



SEPTEMBER 17, 2026

Wetlands Investigations

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Wetlands Investigations

Buckman Ozone-Wetland Pilot

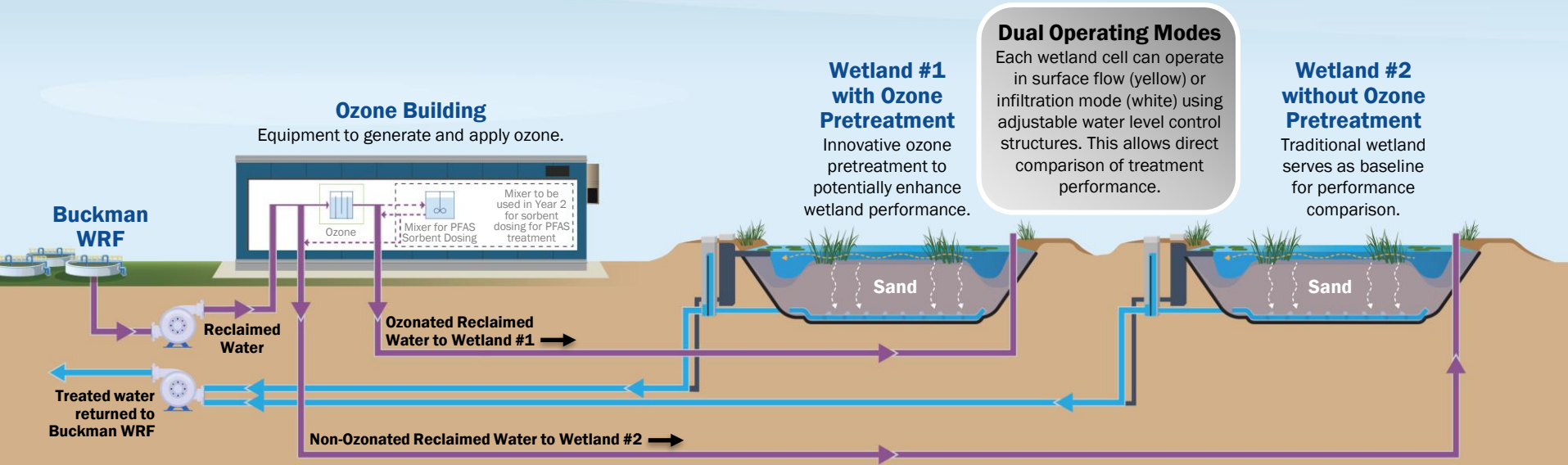
Innovative investigation to explore enhancements to wetlands treatment.

Feasibility Analysis

Evaluating site suitability and conveyance for a wetland treatment system.

Reclaimed Water Reimagined: The Buckman Ozone-Wetland Pilot Study

JEA is conducting a pilot study at the Buckman Water Reclamation Facility (WRF) to assess the effectiveness of constructed wetlands to further treat reclaimed water. Repurposing reclaimed water for beneficial aquifer recharge will support JEA's Integrated Water Resources Plan and efforts to comply with Senate Bill 64. The study uses two half-acre wetlands to compare traditional wetland treatment with a treatment process that includes ozone pre-treatment of reclaimed water followed by wetland treatment. Launched in late 2025, the project monitors treatment performance by regularly measuring key water quality parameters, including nutrients, PFAS, and other contaminants. **A process schematic below provides a detailed overview of the treatment process.**



Scan the QR code to
watch our project video
on this pilot study

[JEA Buckman Ozone Wetland Pilot Study Video](#)



