

Restoring a Legacy at Red River National Wildlife Refuge

*A Forestland Restoration Partnership Between the US Fish and Wildlife Service and
The Conservation Fund's Go Zero® Program*



Project Implementation Report

Prepared by:

The Conservation Fund

With contributions from:

United States Fish and Wildlife Service

TerraCarbon LLC

PROJECT FACT SHEET

Project Name: Red River National Wildlife Refuge Restoration Initiative

Location: Natchitoches Parish, Louisiana, United States

Project Developer: The Conservation Fund

Project Auditor:

SCS Global Services
2000 Powell Street, Ste. 600,
Emeryville, CA 94608 USA
1.510.452.9093

Project Start Date: February 2010 (completion of reforestation)

GHG Accounting Period: 100 years

Project Validation Date – May 13, 2009 - Gold Level

Project Standard – First Edition CCB Standards

EXECUTIVE SUMMARY

This Project Implementation Report is prepared for the Red River National Wildlife Refuge Restoration Initiative to meet the verification standards of the Climate, Community, and Biodiversity Alliance. All projects seeking approval under the CCB Standards must be validated to determine that the project design conforms to the Standards, and must subsequently be verified within five years to determine that the project has been successfully implemented, generating net positive climate, social, and biodiversity benefits in accordance with its design.

The Red River NWR Restoration Initiative was validated at the Gold Level on May 13, 2009 under the First Edition of the CCB Standards. This project was designed to decrease the effects of climate change via carbon sequestration, restore Louisiana's bottomland hardwood forest and wetland ecosystem and create long-term community benefits in the form of recreational lands under the management of the US Fish and Wildlife Service – hunting, fishing, wildlife photography, wildlife observation, environmental education and environmental interpretation. The project presented a unique opportunity to restore native bottomland hardwood forests that will benefit fish and wildlife, enhance water quality along the Red River and surrounding waterways, create new areas for public recreation, and trap carbon dioxide.

On behalf of the US Fish and Wildlife Service, The Conservation Fund purchased a total of 1,173 acres of private, marginal agricultural land within the boundary of the Red River National Wildlife Refuge located in Natchitoches Parish in northern Louisiana. Using donations from its Go Zero® program, the Fund restored the entire acreage to its native bottomland hardwood forest habitat. Once restored, the land was conveyed to the US Fish and Wildlife Service as an addition to the Red River National Wildlife Refuge for long-term protection and stewardship. The carbon offsets that are generated and purchased from this project cannot be sold or banked for future offset purposes.

Since 2005, the Fund's Go Zero program has helped Fortune 500 companies, their customers and employees, as well as other organizations and individuals seeking a positive response to two of our nation's most pressing environmental challenges: habitat loss and climate change. In a time when public financing for land conservation and habitat restoration are at historic lows, voluntary contributions are providing new private capital that is used to further the Fund's mission to conserve and restore our nation's land and water legacy for current and future generations. From these Go Zero projects, the nation derives—and will continue to receive for many years into the future—significant public benefits, including cleaner air, filtered water, restored wildlife habitat and enhanced areas for public recreation.

All of the Fund's reforestation-based carbon sequestration activities are conducted with state and federal natural resource agencies, including the US Fish and Wildlife Service. These organizations employ some of the world's top wildlife biologists, foresters and environmental professionals who serve as long-term stewards of the forests once they are restored. In March

of 2007, the Fund and the US Fish and Wildlife Service entered into a Memorandum of Understanding (renewed in 2010) that allowed all 553 of the Service's National Wildlife Refuges to benefit from the Fund's Go Zero program, building upon nearly a decade of partnership between the Fund and the US Fish and Wildlife Service to advance the science of carbon sequestration through reforestation.

The National Wildlife Refuge System Improvement Act of 1997 requires each refuge to develop a Comprehensive Conservation Plan for achieving refuge objectives consistent with sound principles of fish and wildlife management, conservation, legal mandates, and Fish and Wildlife Service policies. Our Project Design Document expanded upon many of the stewardship and management activities prescribed in the Red River National Wildlife Refuge Comprehensive Conservation Plan and our monitoring plans described in the Project Implementation Report follow the monitoring protocols prescribed by the US Fish and Wildlife Service.

The Red River National Wildlife Refuge Restoration Initiative also benefits from our partnership with TerraCarbon LLC, an advisory firm specializing in the forestry and land use sector of the carbon markets. TerraCarbon was contracted by the Fund to develop a monitoring plan that enables the Fund to monitor the project's ongoing carbon gains.

Over the course of the last century, we have lost more than 24 million acres of bottomland hardwood forest along the Red River and lower Mississippi River valleys, primarily because the land was converted to agriculture. Habitat destruction is more pronounced here than in any other area of the United States. Due to the geological challenges of farming in a floodplain, combined with changing market forces, agricultural landowners are increasingly interested in alternatives, providing significant opportunity for acquisition and restoration of vast acreage back to its original bottomland habitat. Restoring these lands—especially at Red River—is now one of The Conservation Fund's highest priorities, leaving our communities with cleaner air, cleaner water, and restoring biodiversity for wildlife and people alike.

