

SUSTAINABLE FOREST MANAGEMENT PLAN

Carbon Accretion & Riparian Benefits (CARB)



July 2023

Revision-0

1.0 CARB PROJECT – SUSTAINABLE FOREST MANAGEMENT PRINCIPLES

Carbon Rho has adopted the following principles for our Carbon Accretion and Riparian Benefits (CARB) group project. Each participating owner shall review this Sustainable Forest Management Plan (SFMP) and shall attest to their implementation of this plan for their participating forested acreage. Owners may elect to perform alternative management practices in accordance with their existing management plan; however, these guiding sustainable management practices shall apply to forested land in CARB:

1. **Sustainable Forestry** - Sustainably managed forests provide a multitude of benefits to current owners and the ecosystem, while maximizing future utility of the associated natural resources. Key benefits of sustainable forest management include, but are not limited to, soil and water conservation, improved terrestrial and aquatic habitat, biodiversity, and storage of atmospheric carbon dioxide. These benefits shall be actively managed throughout the life cycle of working forests. Intentional management to augment these benefits is integral to CARB, which seeks to regenerate and reforest degraded lands, where applicable.
2. **Forest Productivity and Health** - Owners shall coordinate with Carbon Rho to ensure that either regenerative growth or replanting of harvested areas act to maintain or improve forested land capacity. Long-term protection of forest and soil health are essential to CARB.
3. **Protection of Water Resources** - Protection and expansion of riparian zones that ultimately preserve and improve water quality is a key benefit of the CARB project. Owners shall comply with best management practices for riparian areas, including regulatory requirements for timber management within streamside management zones (SMZs).
4. **Protection of Biological Diversity** - Connection of riparian areas and associated habitat is a key function of the CARB project area. This connection protects and promote biological diversity, including animal and plant species, wildlife habitats, and resilient ecosystems.
5. **Identification and Protection of Sensitive Areas** - Owners shall coordinate with Carbon Rho to ensure sensitive areas of forest lands (e.g. ecological, geological or cultural) are identified. Carbon Rho maintains a site-specific survey of sensitive areas for each owner that uses publicly available data sets to identify potentially sensitive areas. A mitigation plan shall be prepared with affected owners to ensure protection of the known sensitive areas.
6. **Regulatory Compliance** —Participating owners shall comply with applicable federal, tribal, state, and local environmental regulations.
7. **Audit Access**—Consistent with the terms and conditions of the Carbon Services Agreement each owner shall allow unencumbered access to both Carbon Rho and 3rd party auditors, our subcontractors and/or carbon registry verifiers.
8. **End Use of Harvested Timber** - Where feasible, Carbon Rho will work with participating owners to identify regional opportunities to direct harvested timber to mills producing long-lived, end use products. Examples include mass timber mills and other forest products that replace conventional building materials (e.g. concrete and steel). Harvests from NRCS easements shall be performed in accordance with at USDA-NRCS approved Timber Stand Improvement Plan.
9. **Continual Improvement**—CARB presents a unique opportunity for shared learning between participating owners that will continually improve the practice of forest management within the project area. Carbon Rho will work cooperatively with owners to improve the practice of sustainable forestry through training and education programs. Owners are encouraged to share learnings, including support of sustainable forest management research with partner institutions.

2.0 GROUP PROJECT OBJECTIVES

Carbon Rho, LLC (Cr) is developing the Carbon Accretion and Riparian Benefits (CARB) project to leverage revenues generated from the growing voluntary carbon credit market and connect privately owned tracts to protect and enhance riparian habitats. Connecting various properties through a group project focused on nature-based carbon capture will also provide stacked ecological service benefits, including but not limited to:

- Preserving and restoring native bottomland forests;
- Creating conservation corridors to protect, restore, or create riparian habitats;
- Improving water quality in adjacent waterbodies; and
- Mitigating bank and overbank erosional losses during flood events.

CARB is a group forestry-based carbon capture project focusing on the four states (4-States) region of Arkansas, Louisiana, Oklahoma and Texas. The project provides a mechanism to aggregate tracts with similar forest types to create conservation corridors. Generating revenue via land use practices that enhance carbon capture in natural sinks will provide an incentive for adjacent landowners to participate in the project, thereby encouraging adoption of conservation practices on a larger scale as new tracts are enrolled on an annual basis.

