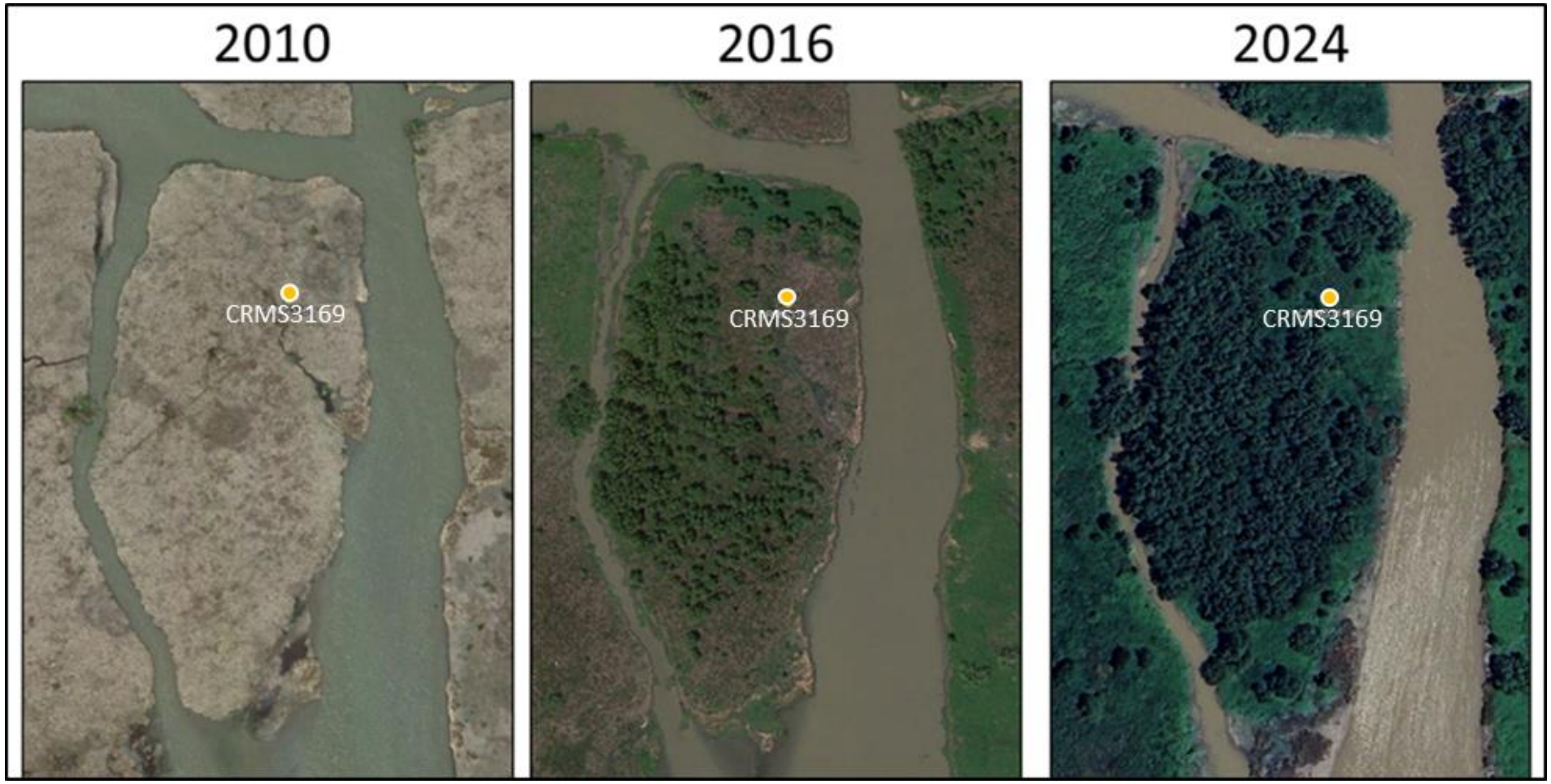


CRMS3169: Vegetation

- **Black willow:** highest mean cover since 2016.
  - 1st noted in 2012 after several years of high flow
- Canopy cover **increased** from 27% (2021) to 57% (2024)
- # of tagged trees **increased** from 77 (2021) to 82 (2024). All black willow.
- Woody species: baccharis, wax myrtle, buttonbush, red mulberry



CRMS3169: Transition



- USGS land-water analyses being conducted of ponding area pre/post construction (1998/2024).
- Results available in 2025 or 2026 annual report.

Davis Pond Freshwater Diversion

2024 Wildlife and Fisheries Summary

2024 Barataria Basin: Wildlife and Fisheries

- LDWF monitoring is used for wildlife and fisheries management: setting seasons, establishing fishing regulations for species, determining population size, etc.

- Fisheries data presented were collected through **fisheries independent** monitoring

- Fisheries data collection methodologies and stations have been more consistent the **past 10/11 years.** Comparisons in this time frame are more reliable.

- All fisheries data in this report are available through CIMS.

- Additional LDWF fisheries information can be found in the report *2024 Annual Report-Coastwide Fish and Shellfish Monitoring Program FY24–26*. LDWF Marine Fisheries Section. Available through CIMS.

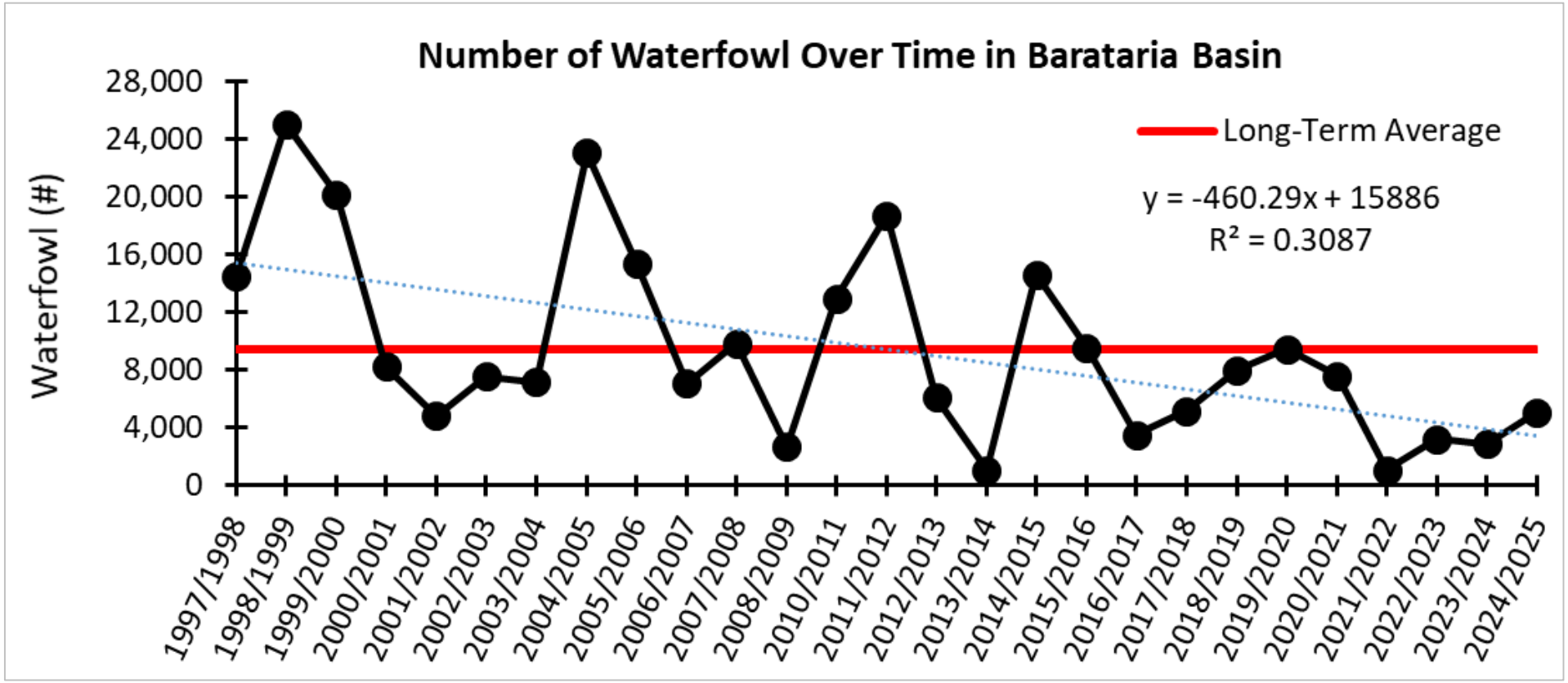
2024/2025 Barataria Basin: Aerial Waterfowl Surveys