RED RIVER NATIONAL WILDLIFE REFUGE RESTORATION INITIATIVE: TABLE OF CONTENTS

PROJECT FACT SHEET	2
EXECUTIVE SUMMARY.....	3
TABLE OF CONTENTS	5
G1. ORIGINAL CONDITIONS AT PROJECT SITE	8
G1.1 LOCATION AND BASIC PHYSICAL PARAMETERS	8
G1.2 VEGETATION.....	11
G1.3 CURRENT CARBON STOCKS AT THE PROJECT SITE.....	11
G1.4 COMMUNITIES LOCATED IN AND AROUND THE PROJECT AREA.....	11
G1.5 CURRENT LAND USE AND LAND TENURE AT THE PROJECT SITE	11
G1.6 CURRENT BIODIVERSITY IN THE PROJECT AREA	12
G1.7 IUCN RED LIST THREATENED SPECIES	12
G2. BASELINE PROJECTIONS	12
G3. PROJECT DESIGN AND GOALS	12
G3.1 PROJECT SCOPE AND SUMMARY OF GOALS	12
G3.2 DESCRIPTION OF PROJECT ACTIVITIES	12
G3.3 PROJECT LOCATION	13
G3.4 PROJECT TIMEFRAME.....	13
G3.5 RISKS TO CLIMATE, COMMUNITY AND BIODIVERSITY BENEFITS.....	13
G3.6 STAKEHOLDER IDENTIFICATION.....	13
G3.7 TRANSPARENCY AND PROJECT INFORMATION AVAILABILITY	16
G4. MANAGEMENT CAPACITY	16
G4.1 MANAGEMENT TEAM EXPERIENCE	16
G4.2 MANAGEMENT CAPACITY AND PROJECT SCALE	17
G4.3 TECHNICAL SKILLS OF PROJECT TEAM	17
G4.4 FINANCIAL HEALTH OF IMPLEMENTING ORGANIZATIONS	17
G5. LAND TENURE.....	18
G5.1 PRIVATE PROPERTY AND LAND RIGHTS.....	18
G5.2 VOLUNTARY NATURE OF THE PROJECT	18
G5.3 POTENTIAL IN-MIGRATION	18
G6. LEGAL STATUS	18
G6.1 COMPLIANCE WITH LAWS.....	18
G6.2 APPROVAL FROM APPROPRIATE AUTHORITIES.....	18
G7. ADAPTIVE MANAGEMENT FOR SUSTAINABILITY	18
G7.1 GENERATION OF RELIABLE FEEDBACK	18
G7.2 DOCUMENTATION OF DECISIONS.....	19
G7.3 PROJECT FLEXIBILITY.....	19

G7.4	COMMITMENT TO LONG-TERM SUSTAINABILITY	19
G8.	KNOWLEDGE DISSEMINATION	20
G8.1	DOCUMENTATION OF PROJECT LESSONS LEARNED	20
G8.2	DISSEMINATION OF INFORMATION	20
CL1.	NET POSITIVE CLIMATE IMPACTS	21
CL1.1	ESTIMATION OF NET CHANGES IN CARBON STOCKS	21
CL1.2	NON-CO2 GREENHOUSE GASES	22
CL1.3	NET CLIMATE IMPACT.....	22
CL2.	OFFSITE CLIMATE IMPACTS	23
CL2.1	LEAKAGE	23
CL2.2	MITIGATION OF NEGATIVE OFFSITE IMPACTS	24
CL2.3	NET EFFECT OF CLIMATE IMPACTS	24
CL3.	CLIMATE IMPACT MONITORING	24
CL3.1	MONITORING PLAN.....	24
CL4.	ADAPTING TO CLIMATE CHANGE AND CLIMATE VARIABILITY	26
CL5.	CARBON BENEFITS WITHHELD FROM REGULATORY MARKETS	26
CM1.	NET POSITIVE COMMUNITY IMPACTS	27
CM1.1	COMMUNITY BENEFITS	27
CM1.2	STAKEHOLDER PARTICIPATION IN PROJECT PLANNING	29
CM1.3	CONFLICT RESOLUTION AND GRIEVANCE PROCEDURES.....	30
CM2.	OFFSITE COMMUNITY IMPACTS	30
CM2.1	POTENTIAL NEGATIVE OFFSITE COMMUNITY IMPACTS.....	30
CM2.2	MITIGATION OF NEGATIVE IMPACTS.....	30
CM2.3	NET SOCIAL AND ECONOMIC IMPACTS.....	31
CM3.	COMMUNITY IMPACT MONITORING	32
CM3.1	MONITORING PLAN.....	32
CM4.	CAPACITY BUILDING	32
CM4.1	ACCOMMODATES COMMUNITIES.....	32
CM4.2	INCLUSION OF ALL GROUPS	33
CM4.3	INCLUSION OF WOMEN	33
CM4.4	COMMUNITY PARTICIPATION	33
CM5.	BEST PRACTICES IN COMMUNITY INVOLVEMENT	33
CM5.1	KNOWLEDGE OF LOCAL CUSTOMS.....	33
CM5.2	STAKEHOLDER EMPLOYMENT.....	33
CM5.3	WORKERS' RIGHTS.....	33
CM5.4	WORKER SAFETY	33
B1.	NET POSITIVE BIODIVERSITY IMPACTS	34
B1.1	NET POSITIVE BIODIVERSITY UNDER THE PROJECT SCENARIO	34

B1.2 POSSIBLE ADVERSE EFFECTS OF NON-NATIVE SPECIES..... 35

B1.3 THREATENED SPECIES..... 35

B1.4 SPECIES USED BY THE PROJECT 35

B1.5 GENETICALLY MODIFIED ORGANISMS..... 35

B2. OFFSITE BIODIVERSITY IMPACTS35

B2.1 POTENTIAL NEGATIVE OFFSITE BIODIVERSITY IMPACTS 35

B2.2 MITIGATION PLANS..... 35

B2.3 NET EFFECT OF PROJECT ON BIODIVERSITY..... 36

B3. BIODIVERSITY IMPACT MONITORING36

B4. NATIVE SPECIES USE.....37

B5. WATER AND SOIL RESOURCE ENHANCEMENT37

CONCLUSION38

Exhibits

- A. Memorandum of Understanding Between The Conservation Fund and U.S. Fish and Wildlife Service (2010)
- B. *Journal of Wetlands* publication
- C. Shreveport Times article

G1. ORIGINAL CONDITIONS AT PROJECT SITE

G1.1 Location and Basic Physical Parameters

The Red River National Wildlife Refuge Restoration Initiative (“Red River Restoration Initiative”) was implemented at the Red River National Wildlife Refuge (“Refuge” or “Red River NWR”), in northern Louisiana. The Refuge is comprised of five units, illustrated in the map in Figure 1. The restored acres are located within the Lower Cane Unit in Natchitoches Parish, which is the largest Unit within the Refuge. The restored lands are highlighted below in the Lower Cane Unit map in Figure 2.

Per the time table outlined in the Project Design Document (“PDD”), the Red River Restoration Initiative was successfully completed in two phases. The first parcel, which consisted of 922 acres, was purchased by the Fund in October 2008 and restored with native seedlings in January 2009. The acquisition of Phase 2, totaling 251 acres, was completed in Fall 2009 and was planted with native bottomland hardwood seedlings in February 2010. Both parcels (the “Go Zero Tracts” or the “Tracts”) were conveyed to the United States Fish and Wildlife Service (“USFWS” or “Service”) for inclusion into the Refuge in 2010.

