

The image features a logo in the top left corner consisting of a large, dark green letter 'C' enclosed within a thin black square frame. To the right of the 'C', the words 'ARBON RHO' are written in a dark green, sans-serif, all-caps font. The background of the entire image is a soft-focus photograph of a natural landscape. In the foreground, there is a dense patch of tall, thin grasses, some of which are golden-brown and others green, blowing in the wind. The background shows a hazy, rolling landscape under a bright, overcast sky.

# CARBON RHO

## **PARTNERING WITH LANDOWNERS**

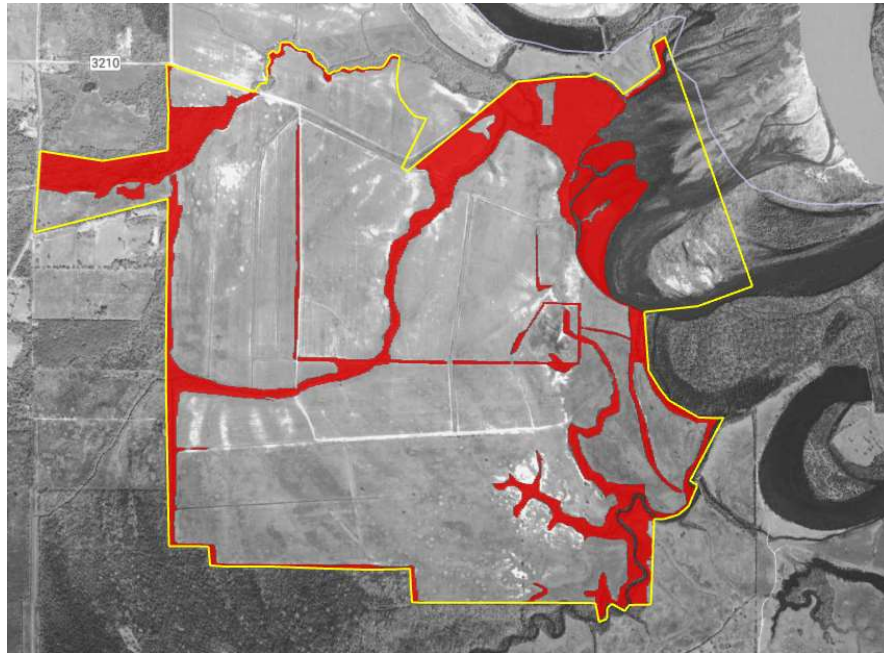
*to capture the value of natural  
assets, and provide access to the  
carbon credit trading market*

## Section I

# LEVERAGING IMPROVED FOREST MANAGEMENT ON EXISTING HARDWOOD STANDS



# RED RIVER PILOT PROJECT – EXISTING STANDS



## EXPLANATION

 **Mixed Bottomland Timber-Strata #2  
(Riparian areas and field fencelines)**

 **Cultivated Areas (Prior to 2002)**

- Historic Deforestation: The Oklahoma Forestry Services' article entitled Forest Legacy estimates a greater than 40% loss of native forest across the state since settlement. By 1956, the U.S. Forest Service estimated that only 15% of the state's bottomland hardwoods still stood (OKDAFF, 2023). The Red River valley across the 4-States region has undergone similar widespread deforestation since the early 1900s, as large-scale agriculture developed.
- Existing Threats to Native Hardwoods: According to publicly available interactive mapping (Global Forest Watch), over 40 % of forest cover present in 2000 has been lost from the six counties across the 4-States Region of Arkansas, Louisiana, Oklahoma and Texas. Historic data suggests much of that timber loss is from hardwood timber stands, which are often clearcut prior to or after a real estate transaction. CARB currently protects over 5,400 acres of existing native bottomland hardwood forests.
- Project Design – Improving Hardwood Stands: The project design, including baseline stratification were developed to use market-based returns to incentivize owners to build/maintain resilient native hardwood stands.