- LDWF surveys: Sept, Nov, Dec, Jan
  - No Sept 2024 survey (H. Francine)
- 2024/2025 survey:
  - 5,072 birds
  - 14 species
  - Most in fresh marsh (80%)
  - Most surveyed in Jan (2,797)
- Coots were most abundant, followed by gadwall and blue-winged teal
- Black-bellied whistling ducks were the 6th most abundant species; none were counted during the 2023/2024 survey

Common Name	Fresh	Intermediate	Brackish	Salt	Other	Total
American coot	3,822	209			55	4,086
Black-bellied whistling duck					112	112
Blue-winged teal	30	53			145	228
Bufflehead				7		7
Canvasback				12		12
Common goldeneye				2		2
Gadwall	16	2	93	126		237
Green-winged teal	28	13	3	18		62
Hooded merganser			9	131		140
Mottled duck	10	12	4	8		34
Northern pintail			4			4
Ring-necked duck				4	12	16
Scaup: lesser and greater	87		4	41		132
Total # by Marsh Type	**3,993**	**289**	**117**	**349**	**324**	**5,072**

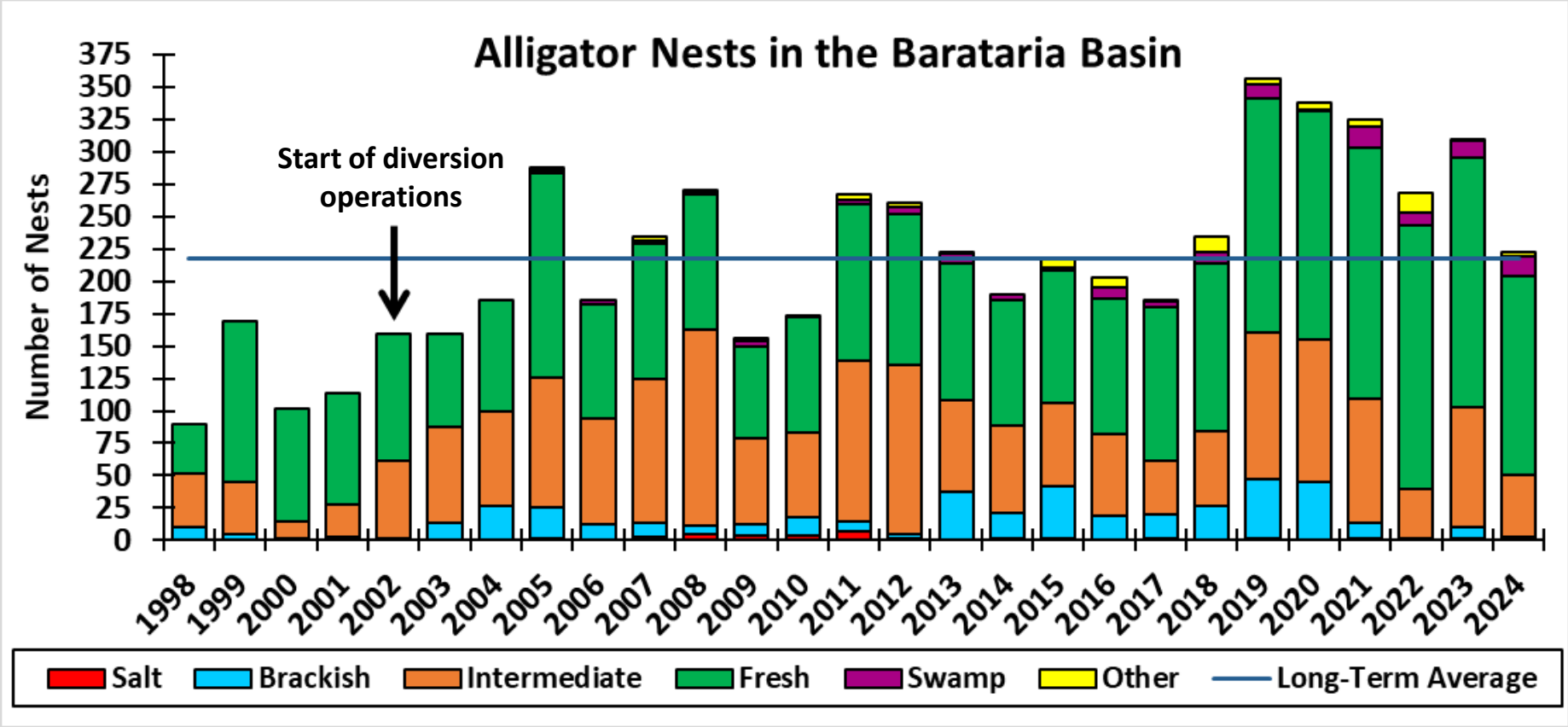
2024/2025 Barataria Basin: Waterfowl

- **75% increase** from 2023/2024 survey (2,900 birds)
- Counts below LTA (9,442 birds) since 2020/2021 season
- Counts fluctuate over years; Hurricane Ida impacts: 08/29/2021



2024 Barataria Basin: Alligators

- LDWF conducts annual aerial nest surveys (June 22–23, 2024)
- 2024: 223 nests; 28% decline from 2023 (recent declining trend); still above LTA (218 nests)
- Previous 5 years had 4 of the 5 highest counts for alligators in the basin since 1998



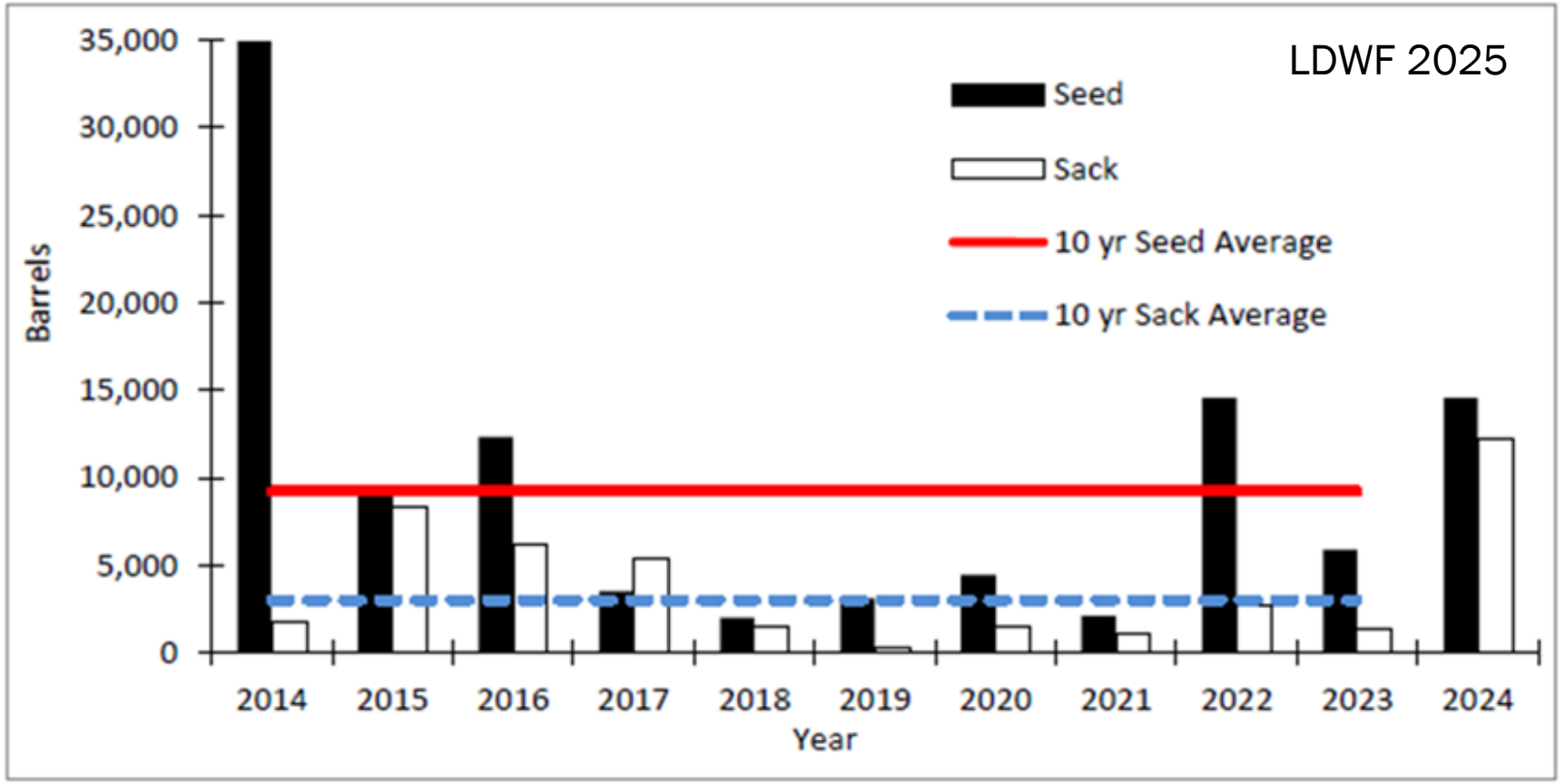
2024 Barataria Basin: Oysters

- Square-meter sampling to assess resources on public seed grounds
- 8 stations in Hackberry Bay, 1 station in Barataria Bay
- July: standard LDWF sampling; May and Sept: SWAMP sampling
- **Seed** oysters: < 3 inches long; **sack** oysters: ≥ 3 inches long, harvestable oysters