The entire acreage of the Red River NWR is currently 13,070 acres. The Conservation Fund acquired, restored and conveyed 1,173 of these acres to the Service, or approximately 9% of the total Refuge area.

For additional information, please also refer to this section in the Project Design Document.

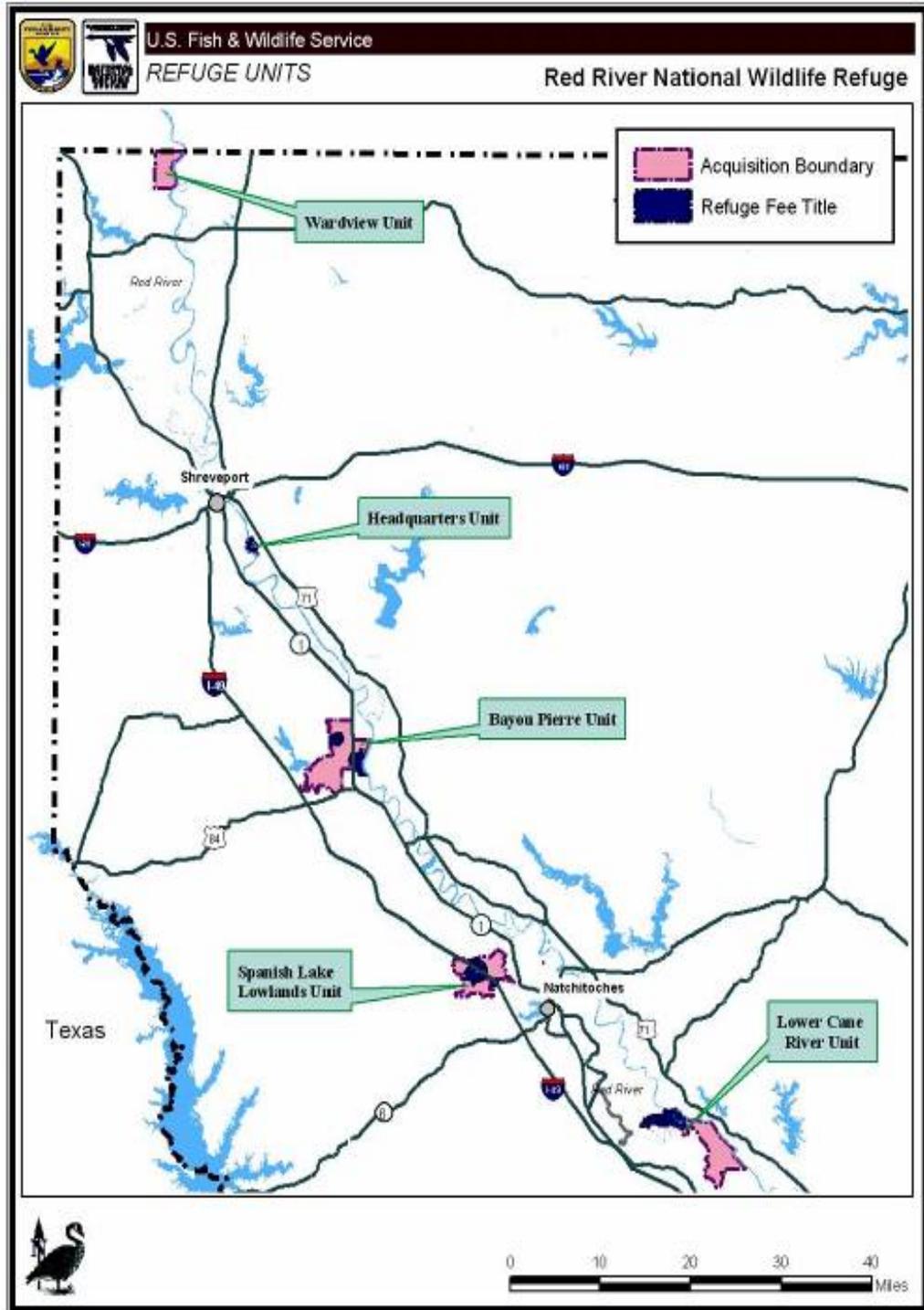


Figure 1: Map of Red River National Wildlife Refuge

Red River National Wildlife Refuge Lower Cane River Unit Planned Reforestation

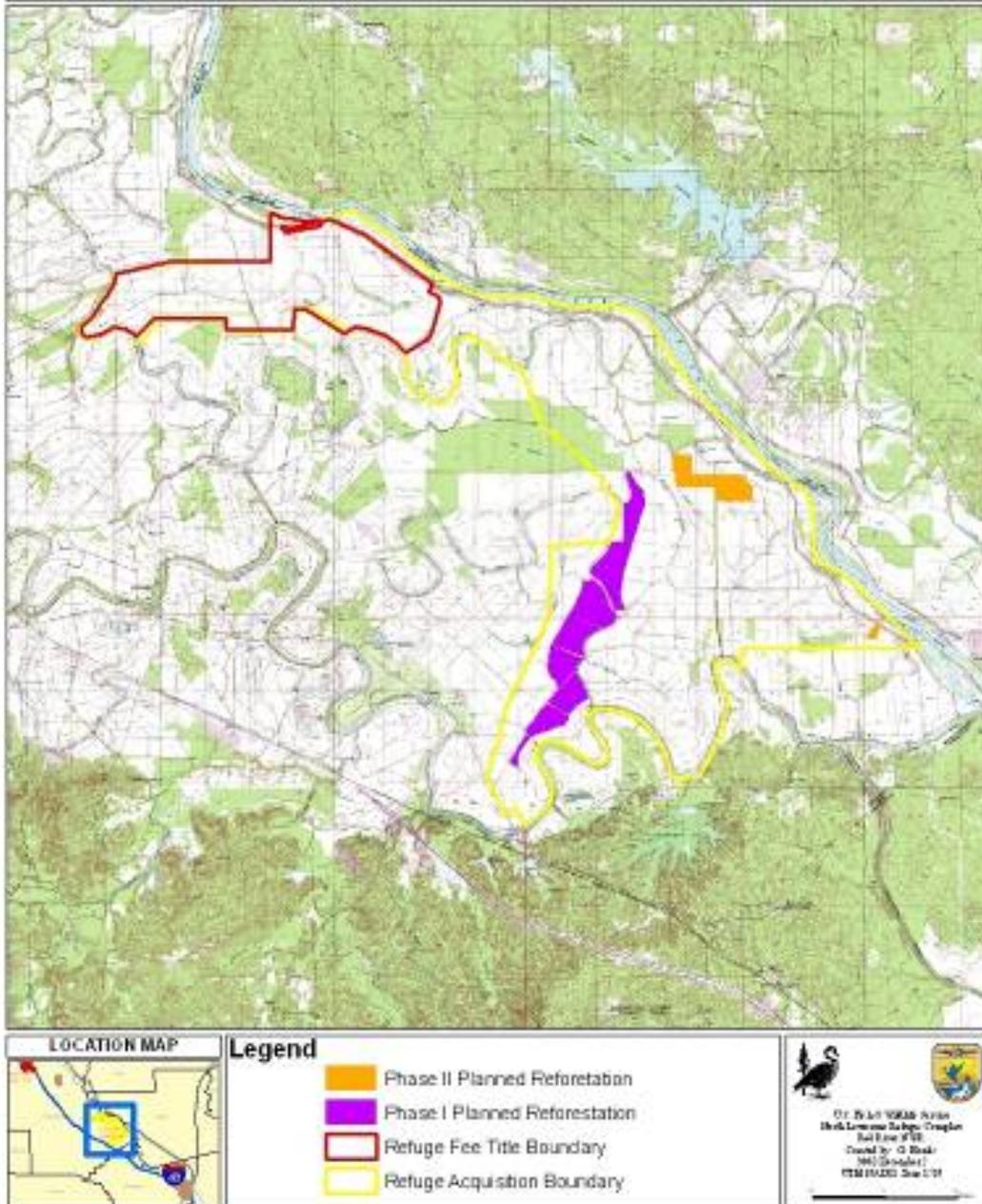


Figure 2: Map of Red River National Wildlife Refuge's Lower Cane River Unit

G1.2 Vegetation

Please refer to this section in the Project Design Document

G1.3 Current Carbon Stocks at the Project Site

The global climate change benefits of reforestation projects are widely recognized. Land use change—especially deforestation—is a significant component of increasing atmospheric CO₂ levels and a cause of global warming.¹ Thus, restoring forestland represents a natural way to reduce these effects and combat climate change. The climate and soil conditions in the Lower Mississippi River Valley contribute to carbon sequestration rates that are among the highest in the United States.

In order to quantify the carbon sequestration for the project, the Fund uses a sampling design that conforms to the methodologies of the Intergovernmental Panel on Climate Change's Good Practice Guidance (IPCC GPG). This sampling plan measures carbon stocks on a 5 year basis using both fixed radius and variable radius plot designs. At this time, all of the seedlings are less than five years old. The Fund estimates that these lands currently store between 6 to 10 metric tons of CO₂e/acre. The carbon impact of the Red River Restoration Initiative is estimated at 361 short tons / 327.5 metric tons of carbon dioxide equivalent per acre over one hundred years.²

We assume the soil carbon stocks will increase over time as tilling of the agricultural fields ceases and small and large woody detritus accumulates on the ground and is incorporated into the soil carbon pool. Soil carbon stocks will be estimated using lookup tables with default values.

G1.4 Communities Located in and Around the Project Area

Please refer to this section in the Project Design Document

G1.5 Current Land Use and Land Tenure at the Project Site

Please refer to this section in the Project Design Document

¹ IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

² Shoch, D., Kaster, G., Hohl, A. and R. Souter. Carbon sequestration potential of bottomland hardwood afforestation in the Lower Mississippi Valley, U.S.A. *Wetlands* 29 (2), 535–542.; Smith, J.E., Heath, L.S., Skog, K.E. and R.A. Birdsey. 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types of the United States. USDA Forest Service, Northeastern Research Station. Newtown Square, Pennsylvania, USA. Gen. Tech. Rep. NE-343.

G1.6 Current Biodiversity in the Project Area