# RED RIVER PILOT PROJECT – INTENTIONAL DESIGN

## BASELINE INVENTORY HARDWOOD STRATIFICATION

### MODELED CARBON ACCRUAL BY STRATA

(MtCO<sub>2</sub>e/Acre-year)

3.1 MtCO<sub>2</sub>e/Acre-year

2.2 MtCO<sub>2</sub>e/Acre-year

2.5 MtCO<sub>2</sub>e/Acre-year

3.6 MtCO<sub>2</sub>e/Acre-year

2.6 MtCO<sub>2</sub>e/Acre-year

1.0 MtCO<sub>2</sub>e/Acre-year

HARDWOOD STRATA #1  
(>120 MtCO<sub>2</sub>e/Acre)

HARDWOOD STRATA #2  
(>70-120 MtCO<sub>2</sub>e/Acre)

HARDWOOD STRATA #3  
(>40-70 MtCO<sub>2</sub>e/Acre)

ARR STRATA #1  
(>40 MtCO<sub>2</sub>e/Acre)

ARR STRATA #2  
(>15-40 MtCO<sub>2</sub>e/Acre)

ARR STRATA #3  
(<15MtCO<sub>2</sub>e/Acre)

### OWNER REVENUE PER ACRE

(Example: Assumes \$25/ton Credit Pricing)