**CDM
Smith**

Jacobs

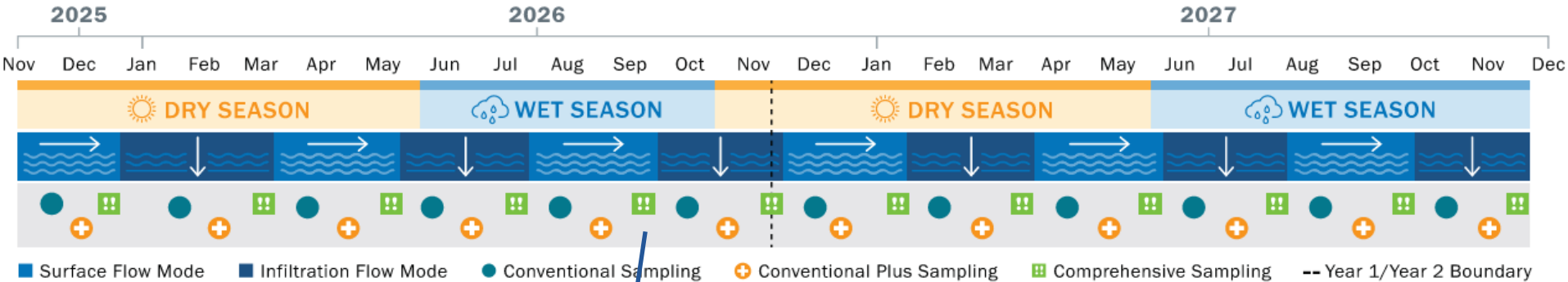


Operational and Sampling Plan

The operational plan for the wetlands will be to continuously split flow between the ozonated water (Wetland #1) and control (Wetland #2) for each flow mode.

Each flow mode will be operated for 9 weeks and sampled for constituents on routine cycles:

Conventional, Conventional Plus and Comprehensive Sampling





Conventional Sampling

General Parameters

- Carbonaceous Biochemical Oxygen Demand
- Total and Dissolved Organic Carbon
- Effluent Biological Toxicity
- Total and Fecal Coliforms
- Fluoride
- Chloride
- Iron
- Total Suspended Solids

Nutrients

- Ammonia
- Nitrate/Nitrite
- Total Kjeldahl Nitrogen
- Total Nitrogen
- Orthophosphate
- Total Phosphorus

Ozone-Related Parameters

- Bromate
- Bromide

Conventional Plus

- Conventional Parameters
- PFAS
- NDMA (Ozone-Related)
- Carboxylic Acids (Ozone-Related)

Field and Online Monitoring

- Flow
- Conductivity
- pH
- Temperature
- Dissolved Oxygen
- UV 254

Comprehensive

- Conventional Plus Parameters
- Pharmaceuticals and Personal Care Products
- Pesticides
- Industrial Compounds
- Primary and Secondary Drinking Water Standards
- Carboxylic Acids (Ozone-Related)

Over 250 constituents sampled and analyzed every 6 weeks



Initial planting completed in May 2025.

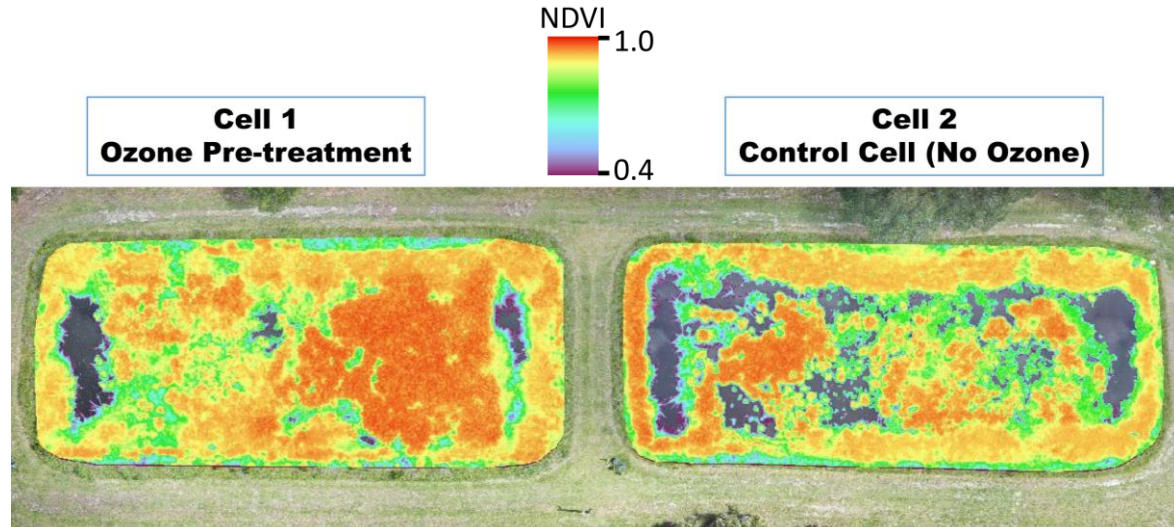
Operational 'start-up' in November 2025.