The CARB project is designed to be complementary to the USDA Agricultural Conservation Easement Program (ACEP), which includes Agricultural Land Easements (ALE) that have established forestry-based conservation practices on easements across the 4-States region. Conservation easements under these programs include but are not limited to conservation reserve program (CRP), Wetland Reserve Program (WRP), and flood plain easements (FPE). In response to historic regional deforestation, these easement programs have effectively replanted or protected native hardwood forests, thereby preventing conversion of these working lands to non-agricultural uses. The resulting patchwork of conservation easements presents an opportunity for aggregation of both ACEP lands and adjacent tracts to create a broader habitat protection project. Beyond these ACEP easements, a wide variety of managed and unmanaged timber exists in the region; however, this pilot project is strategically focused on the following forest types:

- Reforested agricultural lands;
- Native bottomland mixed hardwood stands;
- On-going ARR opportunities; and
- Commercially managed forests adjacent to the forest types above.

Grouping these forest types that exist in similar settings to the ACEP easements should encourage the expansion of conservation corridors over time. This aggregation project will ultimately create a landscape-level framework to incentivize owners to proactively manage traditionally unmanaged timber to restore high quality resilient native hardwood stands.

3.0 LANDOWNER MANAGEMENT OBJECTIVES

Individual landowner objectives for their participating acreage in the CARB project will be included in a site-specific Resource Management Strategy (RMS). Although each landowner with contributing acreage in the project area has met the criteria to participate in the group forestry project, the BCarbon Forest Carbon Protocol (hereafter referred to as “the Protocol”) is designed to maximize flexibility in accommodating individual owner management practices. All participating owners must comply with the following requirements of the Protocol to maintain eligibility to participate in CARB:

- Each owner’s management objectives shall comply with the sustainable forest management principles during both the crediting period and the 10-year residual period after monetization of credits cease.
- Owners shall maintain the measured baseline timber inventory for 10 years following the most recent monetization of carbon credits. This is a revolving commitment such that each new monetization event resets the 10-year baseline inventory commitment.

Despite the overall commitment to the principles of this SFMP, each owner’s RMS will focus on necessarily diverse management practices that may include: habitat preservation/improvement; recreation; timber production; and/or a specific species management plan(s). A template RMS document is provided in **Appendix A**. This template may be adapted or owners may use existing plans provide the plans address the minimum requirements of the template RMS.

4.0 BEST MANAGEMENT PRACTICES

The CARB project area and the greater 4-States region has plentiful natural stands of diverse and highly productive forestlands, which add substantial economic and ecological value to the region. Design of the CARB project is intentionally focused on development, protection and enhancement of conservation corridors along the Red River and its tributaries in the 4-States region. A recent statewide assessment of Texas ecosystem services was completed by Texas A&M Natural Resources Institute (TAMU-NRI), and the assessment ascribes values to various functions of working lands and their tangible benefits to society (Putnam, 2022). The State of Texas has lost over 1.2 million acres of working land in the past five years (or 650 acres per day) as on-going population increase results in land use conversions (Smith, 2019). Estimated total annual ecological service value provided by lands in the CARB project are estimated between \$250-\$500. Riparian areas within the project area provide the following key ecological services inventoried by TAMU-NRI:

- Erosion Control;
- Flood mitigation;
- Air quality benefits and air pollution removal;
- Water quality (replacement and improvement);
- Recreation; and
- Wildlife habitat and biodiversity.

These annual ecological services alone are valued at over \$200 per acre within the project area. Hence, maintaining and enhancing these ecological services adds value to all project participants.

An actionable plan is the most effective way to achieve these project goals and sound management of the forest resources must be the focal point of the plan. Misapplication of silvicultural practices can negatively affect soil and water resources that CARB is striving to protect and enhance. Best Management Practices (BMPs) are an effective way to protect forest soil and water quality. Sustainable forestry BMPs have been developed through on-going evaluation of regional silvicultural practices that prevent or reduce the amount of erosion generated. These BMPs are typically categorized as either:

- Structural BMPs: These BMPs are physical structures that either prevent pollutants from affecting storm water runoff or mitigate the effects on adjacent waterways. Effective structural BMPs must be inspected and maintained to ensure effective operation over the life of project activities.
- Nonstructural BMPs: BMPs that do not require an physical structure are considered non-structural, with examples including site planning, awareness training and education concerning desired outcomes. Non-structural BMPs are often most cost-effective given the preventive nature of the process and opportunity to eliminate or reduce sources of soil and water pollutants.

