



Possum Kingdom Water Quality Modeling Contract

Presented by

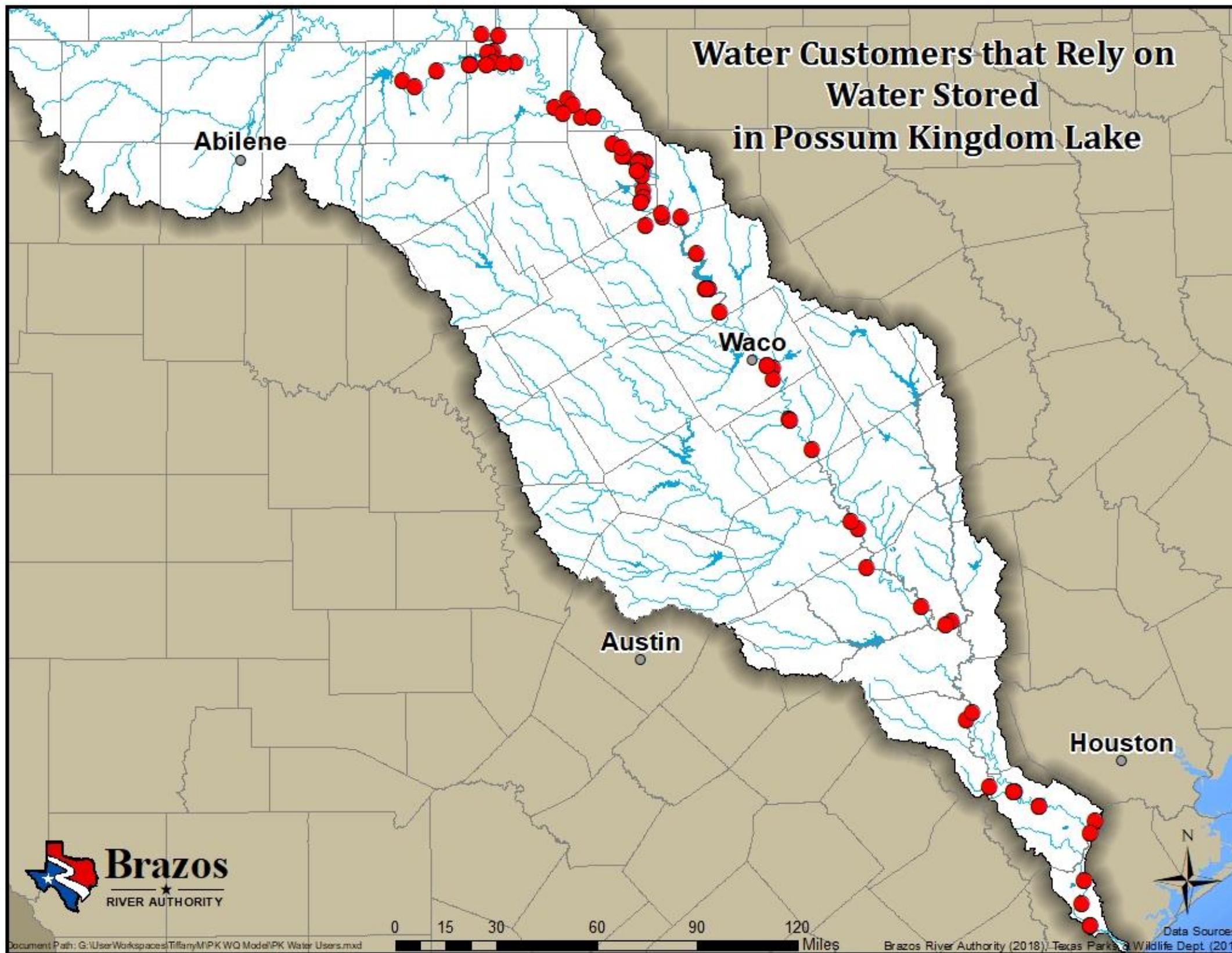
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Environmental & Compliance Manager