2024 LDWF Oyster Stock Assessment (1 m^2): Barataria Basin				
Sampling Month	**Seed (bbl)**	**Sack (bbl)**	**Total Stock (bbl)**	**% Change from 2023 Total Stock**
May–SWAMP	**22,576** (2023: 5,583)	**4,497** (2023: 1,499)	**27,072** (2023: 7,082)	**+282**
July–Standard	**14,569** (2023: 5,902)	**12,163** (2023: 1,349)	**26,732** (2023: 7,251)	**+269**
September–SWAMP	**10,117** (2023: 23,082)	**2,829** (2023: 4,122)	**12,946** (2023: 27,204)	**-52**

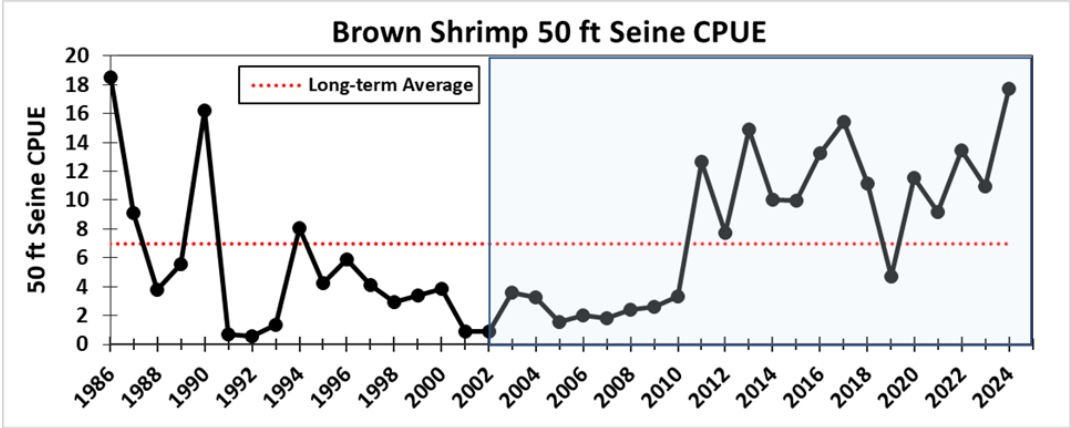
2024 Barataria Basin: Oysters (July sampling)

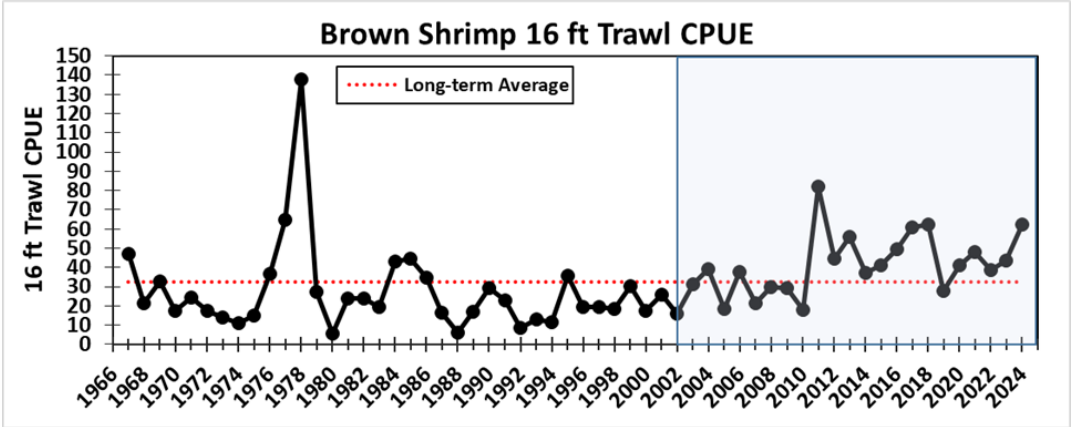
- 2024 seed stock: 58% increase from previous 10-year average of 9,230 barrels
- 2024 sack stock: 303% increase from previous 10-year average of 3,018 barrels

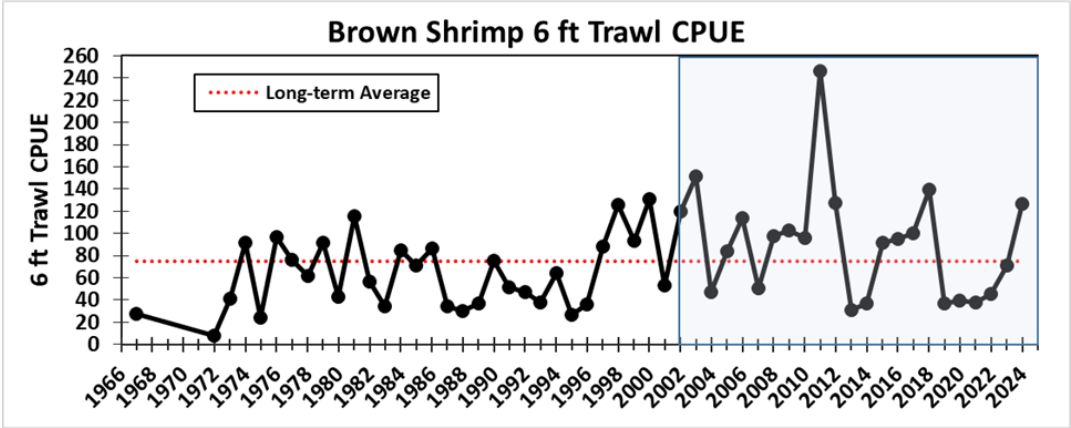


2024 Barataria Basin: Brown Shrimp

- Dominant shrimp landed during the spring inshore season (May–July)
- All gear types: 2024 catch per unit effort (CPUE) **increased** from 2023 and was **above** LTA
  - 50 ft seines: CPUE: 17.7; **highest** since 1986; 2nd highest recorded
  - 16 ft trawls: CPUE: 62.1
  - 6 ft trawls: CPUE: 126.9; last rose above LTA in 2018