May 2025
Sep 2026



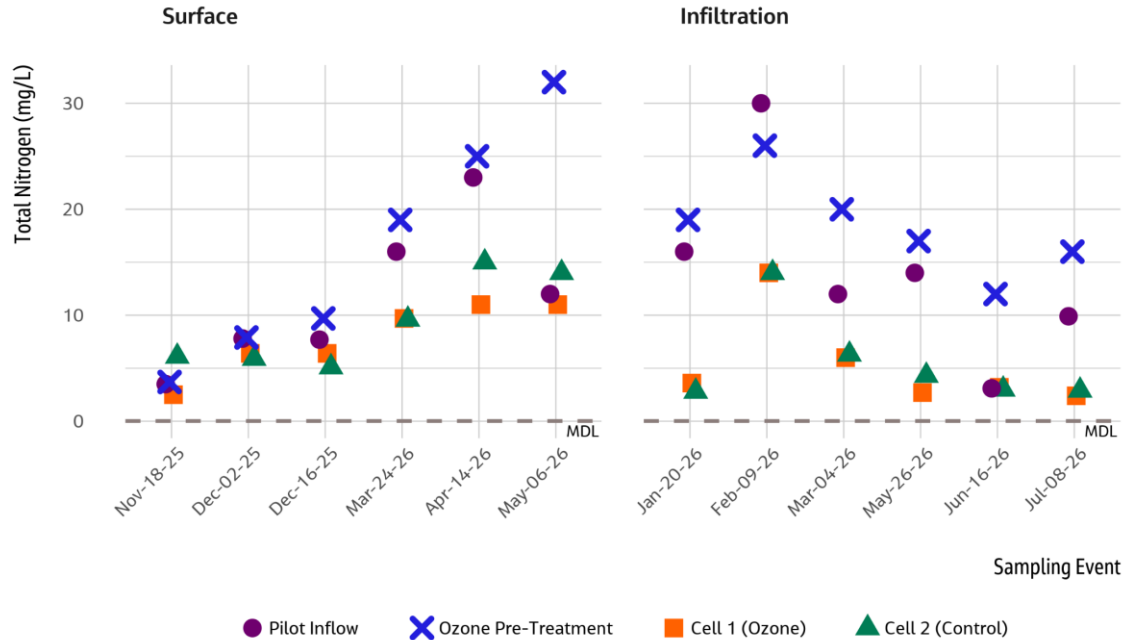
Based on Normalized Difference Vegetation Index (NDVI) data.

Table 1. Vegetative Cover by Cell

Wetland Cell	August 2025 3 Months Post- Initial Planting (Percent Cover)	December 2025 Startup/Baseline (Percent Cover)	March 2026 (Percent Cover)	June 2026 (Percent Cover)
Cell 1 (Ozone)	54	74	77	90
Cell 2 (No Ozone)	51	65	62	74