Possum Kingdom (PK) Lake

- **BRA's most pristine reservoir**
- **Highest water storage location in BRA's system**
- **Serves a variety of customers and purposes(2023 numbers)**
 - **Lakeside – 5,463 acre-feet**
 - **Downstream – 11,958 acre-feet**
 - **Environmental – 43,319 acre-feet**





PK Water Quality

- Calcium carbonate dominant substrate
- High transparency
- TCEQ's 2022 *Texas Integrated Report of Surface Water Quality*
 - Fully supporting of designated uses
 - No impairments or concerns of Texas Surface Water Quality Standards



Frank Harris Bend on PK



Numeric Nutrient Criteria in Texas

- **2000 – U.S. EPA directs the state of Texas to develop and adopt numeric nutrient criteria for Texas waters**
- **2018 – TCEQ adopts first numeric nutrient criteria for 39 reservoirs**
- **Possum Kingdom Lake is one of the 39**
- **Standard designed to be protective current high, water quality**

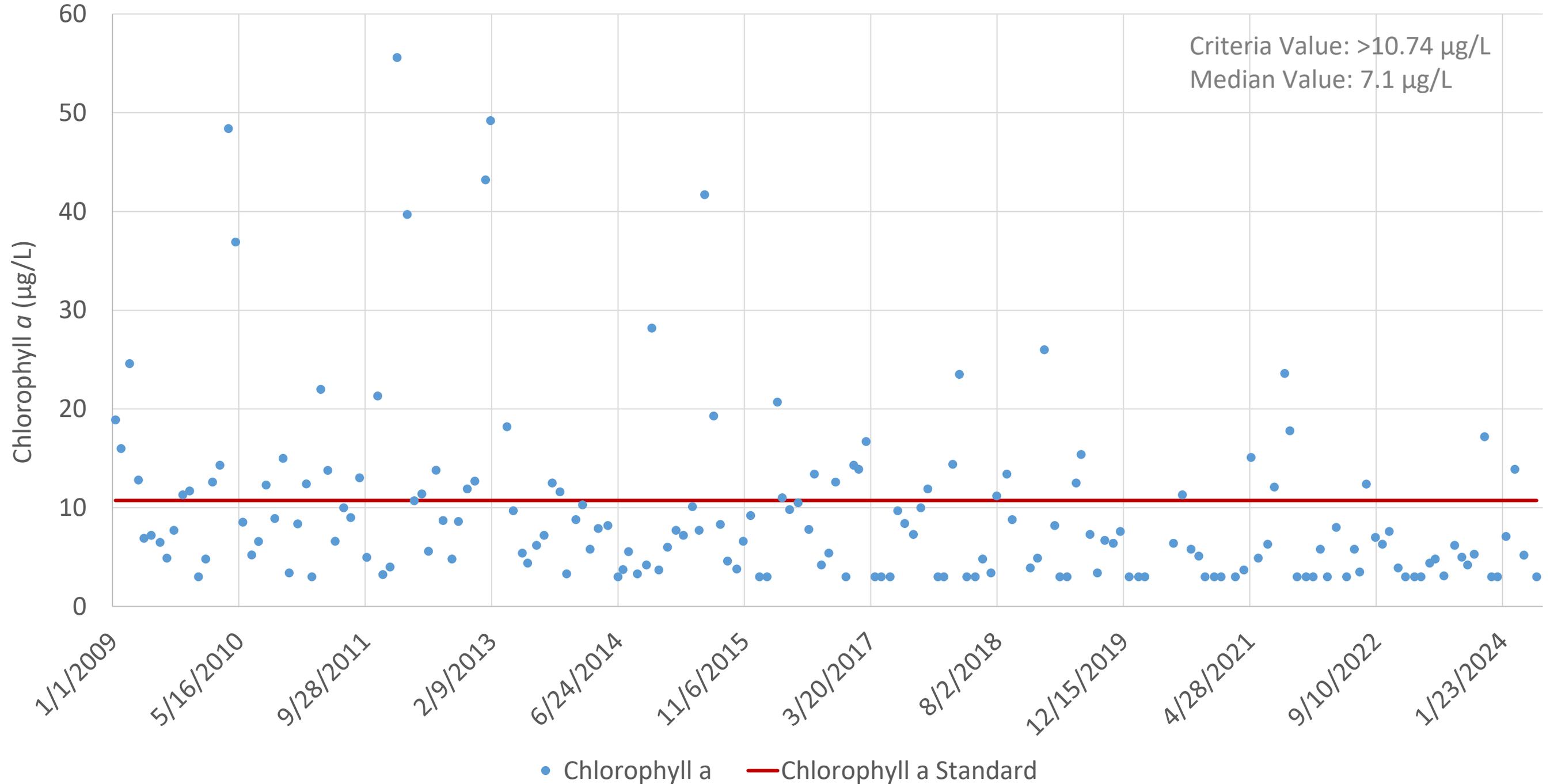


PK's Numeric Nutrient Standard

- **Based on a weight of evidence framework that considers multiple conditions and parameters in the lake**
- **PK is currently compliant with the criteria**
- **Because of protective nature, not a lot of room for increased loadings**