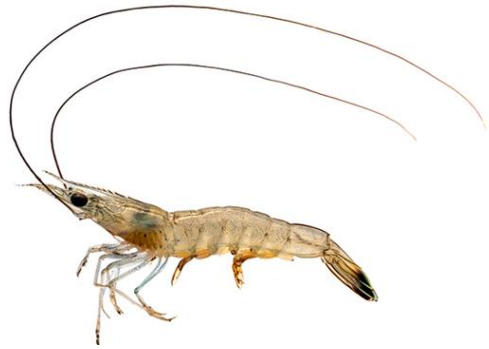


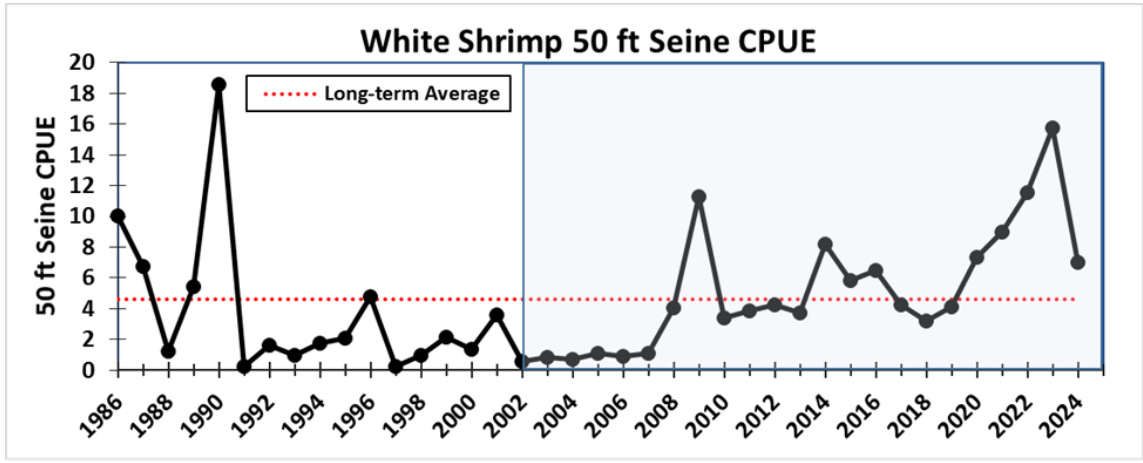


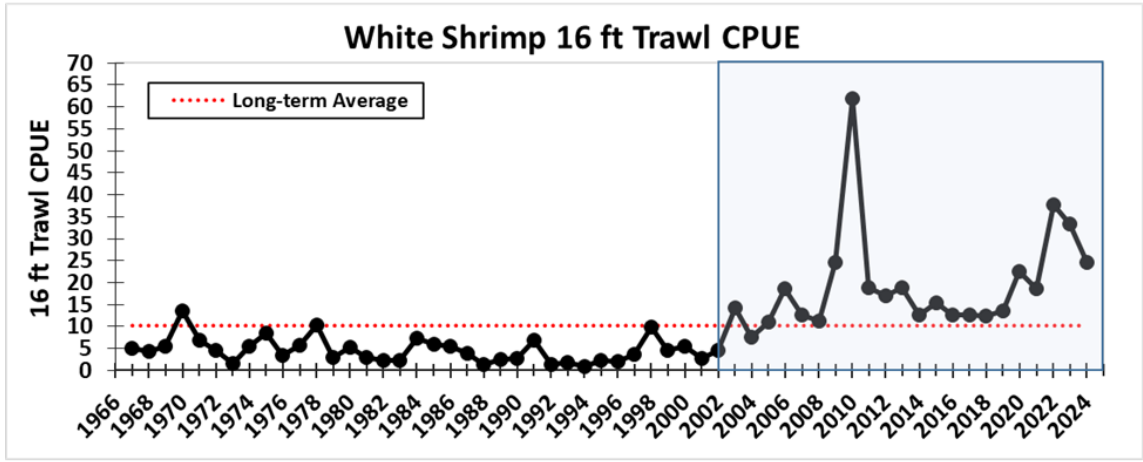


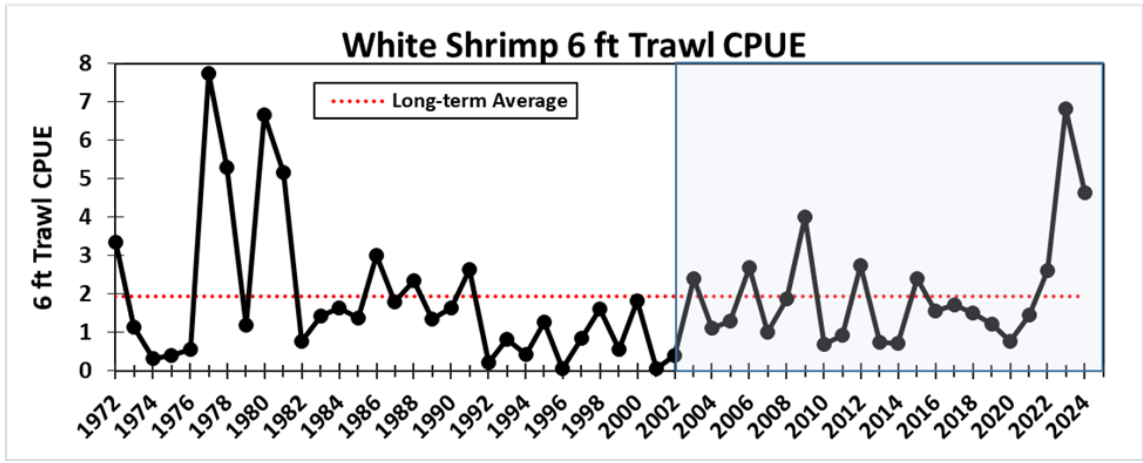
2024 Barataria Basin: White Shrimp

- Dominant shrimp landed during the fall inshore season (mid-Aug to mid-Dec, some regions open into January)
- All gear types: 2024 CPUE declined from 2023, but still high; CPUE was **above** the LTA
  - 50 ft seines: CPUE: 7.0
  - 16 ft trawls: CPUE: 24.7
  - 6 ft trawls: CPUE: 4.6 (2nd highest since 1981)



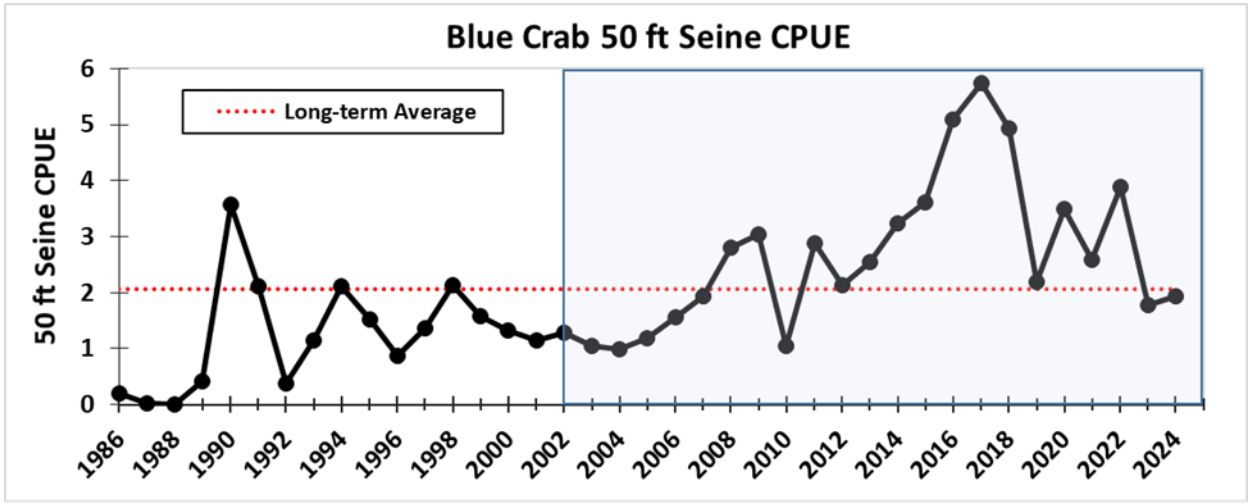


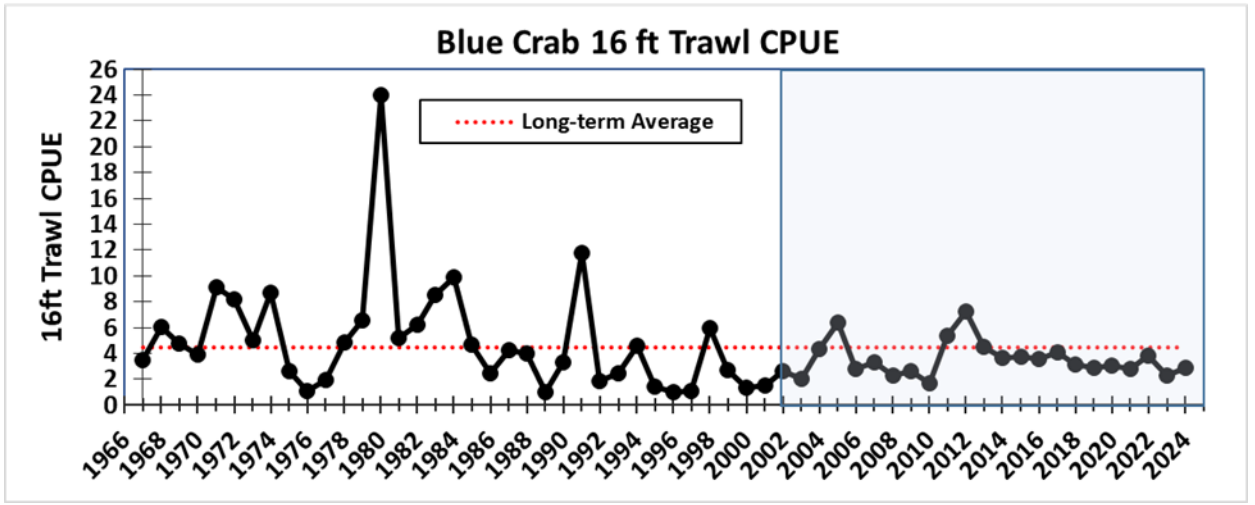




2024 Barataria Basin: Blue Crabs

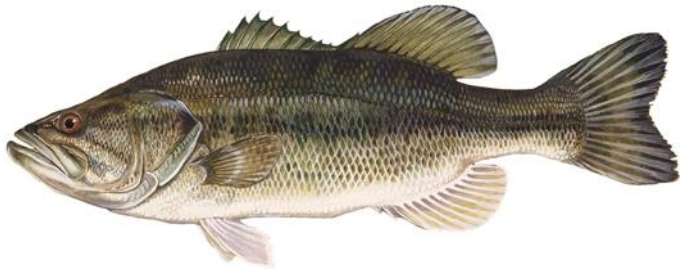
- 2024 CPUE relatively stable from 2023
- 2024 CPUE **below** LTA for both gear types
  - 50 ft seines: 1.9
  - 16 ft trawls: 2.9