Preliminary Data for TN

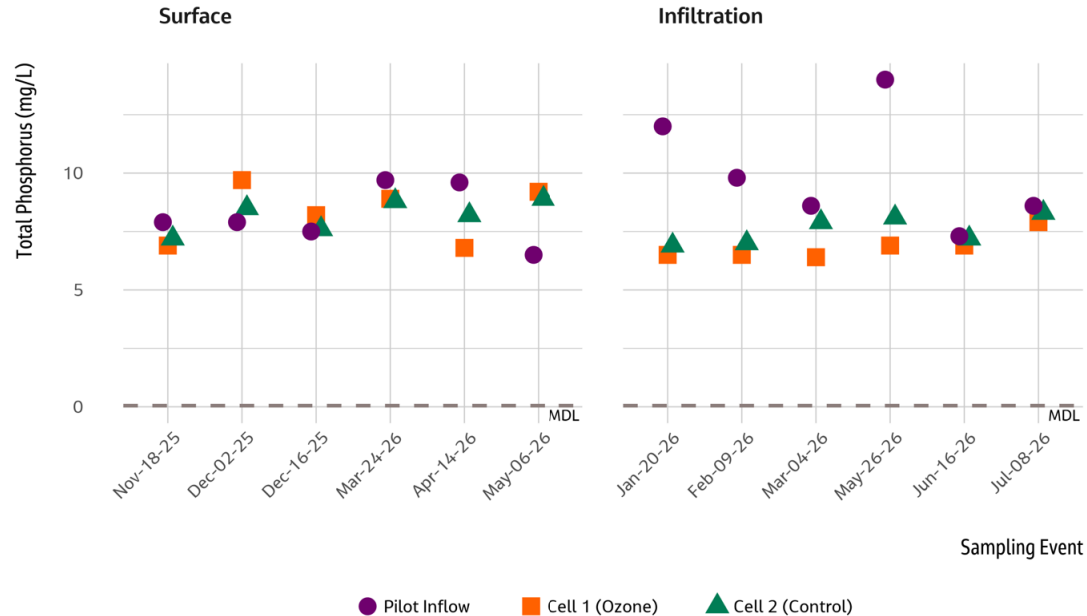
- As expected, both cells and both flow modes reduce TN
- Infiltration mode generally outperforms surface flow mode



Analytes that were not detected were assigned a value equal to one-half the MDL.

Preliminary Data for TP

- TP results have been a bit more variable
- As expected, Infiltration mode consistently outperforms surface flow mode

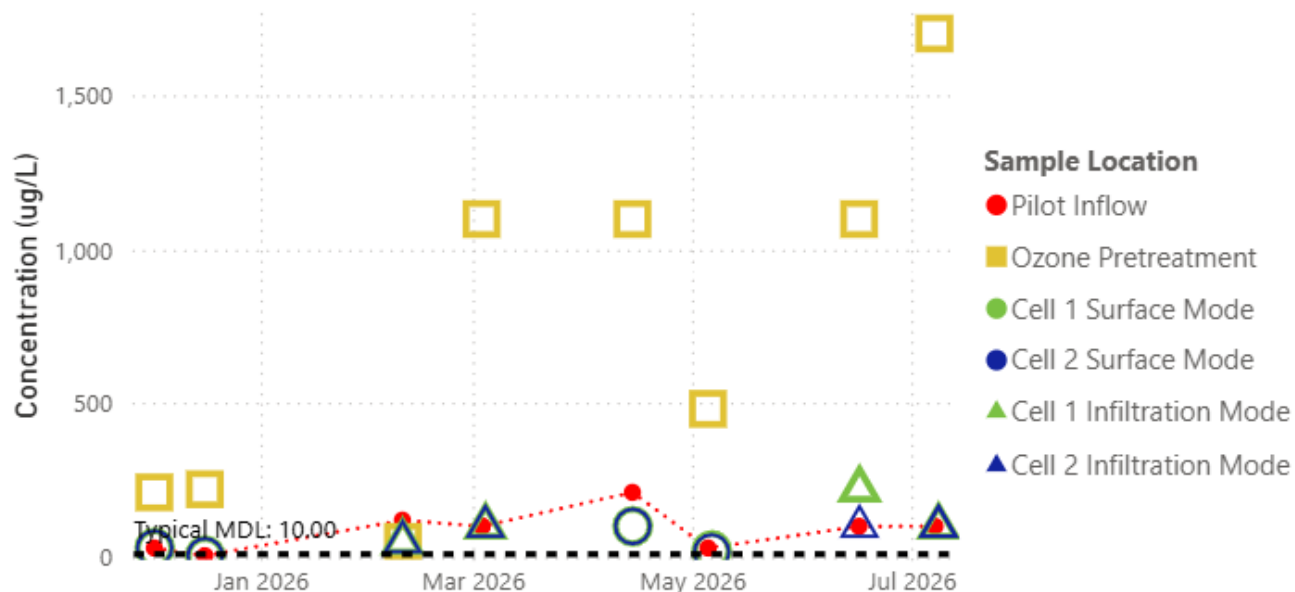


Analytes that were not detected were assigned a value equal to one-half the MDL.