The USDA Natural Resource Conservation Service (NRCS) and Arkansas Forestry Commission (AFC) have both published useful BMPs that should be reviewed and adopted as applicable when developing an owner-specific RSM. These documents are included as references in Section 6.0. Examples of published BMPs available for silviculture and wildlife habitat management are listed below:

- Example Forestry BMPs (typical examples)
 - Alley Cropping
 - Herbaceous Weed Control
 - Windbreak Establishment
 - Fuelbreaks
 - Riparian Forest Buffer
 - Access Control
 - Tree/Shrub Establishment
 - Forest Trails and Landings
 - Brush Management
 - Prescribed Burning
 - Silvopasture Establishment
 - Forest Slash Treatment
 - Firebreak
 - Tree/Shrub Site Preparation
 - Windbreak Renovation
 - Forest Stand Improvement
- Wildlife Management Practices – Forestry Related BMPs (typical examples)
 - Stream Habitat & Improvement
 - Recreation Area Improvement
 - Integrated Pest Management
 - Wetland Wildlife Habitat Management
 - Upland Habitat Management
 - Early Successional Habitat Development/Management
 - Wildlife Watering Facilities

5.0 IMPLEMENTATION

Implementation of the SFMP shall include the following minimum requirements:

- Meet with Carbon Rho representatives to review and amend an existing timber management plan or develop a new site-specific RSM.
- Contact Carbon prior to any planned harvest activities to review projected growth rate and then current baseline inventory maintenance requirements.
- Report material losses on the participating forested acreage. For the purposes of this SFMP, a material loss would be estimated at over 10 acres of timber losses on a single tract;
- At least annually during the crediting period and prior to receiving funds generated from monetization of credits, each participating owner shall review attest to their implementation of this plan for their participating acreage. An example affidavit for participating owner is provided in Appendix B; and
- At a minimum 5-year frequency in conjunction with periodic forest inventory activities, Carbon Rho and each participating owner shall review the RMS. If needed, the RMS will be revised, and written acknowledgement of the 5-year review and/or revision will be documented using the form included as Appendix C.

APPENDIX A

Resource Management Strategy - Template

RESOURCE MANAGEMENT STRATEGY

PROPERTY SETTING

Nearest City:

County:

State:

Physiographic Region:

GENERAL SITE DESCRIPTION & BASELINE INVENTORY DATA

<Provide narrative description of the following:>

- General property description and use.
- Define Management units as appropriate based on dominant soil types/site index
- Average slope/topographic setting, including nearest named river and/or stream
- Status of timber management plan (if applicable) and date of last revision.

Describe Relevant Timber Production Background:

Date of Most Recent Forest Inventory:

Dominant Timber Stand Type(s):

List CARB Strata Present & Estimated FVS Carbon Accrual Rates:

Strata	Strata Area (Acres)	Estimated Carbon Accrual Rate (MTCO ₂ e/Acre)	Comments

See **Attachment 1** for the following site maps:

- Existing property forest stratification
- USDA Soil map and dominant soil series descriptions
- Site index map
- Topographic map

RESOURCE MANAGEMENT STRATEGY

Complete the following data sheet for each significant management unit, which makes up at least 10% of the forested acreage of the project area.

MANAGEMENT UNIT NO. - _____

STRATA DESCRIPTION

CURRENT CONDITIONS

Land Unit	Approx. Average
Acres: _____	Tree Diameter: _____
Soil Type: _____	Inventory
	(MTCO _{2e} /acre): _____
Site Index: _____	

Typical Species Composition:

<Provide narrative description of the following:>

- Typical species mix
- Age class if a recent ARR project or managed timber
- Observation of invasive species or competing herbaceous vegetation

Stand Density:

[Add a discussion of stand density (BA or Trees per Acre), and the implications this has to the intended forest management.]

Wood Products Potential:

If the tract is subject to periodic harvest, describe typical forest products general production potential (e.g. pulpwood, sawtimber or specialty). Reference annual growth rate for strata

Soil Type(s) and Condition:

Reference soil types presented in Attachment 1 mapping and desirable species for future reforestation

Topography:

Describe relevant slope/aspect and ecological service metrics provided in Table 3 of the baseline inventory report.

Natural and Cultural Features:

Use desktop due diligence to identify any know sensitive resource or cultural resources

Roads and Trails:

Use site mapping to update existing roads/access and note if there are erosion concerns or other resource concerns, they should be addressed with appropriate BMPs

Forest Health:

RESOURCE MANAGEMENT STRATEGY

Identify any potential causes of systematic mortality (if present) such as pine beetles, emerald ash borer etc.. Recommend BMPs, if needed.

Federal Species of Interest:

Use desktop due diligence to identify known fish and wildlife listed as federal species of interest. Identify other critical wildlife and management plans, if applicable. Identify species that may require some type of harvest modification, if applicable.

Water Quality and Other Important Features

Identify environmental regulations affecting the tract. These could include regional soil and water conservation requirements (e.g. recharge zones and watershed protection rules), 303(d) listed impairments to adjacent waters, or pollutant of interest for total maximum daily load limitations for impaired waters.