Please refer to this section in the Project Design Document

G1.7 IUCN Red List Threatened Species

Please refer to this section in the Project Design Document

G2. BASELINE PROJECTIONS

Please refer to these sections in the Project Design Document

G3. PROJECT DESIGN AND GOALS

G3.1 Project Scope and Summary of Goals

The scope of the Red River Restoration Initiative included purchasing 1,173 acres of private agricultural land and restoring it to bottomland hardwood forest by planting it with native tree species. After the trees were planted, the land was conveyed to the USFWS for incorporation into Red River NWR where it can be utilized by both wildlife and local residents.

The three primary goals of the Red River Restoration Initiative are to decrease the effects of climate change via carbon sequestration, restore Louisiana's bottomland hardwood forest and wetland ecosystems, and create long-term community benefits in the form of recreational lands under the management of USFWS – for hunting, fishing, wildlife photography, wildlife observation, environmental education and environmental interpretation

G3.2 Description of Project Activities

The project activities listed in our Project Design Document include carbon research, measuring carbon stocks, site preparation, planting, project monitoring and validation/verification.

Research on carbon sequestration rates was conducted prior to project implementation. In 2007, a consortium of leaders in forest science and carbon project development, including representatives from TerraCarbon, amassed the most comprehensive dataset of bottomland hardwood stands yet assembled for the Lower Mississippi River Valley (LMV), drawing on 540 biomass plot measurements, and produced the most reliable predictive model to date. As more fully described in Section CL1, baseline carbon stocks were assessed before planting.

Site preparation and planting was completed in two phases, with the first 922 acres planted in January 2009, and the remaining 251 acres planted in February 2010. The project was validated against the CCBA standards and received Gold Level validation in May 2009. The fully restored 1,173 acres were conveyed to the Service in 2010 for addition to the Refuge and for long term stewardship and management. The Service, along with the Fund and its partners, has been monitoring the climate, community and biodiversity impacts of the project

over the course of the project's life time. The monitoring results are described in their respective sections below.

G3.3 Project Location

Please refer to this section in the Project Design Document and to Section G1 above.

G3.4 Project Timeframe

The project has been implemented according to the timeline outlined in the PDD. The Fund purchased the first Go Zero parcel in October 2008 and restored it with native trees in early 2009. The Fund purchased the second Go Zero parcel in Fall 2009 and restored it with native trees in early 2010.