Preliminary Data – Ozone Pretreatment Indicator

- Oxalic Acid is an indicator of Ozone Pretreatment Effectiveness
- Oxalic acid concentrations increase substantially following ozone pretreatment, confirming active oxidation of organic matter
- Oxalic acid concentrations are generally lower within the wetland demonstrating reduction and transformation within the wetland treatment system.

Oxalic Acid (ug/L)



Operations Continues

What does success look like?

The wetlands continue to provide us with valuable information to establish baseline treatment expectations.

‘Bookend’ approach being evaluated to establish performance criteria:

- Drinking Water Standards for scale and stringent bookend
- Ongoing coordination with project team and regulators for environmental restoration bookend

Workshops to be scheduled to establish water quality goals.



June 5, 2026, Updated Drone Photo

Site and Conveyance Feasibility

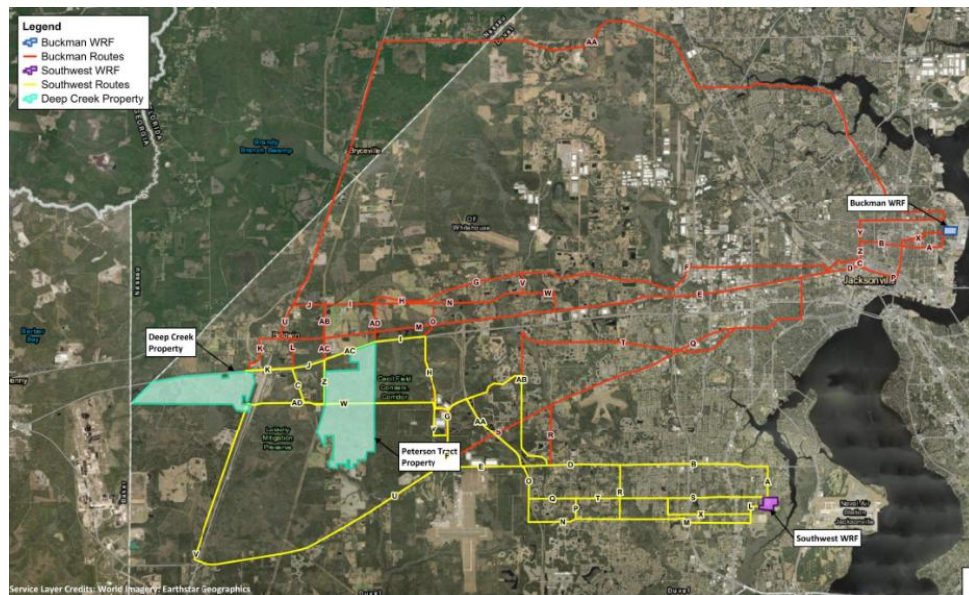
Desktop analysis was performed for JEA owned properties to determine land availability for wetlands creation and treatment:

Property	Treatment Area ¹	Distance ² from Buckman WRF	Distance from Southwest WRF
Deep Creek	450 ac	24 mi	19 mi
Peterson Tract ³	2,280 ac	19 mi	13 mi