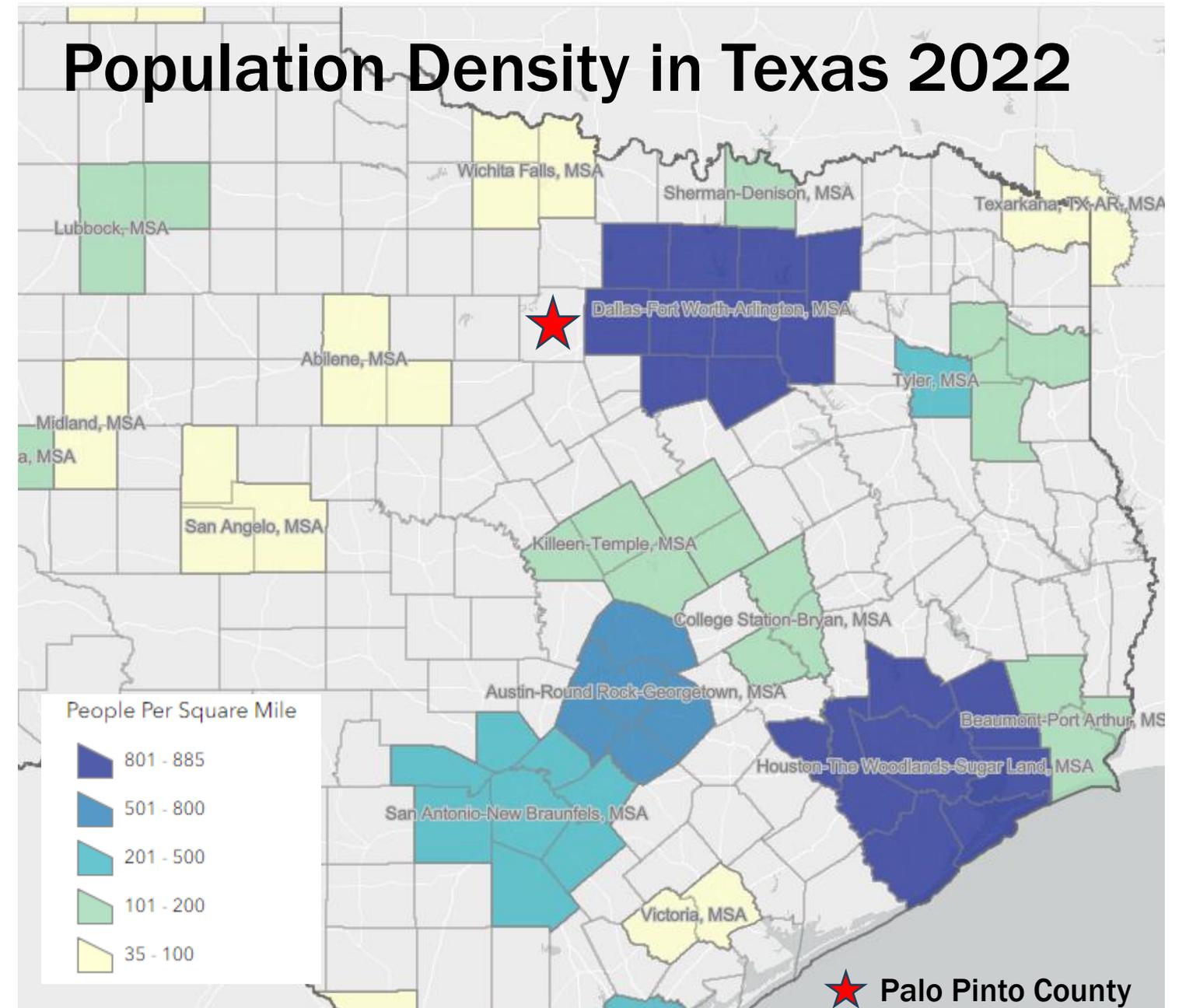
Possum Kingdom Lake Chlorophyll *a*





Palo Pinto County Population

- Palo Pinto County population growing like the rest of the state
- Per U.S. Census Between 2022 and 2023 county population increased 4.7%



Source: [Texas Demographic Center](#)



Water Quality Model

- **Supports**
 - **Mission to protect the water resources of the Brazos River Basin**
 - **Strategic Plan sections 3(a)3 and 3(c)3**
- **Goal**
 - **Provide scientifically-based guidance to BRA Management on how PK water quality will respond to changes in the watershed**
 - **Tool that allows BRA to provide guidance to regulatory agencies on permitting actions**



Project Components

- **Evaluation of existing data**
- **Field Investigations**
- **Stakeholder Group**
- **Regulatory Agency Working Group**
- **Development of watershed and reservoir models**
- **Scientific Advisory Group**
- **Implementation strategy, User's Guide, and Training**



What will model evaluate?

- Land use changes
- Changes in existing wastewater discharges
- New wastewater discharges
- Local effects from individual discharges
- Cumulative effects of all discharges
- Parameters (at a minimum)
 - Flow
 - Sediment (Total Suspended Solids)
 - Total Dissolved Solids
 - Chloride
 - Sulfate
 - Organic Nitrogen
 - Ammonia
 - Nitrate Nitrogen
 - Total Phosphorus
 - Orthophosphate Phosphorus



RFP

- **Advertised 6 weeks**
- **Three proposals**