Figure 3. Newly planted Phase 2 fields at Red River NWR. Photo credit: Environmental Synergy Inc.

Once restored, both parcels were then conveyed to the Refuge in 2010 and USFWS is providing long term management of the land.

The project start date is February 2010, which is when restoration of both phases was completed. The GHG accounting period is 100 years.

G3.5 Risks to Climate, Community and Biodiversity Benefits

As noted in the original PDD, careful risk assessments were made before choosing to restore the Go Zero Tract in Natchitoches Parish; this land was selected for restoration for several reasons. The Tracts are located in a very wet area, which reduces risk of drought and also minimizes risk of fire. The risk of damage from hurricanes is also fairly low because the Tracts are located in the northern part of the state. Wind and rain damage from past hurricanes in Louisiana, including Hurricane Katrina, was mainly confined to coastal areas.

While parts of Louisiana and neighboring states like Texas have been afflicted by terrible droughts over the last five years, the Go Zero trees at Red River NWR have received sufficient rainfall and yielded adequate survival rates.

G3.6 Stakeholder Identification

For each Go Zero project, the Fund works with an array of public and private partners to engage project donors, select and evaluate a project location, negotiate for and acquire the land, conduct site preparation, secure and plant the appropriate seedlings, monitor and measure the carbon accrued over time, and facilitate the long-term use of the property (for the community and for wildlife).

In the original PDD, the Red River Restoration Initiative defined these partners, or stakeholders, as those parties who 1) recently or currently owned the Go Zero Tracts (“the landowner”), 2) currently own property adjacent to The Go Zero Tracts (“the neighbor”), 3) were directly involved with site selection, acquisition, planting, biological monitoring, carbon monitoring or long-term management (“project implementers”), 4) donated to support the project (the “donors”), and/or 5) are members of local groups who use Red River NWR (“community members”). The Friends of Red River National Wildlife Refuge, an all-volunteer group dedicated to assisting Red River NWR with its mission, is a community stakeholder. The Friends group hosts community and educational events on Refuge lands, and its members use the Tracts for events and activities.

The below table illustrates the list of stakeholders and their roles. The current stakeholders remain the same as those listed in the PDD, except that TerraCarbon has replaced ESI in the role of carbon sequestration consultant (See Section G4). The roles have been updated to reflect the current phase of the project.

Table 1: Red River Restoration Initiative Project Stakeholders

NAME OF STAKEHOLDER	CONTACT INFORMATION	ROLE	RATIONALE
The Conservation Fund	Go Zero Operations Manager, 703-525-6300	Project Developer	Managed restoration and planting of the Tracts, conveyed land to USFWS. Coordinates monitoring with USFWS and TerraCarbon.
The Conservation Fund donors	Confidential	Donors	Financial support of the project
US Fish and Wildlife Service	Refuge Manager, 318-742-1219	Project Implementer/ Landowner	Landowner and long-term steward of the forestland. Monitors community and biodiversity variables as part of Refuge management.
TerraCarbon	TerraCarbon President, 1-309-693-9303	Monitoring	Involved with carbon monitoring and analysis
Neighboring landowner / previous landowner	Confidential	Previous Landowner; Neighbor	Directly involved with land transaction; neighboring land parcels, including water rights, affected by restoration
Local residents/ Friends of the Red River National Wildlife Refuge	President, info@friendsofredriver.org	Local Community	Because the Tracts are now part of Red River NWR, the Friends group, whose mission is to support Red River NWR, is an advocate for the Go Zero Tracts. Local citizens benefit from the addition of land to Red River NWR.

G3.7 Transparency and Project Information Availability

Please refer to this section in the Project Design Document

G4. MANAGEMENT CAPACITY

G4.1 Management Team Experience

The management responsibilities of the Red River Restoration Initiative are split between the Fund and USFWS. The National Wildlife Refuge System, managed by the USFWS, is the world's premier system of public lands and waters, set aside to conserve America's fish, wildlife and plants. The Refuge System has grown to more than 158 million acres, including 553 refuges and 38 wetland districts. Refuge management is the core business of the Service, and

management of the restored Go Zero Tracts is the Service's responsibility.



Figure 4. The Lower Cane Unit of Red River NWR. Refuge management is the core business of USFWS. Photo credit: Ronnie Maum.

The Fund is one of the nation's foremost environmental nonprofits dedicated to protecting America's most important landscapes and waterways for future generations. Since its founding in 1985, the Fund has helped its partners safeguard wildlife habitat, working farms and forests, community greenspace, and historic sites totaling more than 7 million acres nationwide.

The Fund's carbon sequestration programs, including, but not limited to Go Zero, have helped to restore more than 10 million trees across 25,000 acres that will trap an estimated 10 million tons of CO₂e over 100 years.

During the early phases of design and implementation, the Fund worked with Environmental Synergy Inc. (ESI) to provide planting and monitoring services. In Fall 2010, ESI dissolved, and the Fund contracted with TerraCarbon LLC to provide monitoring services for the Red River Restoration Initiative. TerraCarbon professionals have decades of experience working with federal, state and non-profit partners on state-of-the-art carbon sequestration science and restoration of ecologically damaged ecosystems. TerraCarbon employs some of the same field

team as ESI, as well as some of the same carbon analysts, so continuity has been maintained over the life of the project.

G4.2 Management Capacity and Project Scale

The scale of the Red River Restoration Initiative is well within the management capacity of the Fund, USFWS, and TerraCarbon. As stated above, all of these organizations have a great deal of previous experience managing and monitoring forest carbon projects. Following the validation of the Red River Restoration Initiative, the Fund - in partnership with the USFWS - had four more projects validated under the CCBA standards at the Gold Level. TerraCarbon is now providing carbon monitoring services for all five projects.

G4.3 Technical Skills of Project Team

The Fund has coordinated and implemented this project in partnership with the USFWS. The Go Zero program has completed multiple carbon projects of this kind in the past, and has the skill set needed to continue coordination and facilitation over the course of the project's lifetime.