1 Treatment area calculated using buffers and setbacks

2 Straight line distance, not route distance

3 Peterson Tract area includes adjacent properties



Wetlands Treatment Evaluation

Influent Parameters

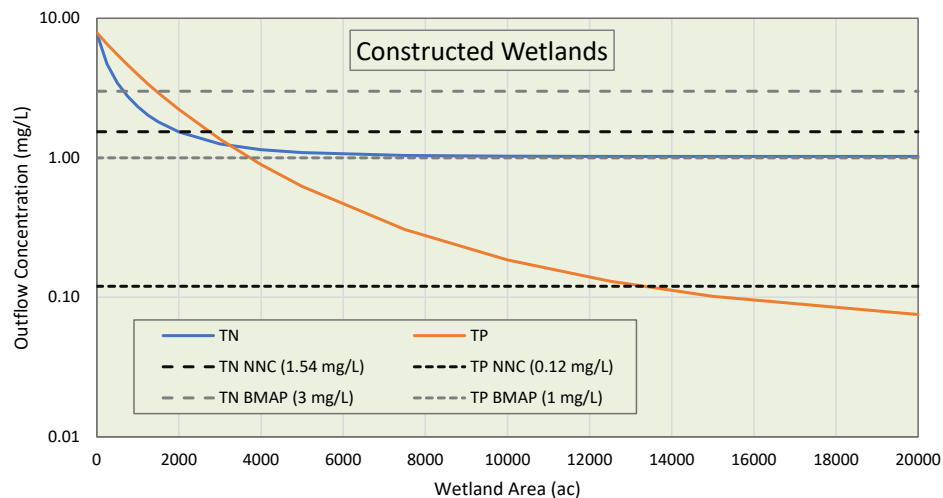
Facility	Flow (MGD)	TN (mg/L)	TP (mg/L)
Buckman WRF	25	8.86	11.85
Southwest WRF	15	6.21	1.30
Combined	40	7.87	7.89

Seasonal variability may necessitate refinements:

- Winter loadings of TN and TP are higher
- Wetland performance worse in winter

Due to area limitations and proximity, the Deep Creek property was removed from further analysis.

Constructed Wetland Sizing



Inputs from facilities will be refined with continued data analysis.
Nutrient targets vary depending on location.

Peterson Tract Feasibility

Desktop study completed in 2025

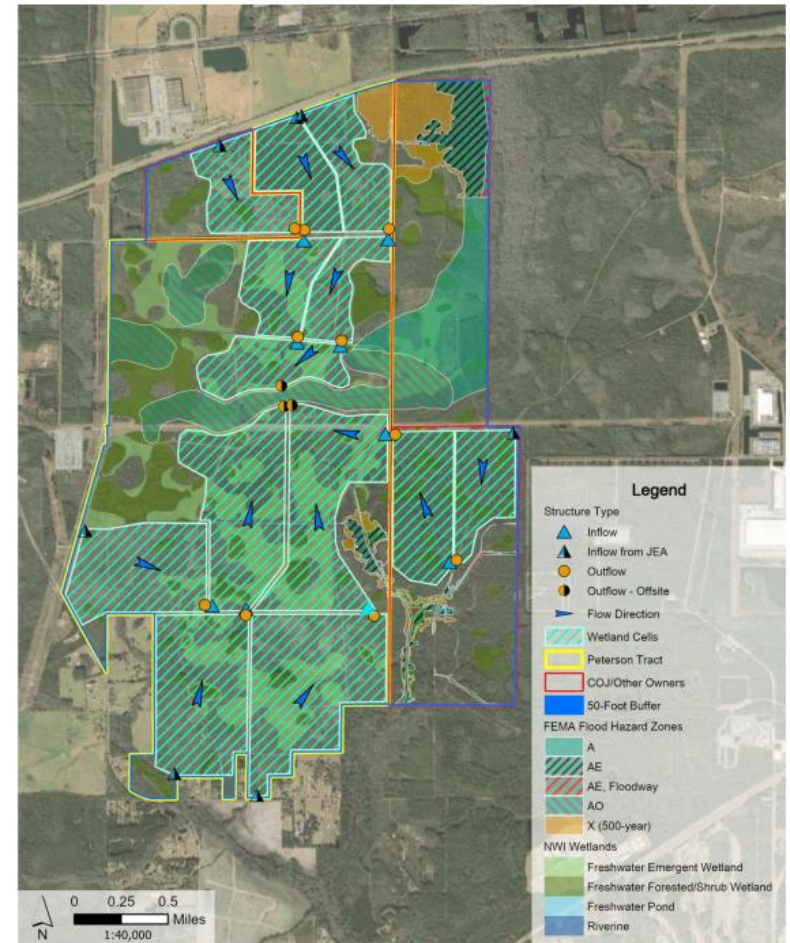
High-level real estate needs for wetlands treatment from the WRFs was evaluated at the JEA owned Peterson Tract.