- **Evaluation Committee**
 - **Upper Basin**
 - **Government and Customer Relations**
 - **Environmental Services**
- **Aqua Strategies – most qualified respondent**



Contract Scope

- **Project contains scope uncertainty**
 - **Stakeholder Group**
 - **Regulatory Agency Working Group**
 - **Scientific Advisory Group**
- **Developed with multiple alternatives and options of different levels of effort to address uncertainty**
 - **Varied project duration**
- **BRA will direct Aqua Strategies which options and alternatives to complete**



Cost

- **Not-to-exceed costs established for options and alternatives**
- **Contract all highest level of effort options and alternatives selected - \$2,973,843**
- **Contract all lowest level of effort options and alternatives selected - \$1,683,531**
- **10% Contingency recommended**



“BE IT RESOLVED that the Board of Directors of the Brazos River Authority hereby Authorizes the General Manager/CEO to execute a contract for the development of the Possum Kingdom Water Quality Model with Aqua Strategies in an amount not to exceed \$2,973,843.”

“BE IT FURTHER RESOLVED that the Board of Directors of the Brazos River Authority hereby authorizes the General Manager/CEO, if he deems it appropriate, to increase the contract value by an amount not to exceed 10% of the original contracted amount for additional services.”



Brazos River Authority



Brazos

— ★ —
RIVER AUTHORITY