The employees of TerraCarbon possess the skills and knowledge needed for carbon monitoring and tree survival analysis. TerraCarbon is staffed by experts in forestry, biometry, remote sensing, and finance to provide a range of services to project developers and supporting organizations. They have more than 30 years of combined experience in the forest carbon field, working on projects across multiple carbon standards, project types, and geographies and have worked with clients on projects around the world that are protecting and restoring more than 3.7 million acres and that have already reduced greenhouse gas emissions by nearly 10 million tons.

The USFWS team possesses the appropriate skill set needed for biodiversity monitoring, long term habitat monitoring, and community monitoring. These activities are essential functions of Refuge management.

Local groups, including Friends of Red River, are also able to assist with monitoring community impacts. The mission of the Friends group is to support the Refuge and enable the local community to enjoy the Refuge for educational and recreational purposes.

G4.4 Financial Health of Implementing Organizations

USFWS is a financially stable agency within the United States government, funded through federal appropriations, and does not pose a financial risk to the longevity of the Red River Restoration Initiative.

The Fund leverages conservation dollars from our public and private partners, saving taxpayers more than \$1 billion in land purchase costs to date on lands valued in excess of \$5 billion. The Fund puts an average of 96 percent of its budget directly into conservation programs and just 1 percent into fundraising. The Fund is recognized as one of the nation's top environmental organizations, and has consistently earned an A+ rating from Charity Watch.

The Fund's work is made possible with generous support from individuals, foundations, corporations and government agencies. Its commitment to accountability and donor transparency remains a cornerstone of its operations. Copies of the Fund's 2011 and 2012 Consolidated Audit and 2012 990 Tax Return can be found at: http://www.conservationfund.org/who_we_are/financials

G5. LAND TENURE

G5.1 Private Property and Land Rights

The first phase of the Red River Restoration Initiative consisted of 922 acres, which were purchased by the Fund in October 2008 from a private landowner and willing seller. The acquisition of Phase 2, totaling 251 acres, was completed in Fall 2009 and purchased from the same individual. Both parcels have been conveyed to the Service for incorporation into the Refuge. The majority of the Go Zero lands are now open to the public for hunting and outdoor recreation.

G5.2 Voluntary Nature of the Project

The private landowner sold both parcels willingly to the Fund.

G5.3 Potential In-Migration

Not relevant to project.

G6. LEGAL STATUS

G6.1 Compliance with Laws

Please refer to this section in the Project Design Document

G6.2 Approval from Appropriate Authorities

The Fund has a signed Memorandum of Understanding with USFWS, which was renewed in 2010, recognizing the Fund's ability to plant and restore land with the intention of conveying it to the Service for addition to the refuge system. The renewed MOU is attached as Exhibit A.

G7. ADAPTIVE MANAGEMENT FOR SUSTAINABILITY

G7.1 Generation of Reliable Feedback

The Fund's carbon monitoring protocol is specifically designed to generate reliable feedback to improve project outcomes. The Go Zero Tracts at Red River NWR are part of an "umbrella population" of monitored tracts (referred to as the "Monitoring Umbrella"). The advantage of this design is that it allows for distributing the substantial costs of monitoring among component

tracts while producing robust results that will improve project outcomes and generate the most reliable carbon-related feedback for the project.

In addition, the CCP revision process is designed to generate reliable feedback to help guide management decisions on the Go Zero Tract. The CCP process complies with standards outlined in the National Environmental Policy Act (“NEPA”), which requires CCPs both to examine a full range of alternative approaches to refuge management and also mandates involving the public in selecting the alternative best suited to each refuge’s purposes. CCPs are reviewed annually, and management activities are modified whenever the annual review or other monitoring indicates that the CCP needs changing to achieve the goals or purpose of the Refuge. In this way, feedback on management decisions is consistently generated and used to guide management decisions for the Tract.

G7.2 Documentation of Decisions

The Fund has carefully maintained, and will continue to maintain, all files relating to the Red River Restoration Initiative in a central permanent database to ensure that information on the project will remain with the Fund. The Project Design Document for the project is on the Fund’s website at: <http://www.conservationfund.org/projects/go-zero-carbon-projects-red-river-nwr/>

In addition, the Red River NWR staff produces an annual report documenting management actions on a wide variety of issues including habitat restoration and management, fish and wildlife management, resource protection, and public education and recreation on the Refuge.

G7.3 Project Flexibility

Please refer to this section in the original Project Design Document.

G7.4 Commitment to Long-term Sustainability

For each Go Zero project, the Fund works with the nation’s leading public natural resource agencies, such as USFWS, to ensure that trees are planted in protected areas that have long-term management plans to ensure accuracy and certainty of carbon sequestration. Under the MOU between USFWS and the Fund, the Service has agreed to provide long-term protection and management of Go Zero projects under natural conditions and according to best wildlife and habitat management practices.

As described in previous sections, the Go Zero Tracts were conveyed to USFWS for long term monitoring and stewardship. USFWS receives federal appropriations to carry out its mission of conserving, protecting and enhancing fish and wildlife and plants and their habitats. These funds ensure the long-term sustainability of the project.

G8. KNOWLEDGE DISSEMINATION

G8.1 Documentation of Project Lessons Learned

Please refer to this section in the original Project Design Document.

G8.2 Dissemination of Information

The Service has been actively investing in biological carbon sequestration research and management activities for almost two decades. The Service recognizes that carbon sequestration projects provide a tool for habitat creation or restoration, while at the same time serving the role of helping mitigate the concentration of greenhouse gases in the atmosphere. As the carbon market continues to develop and expand, there is a growing desire for information on implementing carbon projects on Service-owned lands. The Service is currently writing a report highlighting its accomplishments via biological sequestration projects that features the Red River Restoration Initiative as a case study. This report is being used to build capacity and share information within the Service and will eventually be published and available to the public. In addition to being featured in the USFWS report, the Red River Restoration Initiative was also highlighted in press releases and web content on the Fund web site. Project documents, exhibits and relevant information are readily available from the following links:

The Conservation Fund web site: www.conservationfund.org

Climate, Community & Biodiversity Alliance web site: www.climate-standards.org

Finally, the information we used for our monitoring plan has been publicly disseminated. The model for projected carbon stock changes over time was published in the journal *Wetlands*. (Shoch et al, 2009) (attached as Exhibit B).