\$42/Acre

\$29/Acre

\$33/Acre

\$48/Acre

\$35/Acre

\$14/Acre

ARR  
CONVERSION  
INCENTIVE

STAND  
IMPROVEMENT  
INCENTIVE



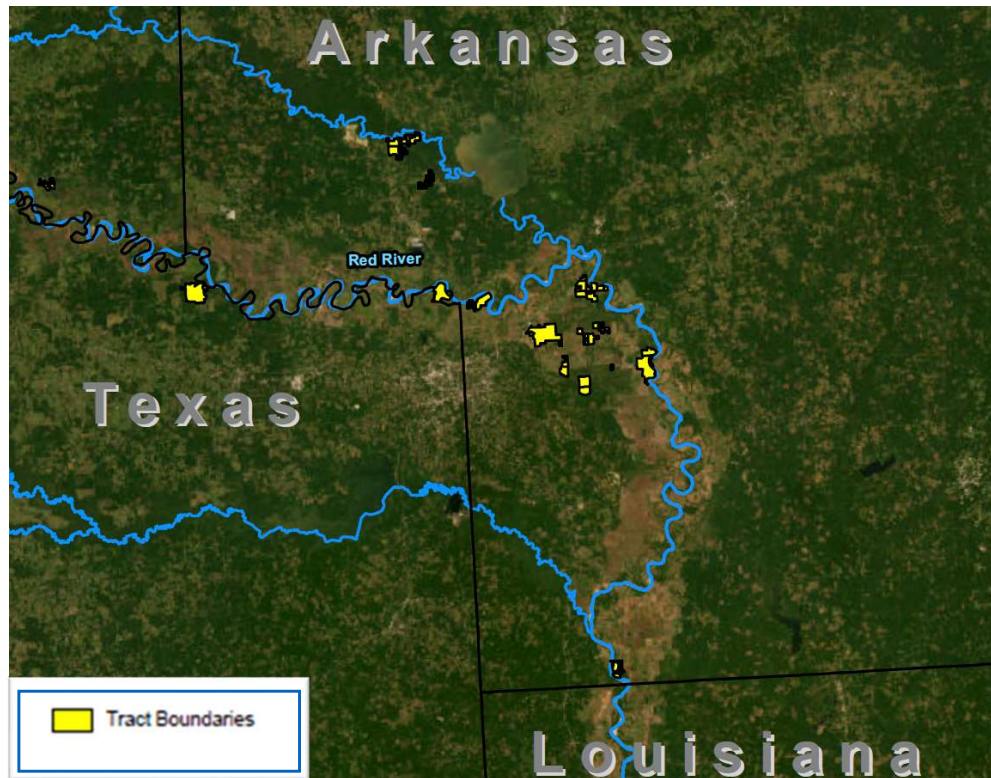
Section II

LEVERAGING IMPROVED FOREST MANAGEMENT ON  
AFFORESTATION TRACTS



# RED RIVER PILOT PROJECT – IMPROVING ARR TRACTS

## Baseline Inventory Findings (>7,800 acres)



- **ARR Strata 3:** Approx. 31% of previous ARR tract acreage converted/reforested within the past 20 years requires active intervention to meet original USDA planting criteria (Over 400 trees/acre). Activities would include ground prep, seedling sourcing and replanting at least 300 stems per acre to improve stocking.
- **ARR Strata 2:** Approx. 30% of previous ARR tract acreage converted/reforested within the past 20 years would benefit from active management (e.g. prescribed fire or hack-and-squirt) to allow selective in-fill reforestation to improve stocking levels.



# RED RIVER PILOT PROJECT – HISTORIC LAND USE



**2001 Aerial – Row Crop Agriculture**

17	Cl	Chlorine	35.45
35	Br	Bromine	79.904
53	I	Iodine	126.90447
85	At	Astatine	(210)
117	Ts	Tennessin	(294)



# RED RIVER PILOT PROJECT – USDA WRP CONVERSION



**2003 Aerial – Constructed Wetlands Visible**



# RED RIVER PILOT PROJECT – STRATIFICATION



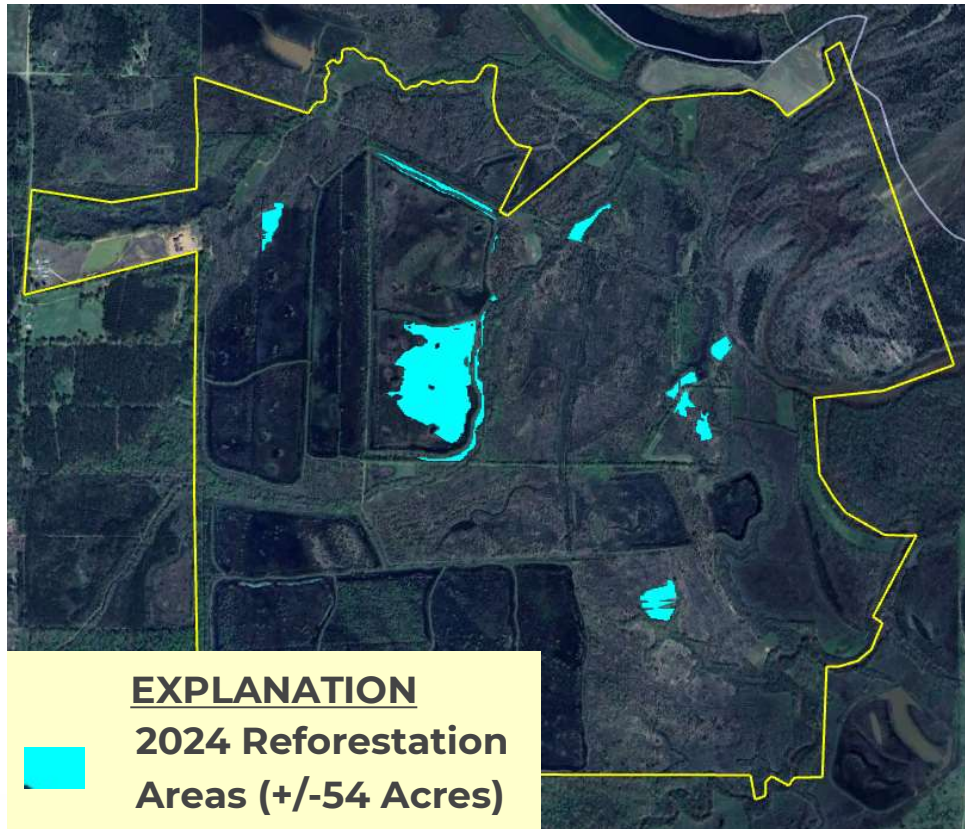
## EXPLANATION

-  Mixed Bottomland Timber (Strata #2)
-  Mixed Bottomland Timber (Strata #3)
-  ARR-Strata #1
-  ARR-Strata #2
-  ARR-Strata #3
-  Monoculture Elm