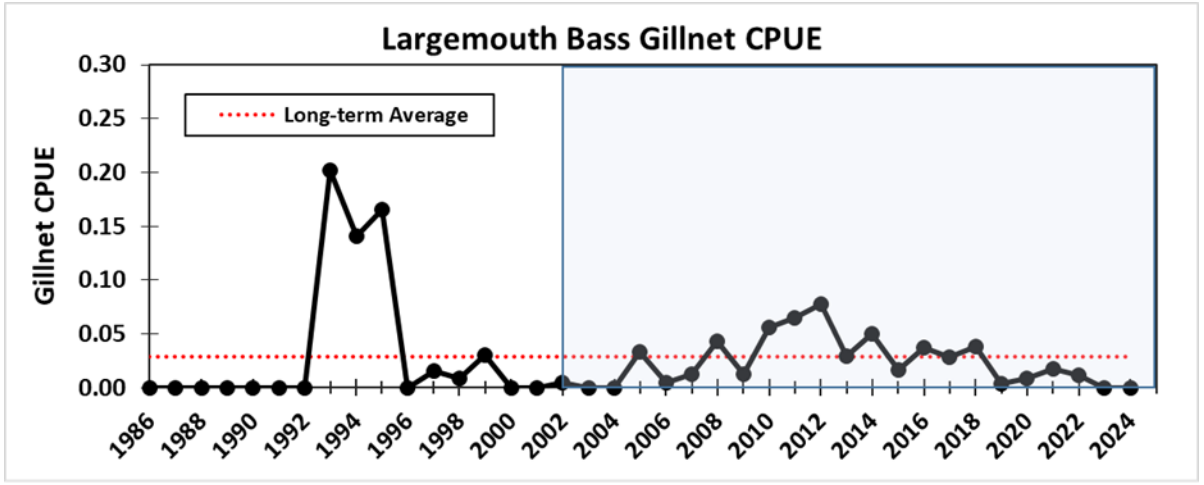


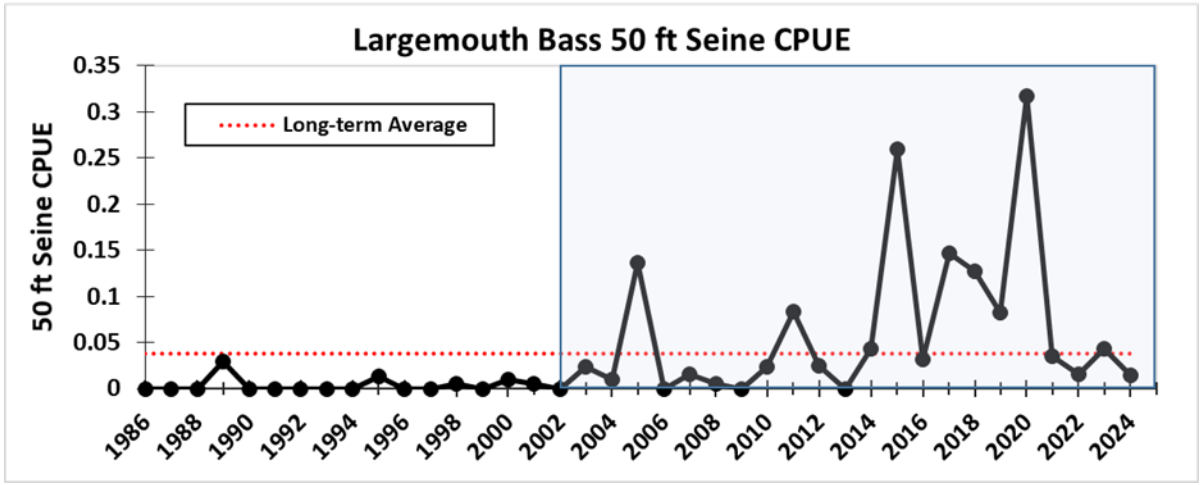


2024 Barataria Basin: Largemouth Bass

- Largemouth bass are found in fresher areas of basin
- Gillnets: 0 fish in 2024 and 2023
- 50 ft seines: 2024 CPUE: 0.01 (4 fish)