Site assumptions and constraints:

- 50' property setback
- 25' buffer from floodplains
- 25' buffer existing wetlands

Preliminary analysis

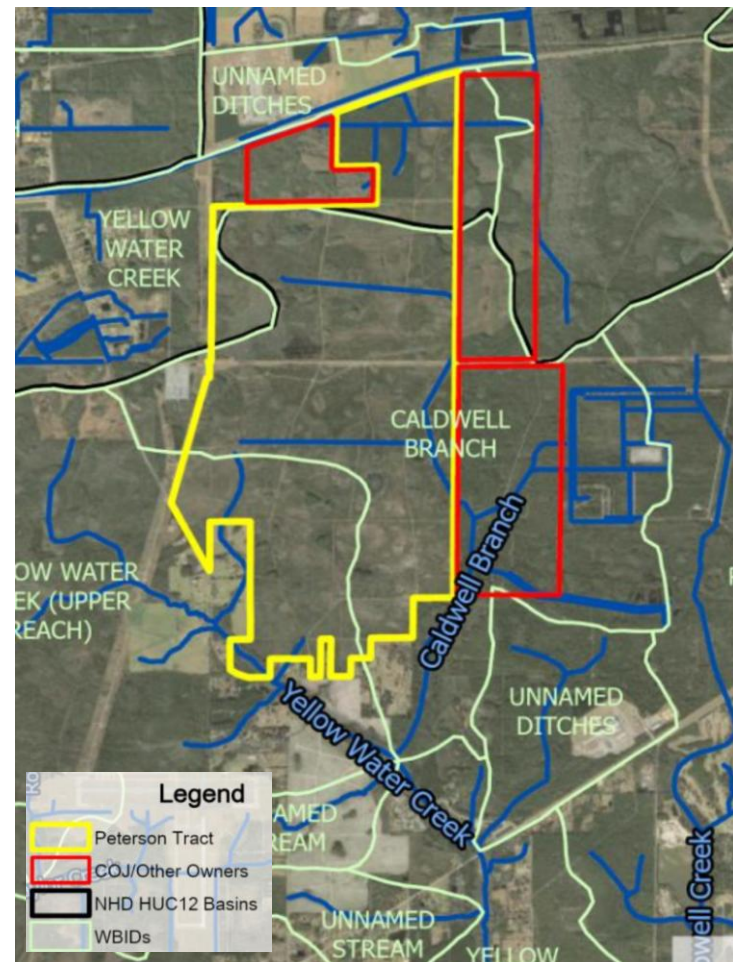
Parameter	Peterson Tract	Adjacent Parcels	Combined Parcels
No. Wetland Cells	10	3	13
Treatment Area	1,891	389	2,280
No. Inflow Structures	5	2	7
No. Internal Structures	7	3	10
No. Outflow Structures	3	0	3



Stream Analysis

Develop regulatory Plan of Study for BMAP/NNC permitting pathway in Yellow Water Creek and Black Creek.

- Review conveyance capacity of channel and impacts with proposed discharge, including channel crossings (e.g. Wells Road, Bicentennial Road)
- Establish presence of flora and fauna of stream system for nutrient evaluation



JEA's Planning Components

The timelines for these efforts are intended to be completed in parallel to the regional efforts for aquifer replenishment with the goal of being ready to continue design in 2 years

Treatment

Ozone

Nutrients

Wetland

Pilot Analysis

Peterson Tract Evaluation

Effluent Water Quality Targets

Conveyance

Pump Stations at WRFs

In-line Boosters

~25 miles 42-inch from Buckman

~19 miles 36-inch from Southwest



Questions?