Existing Conservation Practices

Include information about BMPs in place within the management unit.

Harvest History

Provide customary business records concerning recent harvest history for the unit, if applicable

Miscellaneous

Identify other underperforming resource concerns and how the resource was assessed. If necessary , plan BMP implementation (below) to address the resource concerns.

LIST OF FUTURE OUTCOMES

Strata Improvement: _____ Average Tree Diameter: _____ Inventory (MTCO_{2e}/acre): _____

List other qualitative habitat improvements (e.g. prescribed burns for quail habitat or pollinators)

LIST OF PLANNED BMP IMPLEMENTATION (IF APPLICABLE)

Description of BMP and desired outcome for resource management

Conservation Practice: _____	NRCS Practice Code: _____
Scheduled Installation: _____	Extent: _____ (acres, linear feet etc.)
Resource Concern(s) Addressed: _____	

ADDITIONAL MANAGEMENT CONSIDERATIONS

RESOURCE MANAGEMENT STRATEGY

ATTACHMENT 1

Resource Management Strategy Mapping

RESOURCE MANAGEMENT STRATEGY

ATTACHMENT 2

Owner Approval of Resource Management Strategy

RESOURCE MANAGEMENT STRATEGY

Landowner and Site Information

Landowner Name: _____ Landowner Phone: _____

Landowner Address: _____

Landowner Email: _____ Alternate Phone: _____

Property Location: _____

Project No. _____

Plan Date: _____ Acres in Plan: _____

I hereby attest: (1) that I am familiar with the requirements of the CARB project Sustainable Forest Management Plan; (2) that I or my agent has visited and examined the subject property; (3) that this Resource Management Strategy has been prepared in accordance with standard industry practice, including consideration of applicable BMPs; and (4) the plan is adequate for the facility.

Plan Writer Information

Plan Writer Name: _____ Plan Writer Phone: _____

Company Name: _____

Plan Writer Address: _____

Plan Writer Email: _____ Alternate Phone: _____

Plan Acceptance

Landowner's Signature: _____ Date: _____

Plan Writer's Signature: _____ Date: _____

NRCS Signature: _____ Date: _____

(NRCS acceptance for ACEP easements only)

APPENDIX B

Annual Owner Affidavit

ANNUAL PARTICIPATING OWNER AFFADAVIT

CARB Contract No. TXXXXX_XXX

STATE OF TEXAS §
 §
COUNTY OF _____ §

The undersigned, after being duly sworn and being over twenty-one (21) years of age and otherwise competent to make this Affidavit attests to the following:

1. The undersigned executed a Carbon Services Agreement (CSA) dated _____ by and between the undersigned and Carbon Rho, LLC and hereby affirms, and is currently in compliance with, its terms.
2. The undersigned understands the revolving nature of the BCarbon Forest Carbon Protocol, which specifies the undersigned shall maintain the then current baseline forest inventory for ten years following the most recent monetization of carbon credits.
3. The undersigned has read and attested compliance with the terms and conditions specified in the CARB Sustainable Forest Management Plan (SFMP), including the requirement to maintain compliance with the SFMP for a minimum of 10 years following termination of then current crediting period.
4. The undersigned agrees to provide the most recent property tax receipt upon request by Carbon Rho, LLC.
5. The undersigned hereby affirms the current notice and payment address is set forth in Section 24 of the CSA.
6. The undersigned holds all right, title, and interest in the rights and interests in the Property, as such term in defined in the Agreement.
7. The Property is free from any and all liens, claims, encumbrances, tenancies, restriction, or easements that would prove or interfere with the rights granted to Carbon Rho, LLC under the CSA.

[Name/Authorized Agent of Company]

By: _____

Name: _____

Title: _____

STATE OF TEXAS §
 §
COUNTY OF BOWIE §

This instrument was acknowledged before me on the ____ day of _____, 2022, by _____.

Notary Public, State of _____

APPENDIX C

5-Year Review Documentation – RMS Review

5-YEAR SUSTAINABLE FOREST MANAGEMENT PLAN REVIEW DOCUMENTATION

Landowner and Site Information

Landowner Name: _____ Landowner Phone: _____

Landowner Address: _____

Landowner Email: _____ Alternate Phone: _____

Property Location: _____

Project No. _____

Plan Date: _____ Acres in Plan: _____

The Participating Owner reviews the CARB Sustainable Forest Management Plan (SFMP) plan at least once every five years. Documentation of this review and recommended action is noted below:

I have completed review and evaluation of the CARB SFMP for the subject property on _____ (date) and will will not (check one box) amend the Plan as a result.

Signature

Name (printed)

Note: Completed review form should be retained with the current revision of the Resource Management Strategy document.