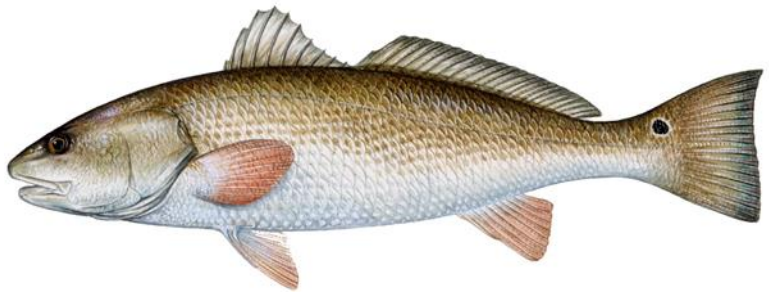


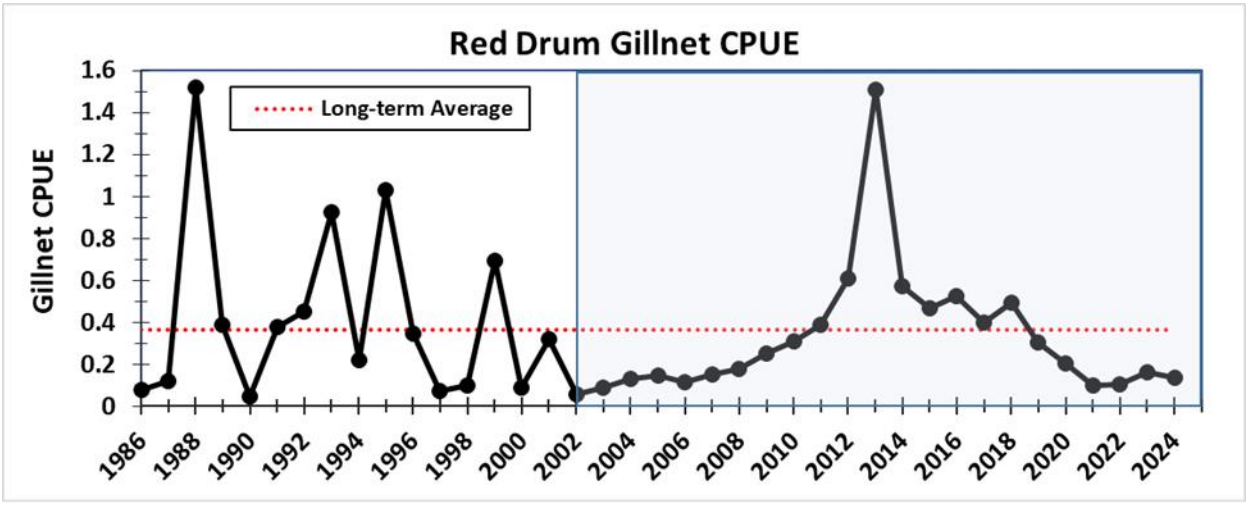


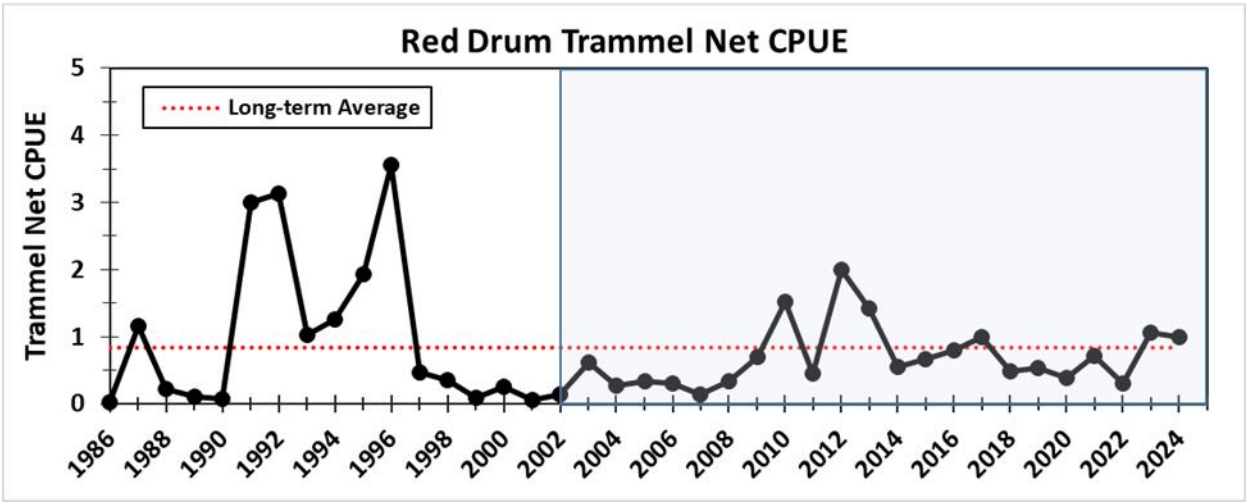


2024 Barataria Basin: Red Drum

- Red drum are estuarine/marine fish; tolerate a wide range of salinity
- 2024 CPUE relatively stable from 2023
- Gill net: CPUE = 0.1; last above LTA in 2018
- Trammel net: CPUE: 1.0; above LTA for past 2 years

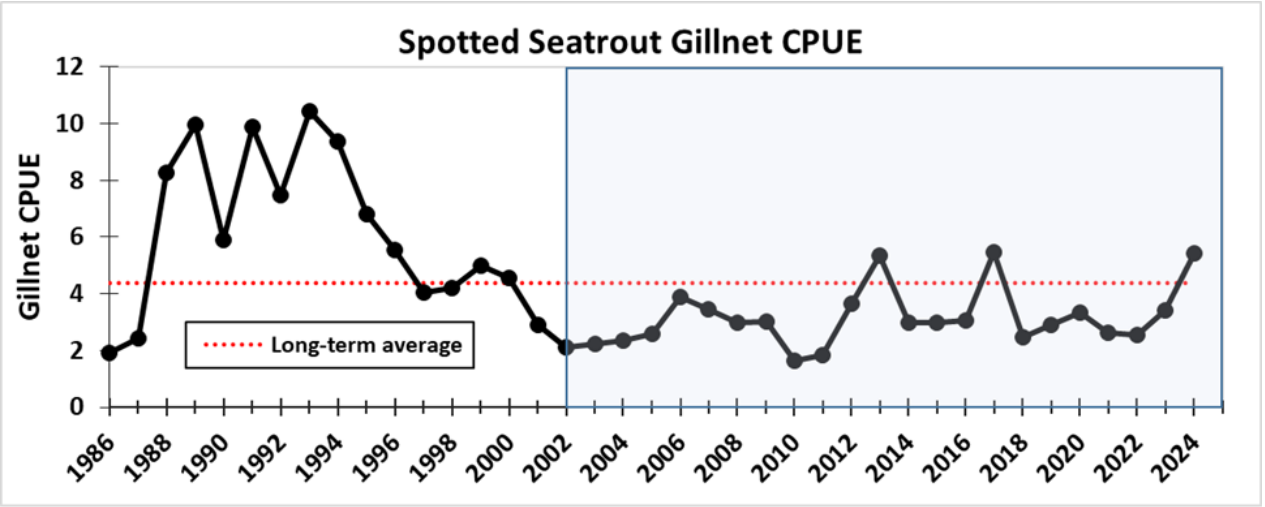


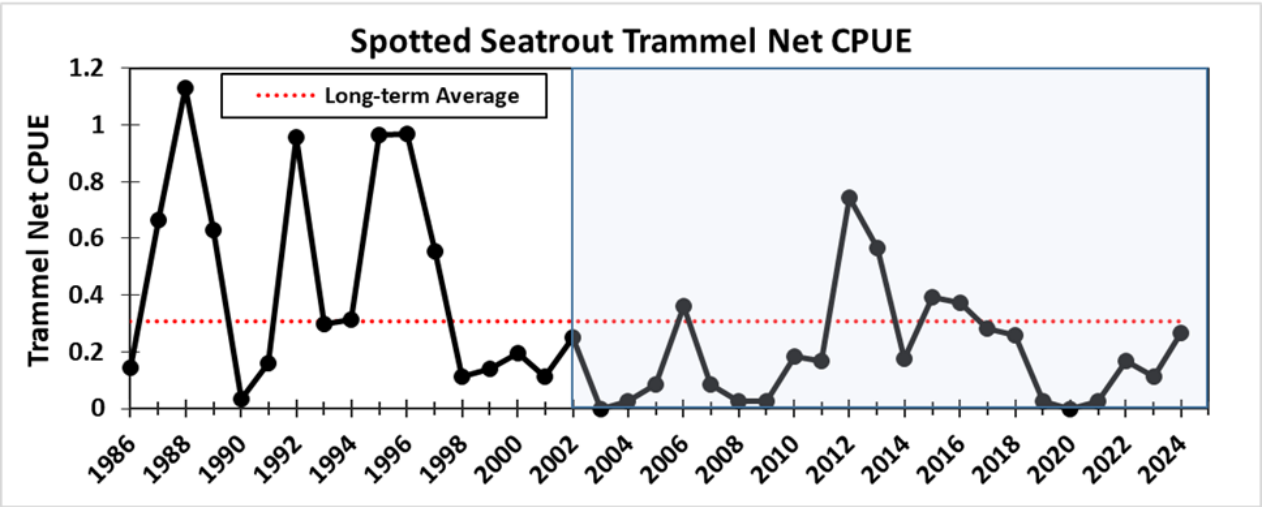




2024 Barataria Basin: Spotted Seatrout (Speckled Trout)

- Spotted seatrout are estuarine/marine fish
- CPUE increased from 2023 in gillnet and trammel net sampling
- Gill net: CPUE = 5.4; rose above LTA for first time since 2017
- Trammel net: CPUE = 0.3; just < LTA