CLIMATE SECTION

CL1. NET POSITIVE CLIMATE IMPACTS

CL1.1 Estimation of Net Changes in Carbon Stocks

The original estimation of net changes in carbon stocks for the Red River Restoration Initiative was drawn from ESI's experience over ten years in measuring carbon accumulation in the Lower Mississippi Valley. ESI was initially contracted by the Fund to plant the project area, to measure the baseline conditions, and to monitor the project's ongoing carbon gains. In 2007, The Nature Conservancy led an extensive research effort to build upon earlier predictive models of carbon sequestration in this region. The 2007 initiative involved a consortium of leaders in forest science and carbon project development, drawing on expertise from representatives of ESI, Winrock, The Nature Conservancy, the Yale School of Forestry and Environmental Studies, the USDA Forest Service Center for Bottomland Hardwoods Research in Stoneville, Mississippi and the U.S. Geological Survey. The team amassed the most comprehensive dataset of bottomland hardwood stands yet assembled for the region, drawing on 540 biomass plot measurements, and produced the most reliable predictive model to date.

The model, using the new empirical biomass data together with forest inventory data represented in USDOE 1605(b) tabular estimates for minor pools (e.g., dead wood, understory and soil carbon), predicts 259 metric tons of CO₂ equivalent per acre (i.e., 286 short tons per acre) at year 50, and 327.5 metric tons of CO₂ equivalent per acre (i.e., 361 short tons per acre) at year 100. The annualized average for the first 50 years is 5.2 metric tons of CO₂ equivalent per acre per year (i.e., 5.7 short tons of CO₂ equivalent per acre per year). The results were vetted through a rigorous internal peer review process and were published in the journal *Wetlands* (attached as Exhibit B). Table 2 illustrates the results of this research.

Table 2: Tabular data of projected carbon curve over 100 year period of LMV bottomland hardwood forest. (courtesy David Shoch, TerraCarbon LLC)

Measured		USDOE tables			(metric)	(short tons)
Stand age	Above- and below ground live tree tC/ha	Soil	Dead Wood and Litter	TOTAL	t CO ₂ -e/ac	t CO ₂ -e/ac
0	0.8	0	0.0	0.8	1	1.4
5	4.8	0.1	1.9	6.8	10	11.2
10	14.4	0.5	5.0	19.9	30	32.6
15	29.8	1.1	7.6	38.5	57	63.0
20	49.3	1.9	9.4	60.6	90	99.0
25	70.4	2.9	10.9	84.2	125	137.6
30	90.9	4	12.1	107.0	159	175.0
35	109.6	5.1	13.3	128.0	190	209.3
40	125.7	6.2	14.6	146.5	217	239.5
45	139.1	7.3	15.5	161.9	240	264.7
50	149.9	8.3	16.6	174.8	259	285.8
55	158.5	9.2	17.6	185.3	275	302.9
60	165.2	10.1	18.4	193.7	287	316.7
65	170.3	10.7	19.4	200.4	297	327.8
70	174.3	11.3	20.2	205.8	305	336.6
75	177.4	11.8	21.0	210.2	312	343.7
80	179.7	12.2	21.6	213.5	317	349.1
85	181.4	12.4	22.4	216.2	321	353.5
90	182.7	12.7	23.2	218.6	324	357.5
95	183.7	13	23.2	219.9	326	359.6
100	184.5	13.3	23.2	221.0	328	361.3

The results of this model show the expected accrual of carbon stocks in bottomland forests in the same region as the Red River CCBA project. Actual carbon stocks for the project will be measured over time using field measurements for live tree biomass and default values for soil, dead wood, and litter (see section CL3 for a discussion of the monitoring plan).

Pre-project carbon stocks

As noted in Section G1.3, the assumption for pre-project carbon stocks (i.e., on the agricultural lands prior to reforestation) was that woody biomass carbon stocks were zero. The only baseline carbon stock was the soil carbon. Future soil monitoring will use default estimates taken from USDOE 1605(b) tables.

CL1.2 Non-CO2 greenhouse gases

Please refer to this section in the Project Design Document.

CL1.3 Net Climate Impact

As noted above, the climate model predicts 259 metric tons of CO₂ equivalent per acre (i.e., 286 short tons per acre) at year 50, and 327.5 metric tons of CO₂ equivalent per acre (i.e., 361 short tons per acre) at year 100. The annualized average for the first 50 years is 5.2 metric

tons of CO₂ equivalent per acre per year (i.e., 5.7 short tons of CO₂ equivalent per acre per year).

CL2. OFFSITE CLIMATE IMPACTS

CL2.1 Leakage

It is unlikely that leakage due to this project will be a major concern. According to a white paper published by the Offset Quality Initiative, reforestation and afforestation projects are less likely to be affected by potential leakage impacts than other carbon projects.³ In this case, the primary concern is that as a result of the Go Zero Tracts being taken out of agriculture and restored to trees, farmers may clear healthy forests to create more viable agricultural lands. First, this is unlikely given that so much of the native forestland in the area has already been cut and converted in preceding decades. In fact, only about 30% of the original bottomland forests still remain in this ecoregion.⁴

Furthermore, the history of the federally subsidized Conservation Reserve Program^{5, 6} (“CRP”) makes leakage unlikely here. Administered by the United States Department of Agriculture’s Natural Resources Conservation Service, CRP provides financing to farmers who are willing to take their lands out of agricultural production and restore them to a more natural state. Since its inception, the CRP program in Natchitoches has been fully subscribed. The local Natchitoches CRP program officer, Dale Ford, previously stated that there have been no leakage effects associated with the CRP; specifically, no forested land has been cleared for farming despite increasing enrollment of lands in the CRP and a reduced agricultural land base. In this way, the Conservation Reserve Program is analogous to the Red River Restoration Initiative, and thus we should expect very little leakage from reforestation projects in this region.

The Refuge Manager is still in contact with the tenant farmer who used to farm on the Go Zero fields prior to their restoration. This farmer is now farming on agricultural lands adjacent to the Refuge, and did not clear any forests to create new agricultural land.

³ Ensuring Offset Quality: Integrating High Quality Greenhouse Gas Offsets into North American Cap-and-Trade Policy, p. 19. July 2008. The Offset Quality Initiative. *Available at:* <http://www.offsetqualityinitiative.org/index.html>

⁴ BATTAGLIA, L. L., P. R. MINCHIN, AND D. W. PRITCHETT. 2002. Sixteen years of old-field succession and re-establishment of a bottomland hardwood forest in the Lower Mississippi alluvial valley. *Wetlands* 22: 1–17.