**Identification of IFM Opportunities**



# RED RIVER PILOT PROJECT – 2024 ARR ACTIVITIES



- 2024 On-site Activities (Complete)
  - (See narrative below: 2024 Monitoring Report)
- Timber Stand Improvement Plan
  - See 2024 Ground Preparation (Page 3)
  - Focused on “easily accessible areas”
  - Hand planting/minimal ground prep

Tract TX48037\_002: Approximately 23,000 barefoot seedlings were planted as part of the reforestation of approximately 54 acres of this tract, which is enrolled in the USDA-Wetlands Reserve Program (WRP). Reforestation activities were performed in accordance with a Timber Stand Improvement (TSI) plan that was prepared by Cp and Kingwood in support of a Compatible Use Authorization (CUA). Like many WRP tracts, a significant portion of the conservation easement either was not reforested as originally planned or mass mortality of planted seedlings occurred after the original ARR conversion. This TSI for this tract is a living document that will be reviewed with U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) foresters to systematically identify and address portions of the tract where additional ARR activities are appropriate.



# RED RIVER PILOT PROJECT – ARR CO-BENEFITS

## Regional Co-Benefits of Afforestation

**Red River Pilot Project—Afforested Areas: 5,330 Acres**

- Erosion Control
- Flood Mitigation
- Runoff Reduction & Water Storage
- Air Quality & Air Pollution Control
- Water Quality Improvement
- Habitat & Biodiversity

**Estimated Annual Value of Total Ecosystem Services: \$2,000,000**

*Source: Texas Ecosystem Services: A Statewide Assessment, Texas A&M Natural Resources Institute (October 2022)*

# RED RIVER PILOT PROJECT – REMOVING BARRIERS

## Section III

### Carbon Finance & Addressing Key Barriers to Private Landowner Participation





# RED RIVER PILOT PROJECT – REMOVING BARRIERS

## Leveraging the BCarbon Protocol to Address Barriers to Landowner Participation

**Land Management Flexibility:** Although afforestation as a concept is well received, most landowners are extremely hesitant to commit to compliance contracts that exceed 40 or even 100-year terms. The small exception to this rule is a relatively small group of owners with unique property holdings or vision (e.g. generational management). This limits the potential to scale ARR activities regionally, whereas BCarbon's 10-year revolving crediting commitment and 10-year post-crediting residual period are much more palatable. Carbon Rho's evergreen contract allows for retention of owners for periods comparable to compliance projects (>50 years). Owners must attest to compliance with our sustainable forest management plan (SFMP) that provides welcome flexibility for management practices versus compliance projects. A "menu" of BMPs allowed under the BCarbon protocol (including prescribed fire) are key to improving regional forest/soil health via sustainable forest management practices, while ensuring the permanence with a revolving 10-year residual/monitoring period.

**Economy of Scale:** Executing nature-based sequestration projects on individual tracts can expose landowners to inordinately small returns coupled with a very high project risk profile. The cost and resource burden of measurement and reporting is much more efficiently managed across our group project, versus managing an individual tract that requires a similar level of effort. Systematic management of a group project lowers the cost to participate to zero for landowners, while mitigating project risk by sharing both returns and risk across a larger project consisting of similar forest resources.