2024 Davis Pond Freshwater Diversion–Summary

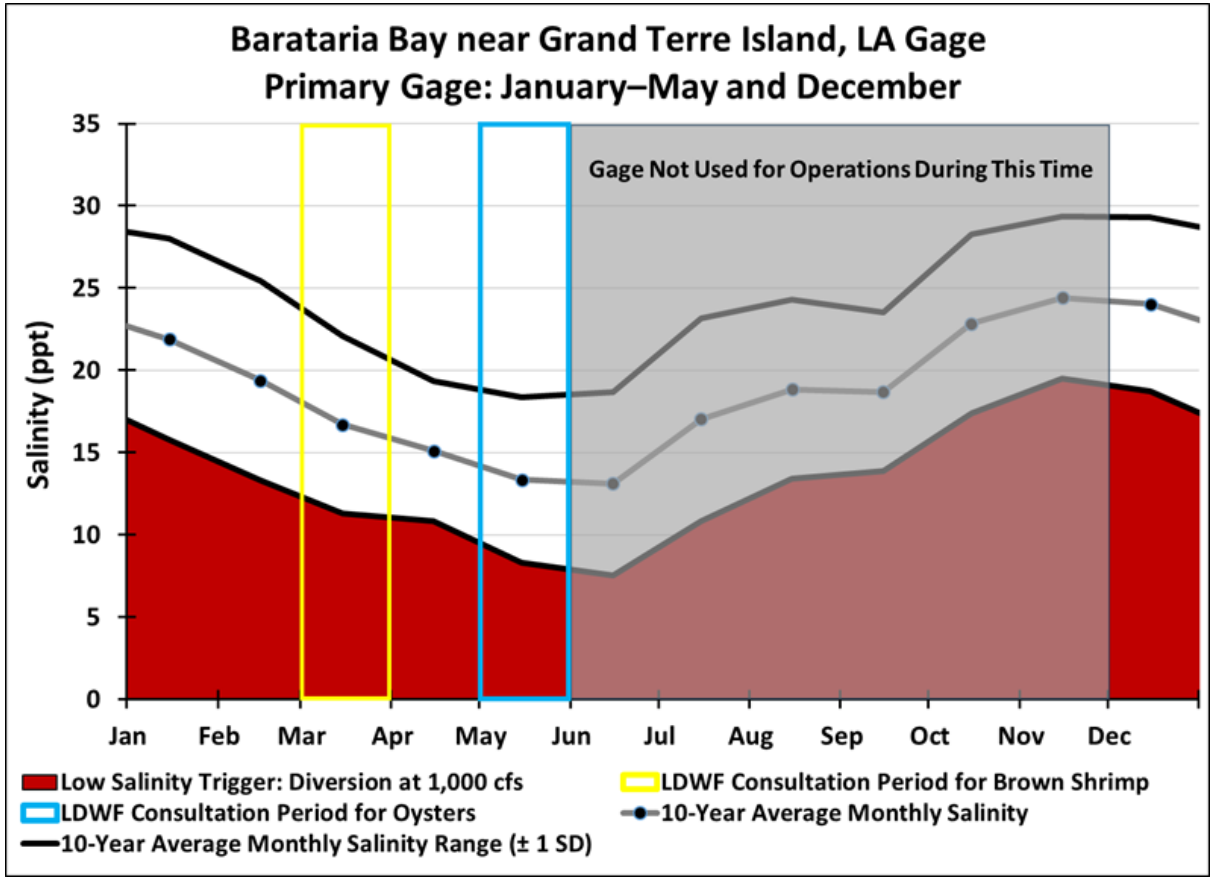
- Diversion was pulsed 57 days in 2024, 19 more days than in 2023 (38 days).
- 2024 mean annual discharge of 1,564 cfs was an 11% **increase** from 2023, but a 13% decrease from the long-term average of 1,808 cfs.
- 2024 mean annual salinity in the Barataria Basin **declined** from the exceptionally high salinity in 2023, but was still above the target isohalines.
- CRMS3169 has transitioned from floating marsh to forested habitat, demonstrating the positive impacts of sediment delivery from the diversion. Land gain in the ponding area will be quantified by USGS land-water analyses.
- Wildlife: Waterfowl counts **increased** from 2023/2024 season, but were below LTA. Alligator nest counts **declined** but were still above LTA.
- Oyster, brown and white shrimp CPUE were relatively high in 2024, with increases seen for spotted seatrout. Blue crab, largemouth bass and red drum CPUE remained low.

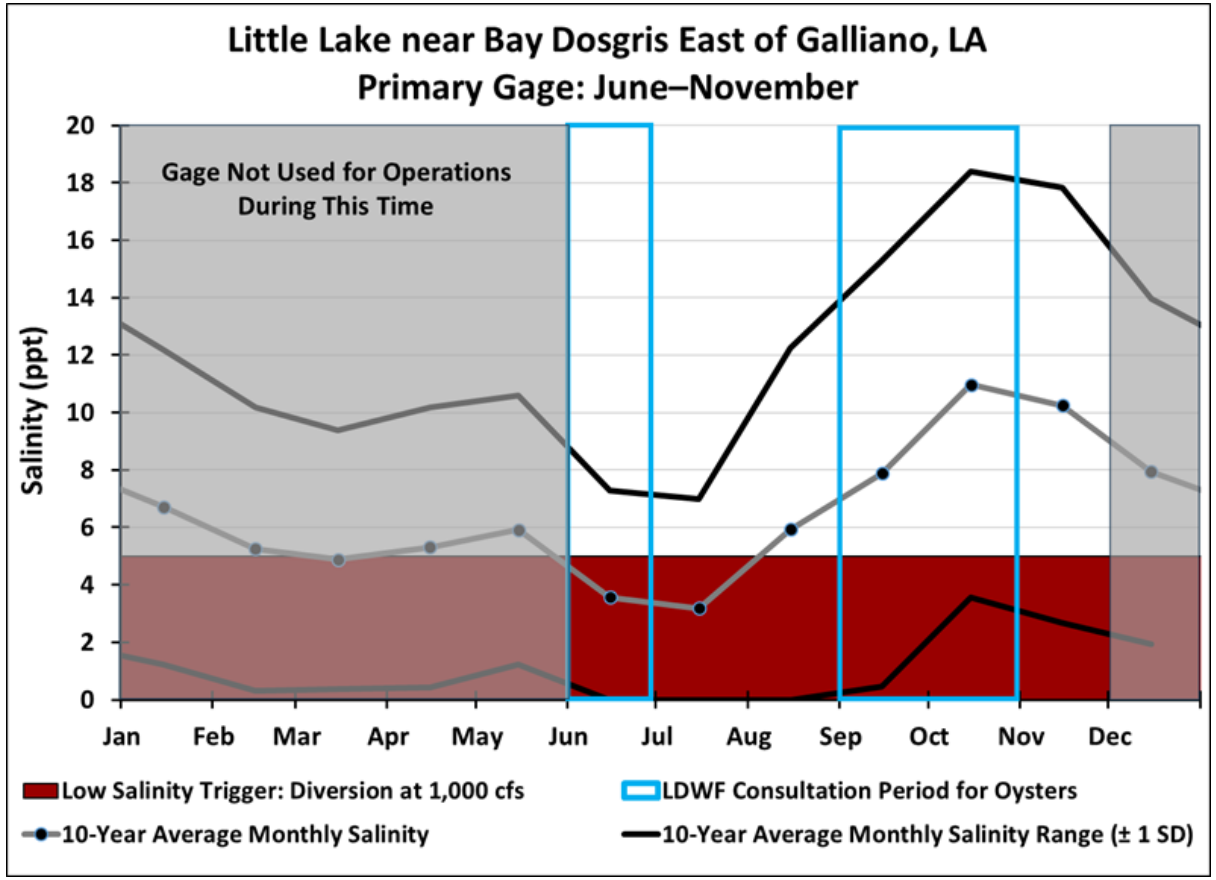
2026 Proposed Davis Pond Freshwater Diversion Operations Plan

2026 Davis Pond Proposed Operations Plan

2026 Plan is the same as for 2025, with the exception of the following changes:

- Updated 10-yr mean monthly salinity range to **2015–2024** (complete data set).
- Revised timeline from **Dec–Nov**, **to Jan–Dec**.





2026 Davis Pond Proposed Operations Plan

- Included text about **maximizing diversion operations** within the operational guidelines of the plan.

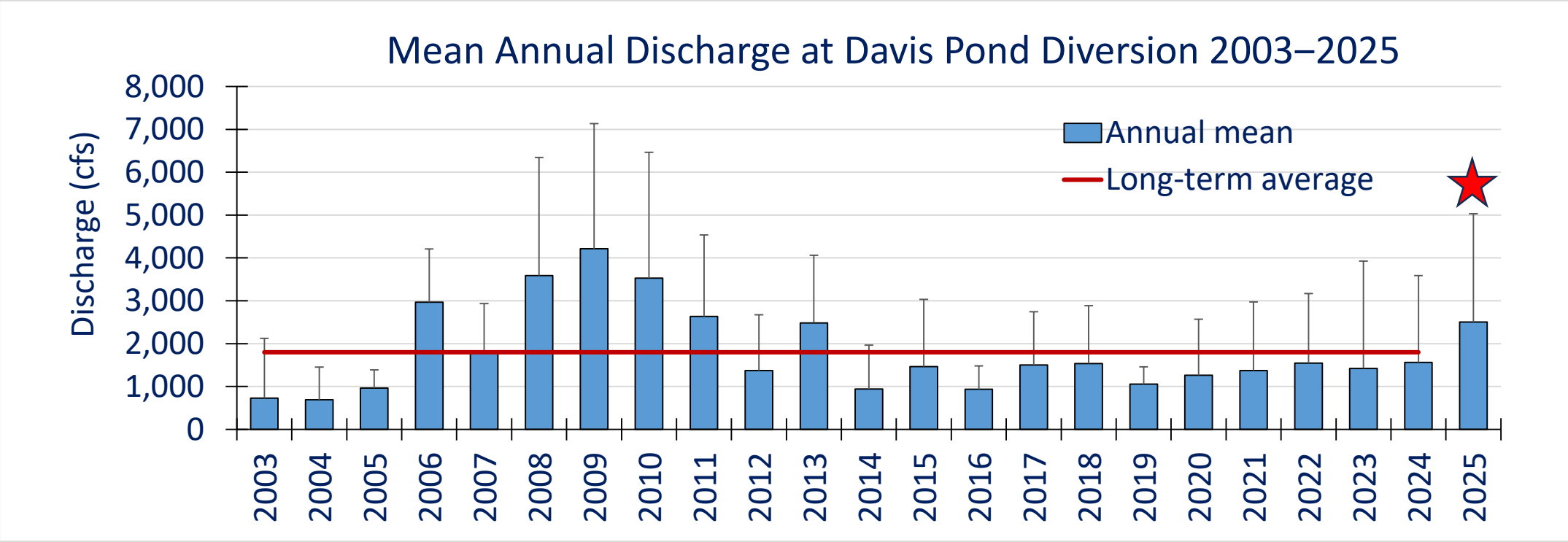
  "The 2024 Davis Pond Advisory Committee (DPAC) meeting was held on December 11, 2024, to discuss and vote on whether to approve the 2025 Davis Pond Freshwater Diversion Operations Plan.

