

## INTRODUCTION



- The Barataria Preserve is in Jean Lafitte National Historical Park and Preserve in Louisiana and protects primarily freshwater deltaic wetlands in the Mississippi River delta's Barataria Basin.

- Starting in the mid-19th century, miles of canals were dredged at

the Barataria Preserve to access and extract natural resources.

- The canals and spoil banks created modified the hydrology of the landscape, causing wetland loss, etc.

## CANAL BACKFILLING



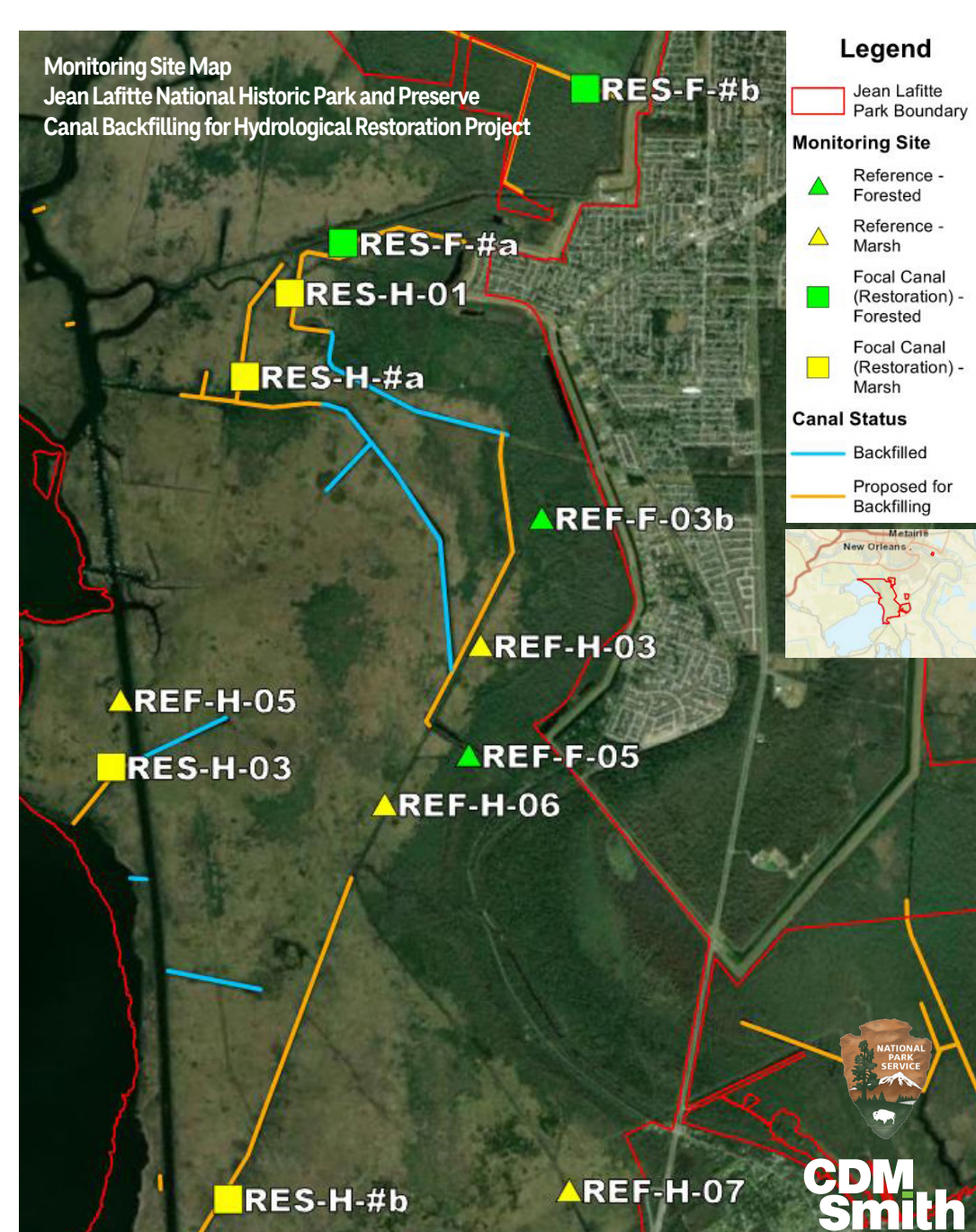
- Canals were backfilled with spoil bank material in 2023 to meet the level of surrounding wetlands and to decrease the height of the spoil banks.

- The goal is to increase hydrologic exchange between canal channels and adjacent wetlands and to reduce the dimensions of canals.

- The expected benefits are improvement of resistance and resilience to physical stressors

- This work is funded by the RESTORE Act, which funds restoration and protection projects on the Gulf Coast. This act is an outcome of the Deepwater Horizon Oil Spill.

## MONITORING SITES



- The team established 12 monitoring sites, including six restoration sites and six reference sites.

- Four sites are in forested wetlands, and eight sites are in marsh.

## INSTALLATION OF WATER LOGGERS

The team installed 24 data loggers to monitor water levels and salinity. Each monitoring site has paired loggers: one in the wetland and one in the near-adjacent canal.