**Revenue Retention:** Carbon Rho expects to drive more revenue to landowners for reinvestment. Many regional competitors either retain 50% or more of carbon proceeds and/or front-load contract payments (e.g. 40-year or longer IFM contracts with avoided emission credits) in anticipation of retaining substantial upside project revenue. Carbon Rho's model is landowner-driven and thereby a more sustainable opportunity for reinvestment in the resources targeted for reestablishment and protection. Delivering at least \$30/acre annually at the outset is an important hurdle for private landowners in the region given competing land use opportunities. Continued farming of marginal croplands of grazing or bottomlands previously cleared of native timber will persist without a reasonable expectation of financial return. Also competing energy transition projects are driving land use decisions regionally. For example, one of the largest solar energy generation facilities in the United States is being developed between the Sulphur and Red Rivers in northeast Texas. Carbon finance can provide predictable annual income that offers an opportunity to break the cycle of regional hardwood management, which often includes clearcutting immediately prior to a land transaction or harvesting timber for cash flow immediately after acquisition. The ability to stack income from a wider variety of compatible land uses (e.g. recreational leasing, managed agroforestry or other soil carbon projects) under the BCarbon protocol also encourages adoption.



## Leveraging the BCarbon Protocol to Address Barriers to Landowner Participation

**Effectively Leverage Public and Private Stakeholder Groups:** the nature of our group project allows Carbon Rho to leverage a wide variety of stakeholders to our participating owners advantage. Individual property owners simply cannot afford to routinely access or engage with these stakeholders to execute large-scale projects. In addition to collaborating with the USDA-NRCS and other state/local conservation advocates on behalf of our landowner group, current project stakeholder engagement includes but is not limited to the following:



**Knowledge Gap:** In the process of developing nature-based solutions (NBS) in this region, a widespread lack of understanding of the fundamental market drivers and opportunities for landowners was encountered. Absent the understanding of both opportunity and downside risk, landowners cannot act as trusted partners in delivering high-value project outcomes. On the expectation of market-based returns, Carbon Rho's management team has invested in landowner educational workshops or presentations with Oklahoma State University Extension, Red River Valley Association and the Louisiana Farm Bureau to reduce the level of mistrust often encountered with nature-based project development.

**Reducing Bureaucratic Frictions:** Both owners with lands enrolled in the USDA Agricultural Conservation Easement Program (ACEP) and unencumbered private properties routinely encounter bureaucratic frictions that often result in slow results or no action on desired BMPs that have significant benefits for nature-based sequestration. Carbon Rho's privately financed model provides more nimbleness in pursuing project funding or co-investment to implement NBS. This flexible access to capital can also lower execution risk compared to individual landowner/project developer alignment that often cannot efficiently navigate a bureaucratic process. Coupling private finance with public sources of funding is also expected to allow for more rapid scaling of the group project as credit offtake is negotiated. Carbon Rho has introduced participating owners to various USDA conservation programs including:

- Conservation Stewardship Program (CSP), including biochar production from woody residue and other soil health BMPs;
- NRCS Timber Stand Improvement planning process; and
- USDA Climate Smart Initiative administered by Texas A&M Forest Service (up to \$600/acre in funding for reforestation).



## Leveraging the BCarbon Protocol to Address Barriers to Landowner Participation

**Reducing Bureaucratic Frictions (Cont'd)**: On private lands in the four states area, BMPs protecting riparian areas adjacent to waterways are not statutory requirements. The project SFMP dictates specific forestry BMPs that serve to protect these riparian areas. Perhaps most importantly to BMP adoption is the awareness of alternative funding opportunities and ability to execute necessary planning and support activities that are not available to typical private landowners. Many small landowners are reticent to engage with regulatory agencies like the US Army Corps of Engineers (USACE) when activities impact waters of the U.S. for example. Engaging with the USACE will be critical as Red River navigability project expands and shoreline protection activities (voluntary and USACE-driven) are incorporated into the group project over time.

✦ ***Absent market-based carbon financing, the degree of timber inventory/measurement and intentional stand improvements undertaken in the Red River Pilot Project and more importantly achieving similar results at the envisioned scale cannot be achieved.*** ✦