  During this meeting, it was proposed and overwhelmingly supported by the Committee that the CPRA maximizes diversion operations to meet project objectives when it is feasible and within the Plan's guidelines.

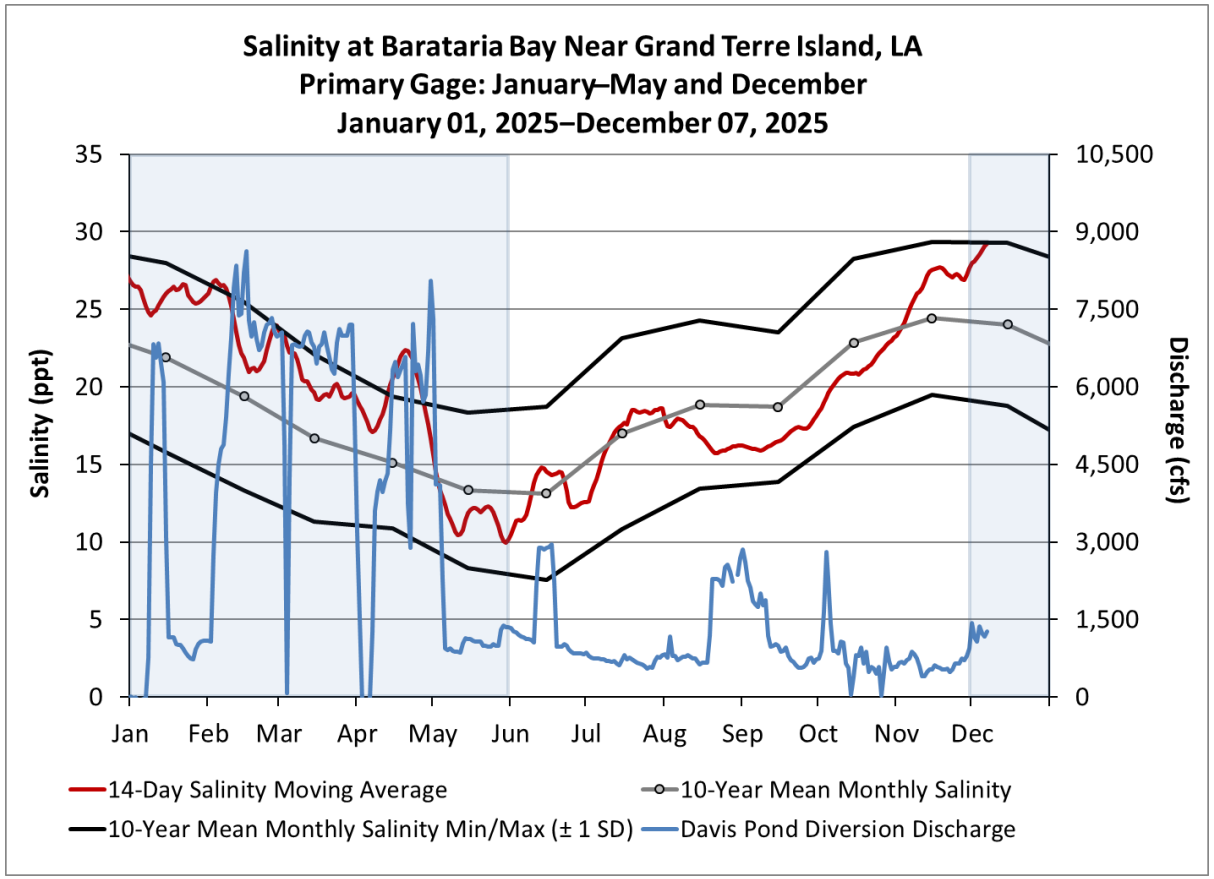
  This 2026 Operations Plan acknowledges and incorporates the DPAC's recommendation."

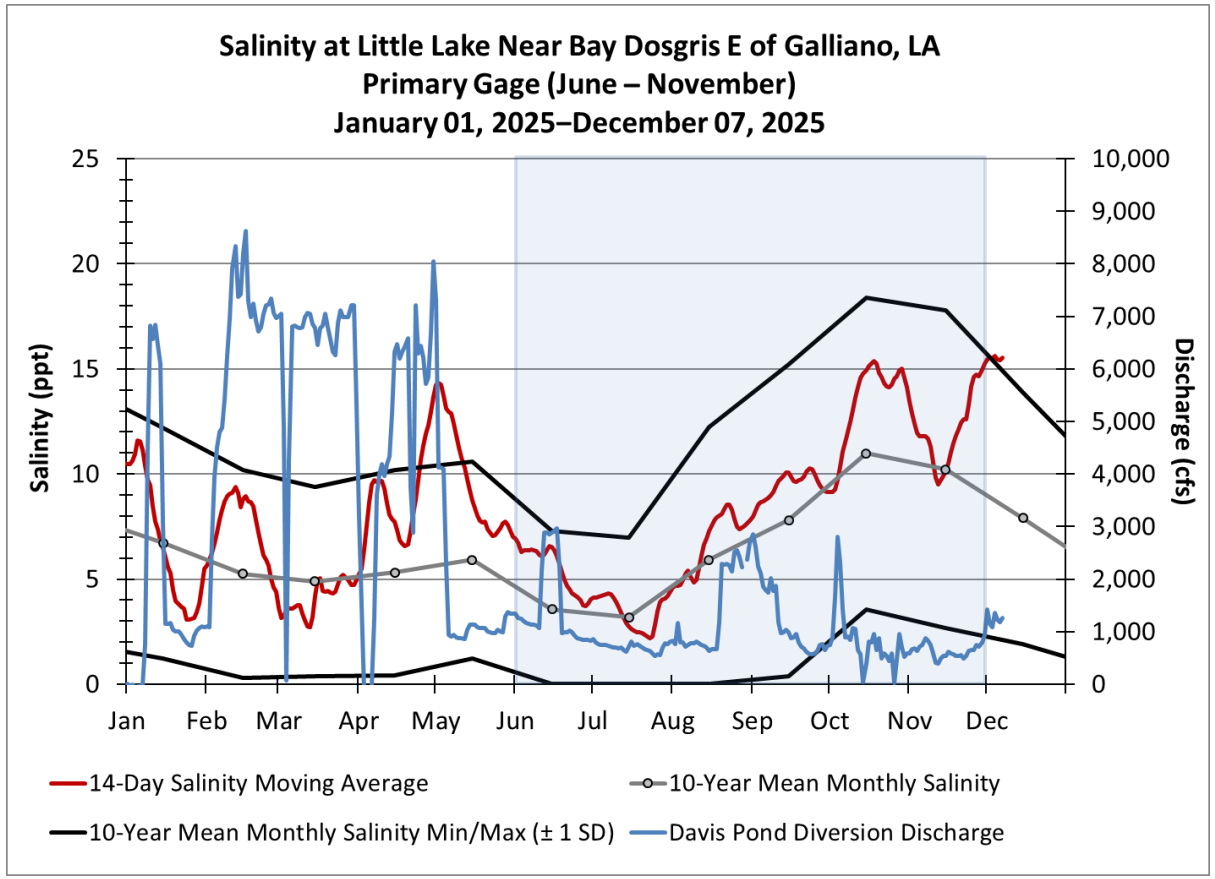
Mean Annual Discharge through 11/30/2025

- 2025 discharge through Nov. 30: **2,504 cfs**
- Highest annual mean discharge since 2011
- 2025 discharge: **38% increase** from LTA of **1,808 cfs** (2003–2024)



2025 Davis Pond Operations (through 12/07)





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