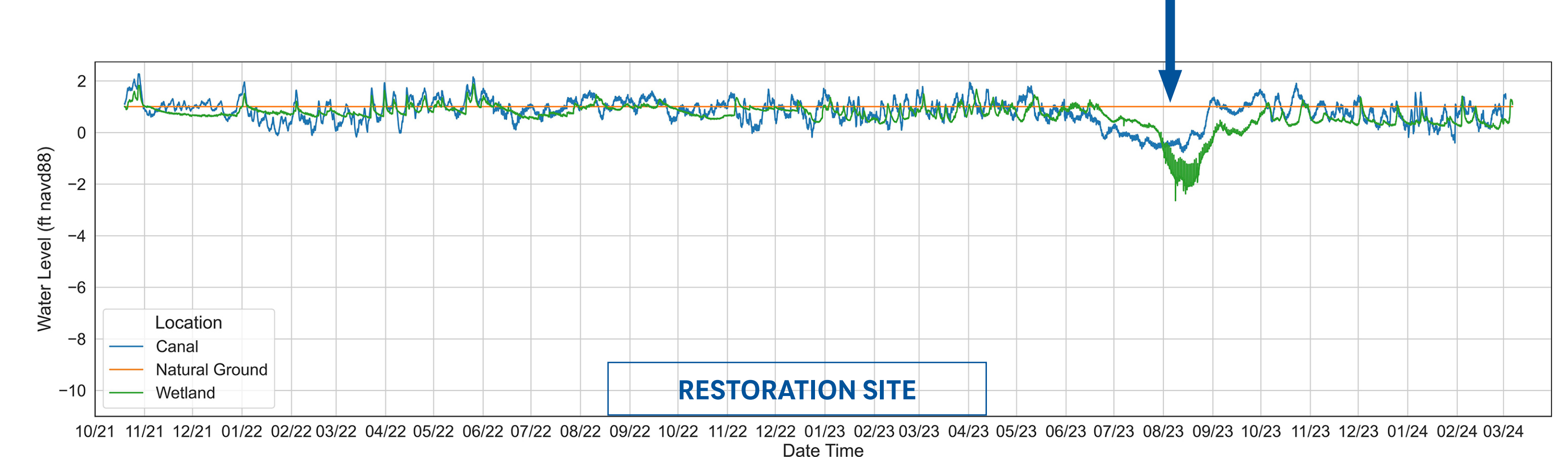
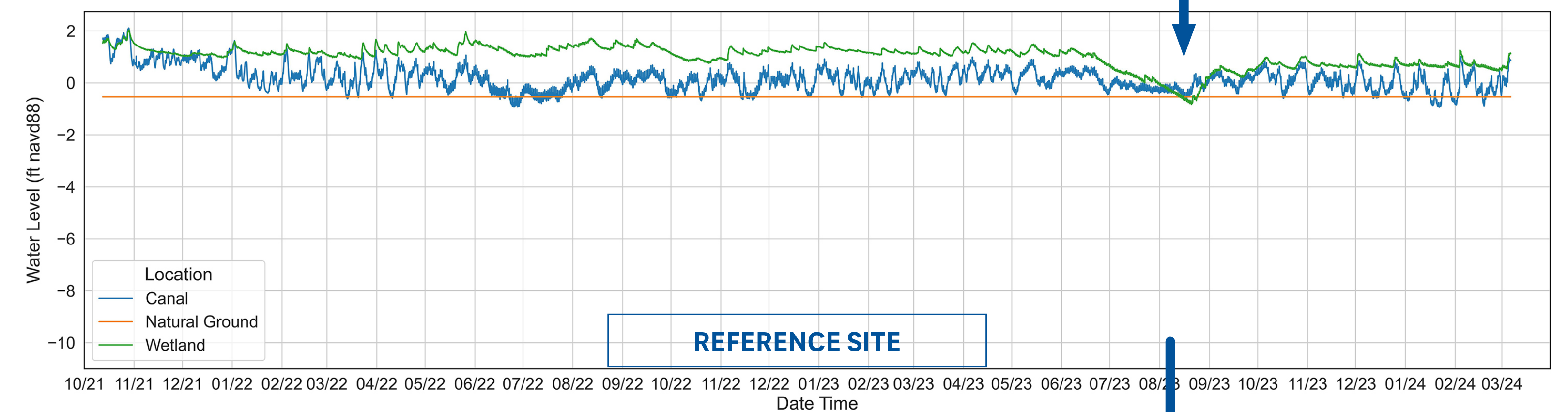
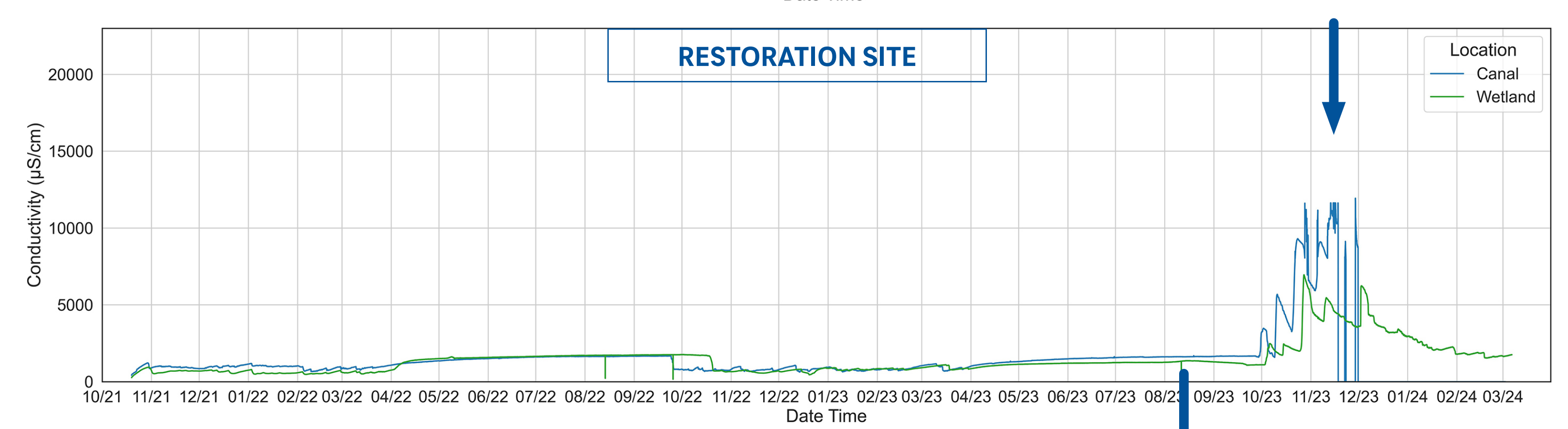
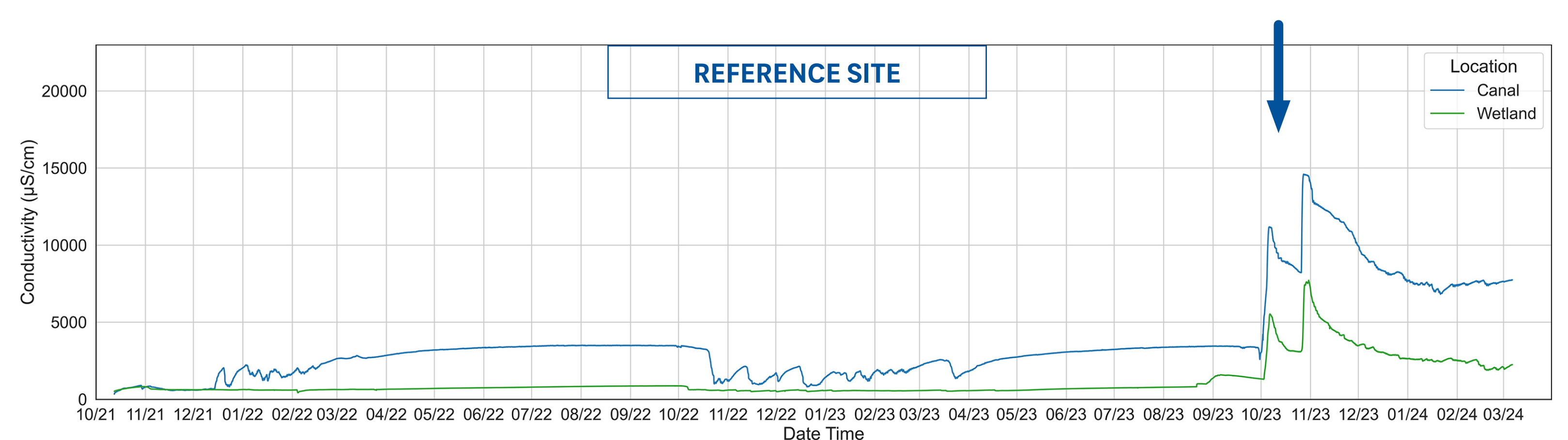


## COMPARISON OF A CANAL SITE: 2021 AND 2023



## PRELIMINARY HYDROLOGICAL DATA: WATER LEVEL AND CONDUCTIVITY

The decreases in water level and spikes in salinity are correlated with a period of extremely low Mississippi River flow. This low flow affected the salinity regime estuary-wide in the Barataria Basin, resulting in exceptionally high waterway salinities.



## THE BIG PICTURE AND THE FUTURE

- This work highlights the importance of understanding how local and regional phenomena may affect the system both in the short and long term.

- From a long-term perspective, understanding how local and regional phenomena may impact a system is crucial to informing adaptive management and decision-making.

- Canal backfilling is considered a cost-effective restoration activity that can be executed at a relatively low cost (Turner and McClenachan, 2018). Additionally, backfilling both prevents future land loss and restores land already lost, making it an invaluable restoration strategy.

**Reference:** Turner, R.E., McClenachan, G. (2018) Reversing wetland death from 35,000 cuts: Opportunities to restore Louisiana's dredged canals. PLOS ONE 13(12): e0207717.