⁵ United States Department of Agriculture, “Conservation Reserve Program,” *available at:* <http://www.nrcs.usda.gov/PROGRAMS/crp/>
The USDA Farm Service Agency, *available at:* <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp-sp>

⁶ United States Department of Agriculture, “Wetland Reserve Program,” *Available:* <http://www.nrcs.usda.gov/PROGRAMS/wrp/>

CL2.2 Mitigation of Negative Offsite Impacts

Because no offsite impacts attributable to project leakage have resulted, no direct actions have been necessary to mitigate their effect.

CL2.3 Net Effect of Climate Impacts

The total net effect of climate impacts of this project is positive. As noted above, there are no anticipated negative climate impacts.

CL3. CLIMATE IMPACT MONITORING

CL3.1 Monitoring Plan

Background

The original monitoring plan that governed the Red River Restoration Initiative was developed in 2001 by Winrock for ESI with the objective of establishing a scientific basis for measuring carbon stock changes over time on reforestation sites with similar characteristics in the Lower Mississippi Alluvial Valley (“LMAV”). The Go Zero Tracts were part of the “umbrella population” of monitored tracts, referred to as the “Monitoring Umbrella.” The monitoring umbrella provides a coordinated system for tracking carbon sequestration on similar projects distributed across the Lower Mississippi planting region. The benefit is that the Red River site belongs to a larger monitoring population that allows for distributing the substantial costs of monitoring among component tracts while producing robust results that apply across the entire population of tracts.

Beginning in 2011, the Fund adopted a new monitoring plan created by TerraCarbon in order to streamline the monitoring of Conservation Fund CCBA Go Zero projects. This new monitoring plan still uses the umbrella population concept to improve sampling efficiency but the population is now limited only to CCBA projects initiated by the Fund. Each Conservation Fund CCBA project serves as its own stratum and by combining these stratum level estimates of carbon stocks will result in less sampling effort and higher accuracy across the full population than would be required if each project was treated separately.

Precision Levels

The number of monitoring plots, together with the spatial variability, determines the precision of the carbon measurements in biomass and soils. Based on an initial assessment of variability, the original ESI monitoring plan has been designed with a sufficient sample size to produce estimates of total carbon per unit area within +/- 10% of the mean with 90% confidence. The new 2011 monitoring plan is designed to estimate carbon accrual with an accuracy within 10% of the mean at the 95% confidence level beginning in year 20.

Monitoring Protocol

ESI's original monitoring protocol for the Go Zero Tracts consisted of three components: (I) base-year analysis (i.e., to determine soil carbon stocks and establish permanent monitoring plots); (II) tree survival analysis and; (III) measurement of carbon stocks after the tenth growing season. The TerraCarbon monitoring protocol also covers each of these components, as described below.

1 Baseline analysis and soil carbon

While the ESI monitoring plan involved direct soil measurements, the new monitoring plan will use default estimates of soil carbon accrual as opposed to direct sampling estimates of soil carbon. The default estimates of soil carbon conform to IPCC GPG Tier 2 requirements. The changes in soil carbon over the course of the project are expected to be relatively small and using a default approach is both effective and efficient.

2. Tree survival analysis

In Fall 2011, TerraCarbon performed an initial tree-survival sampling and analysis at Red River NWR. The analysis showed acceptable rates of survival for this project to sequester carbon at the original estimated rates.

3. Monitoring of soil and tree biomass carbon during the project

The original ESI monitoring plan described on-site measurements beginning in the eleventh year following planting. That plan has been replaced with a new monitoring plan that will have a sample of tree survival measured in year five (2015) and then will be measured every five years after that. The survivorship sample will assess the rate of survival in plots where there are 100 planted trees. Starting in year 10, the sampling will use 1/10th acre fixed area plots to measure carbon stocks. These fixed area plot measurements will be repeated every 10 years. Starting in year 15, a variable radius plot will be used to estimate carbon stocks at the same locations as the fixed area plots. These variable radius plots will be also re-entered on a 10 year cycle. Project monitoring will measure and quantify carbon stocks in aboveground and belowground live tree biomass. Dead wood, litter and soil carbon stocks will not be monitored; changes in these pools will be determined using default values adapted from Table B49; Smith et al., 2006.⁷

⁷ Smith, J.E., Heath, L.S., Skog, K.E. and R.A. Birdsey. 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types of the United States. USDA Forest Service, Northeastern Research Station. Newtown Square, Pennsylvania, USA. Gen. Tech. Rep. NE-343.

CL4. ADAPTING TO CLIMATE CHANGE AND CLIMATE VARIABILITY

Please refer to this section in the Project Design Document.

CL5. CARBON BENEFITS WITHHELD FROM REGULATORY MARKETS

All of the carbon benefits generated by the Red River Restoration Initiative have been withheld from regulated GHG markets and were essentially retired upon their sale.

COMMUNITY SECTION

CM1. NET POSITIVE COMMUNITY IMPACTS

CM1.1 Community Benefits

The Go Zero Tracts, which were previously private farmland with no public recreation value, can now be used and enjoyed by the public and especially residents in the surrounding communities of northern Louisiana. The Tracts provide numerous recreational opportunities to local residents, including hunting, fishing, wildlife photography and observation, environmental education and interpretation.

Since the original PDD was published, the Red River NWR has grown in size and in capacity to provide services to local citizens. The new parcels conveyed to the Refuge in 2010 via the Red River Restoration Initiative added almost 10% more acreage to the Refuge lands. And in January 2012, a brand new Visitor and Education Center opened at Red River NWR. The 9,000 square foot visitor's center building is located just off Lake Caroline, and features both an Exhibit Hall and a Nature Store, and is utilized for many Refuge events. The



Figure 5. The Refuge hosts many activities for children. Photo credit: Lynn Stewart.

Refuge sponsors many educational programs, including classes for kids of all ages and workshops for education professionals. The Refuge, in connection with its Friends group, also hosts community events, like the Annual Refuge Festival, which features booths with live hawks and eagles, nature and bird walks around Lake Caroline, hayrides, fishing games and demonstrations and nature projects and special activities for children. Right now most formal events occur at the headquarters unit (because of the Visitor Center) or at the Bayou Pierre unit (because a renovated farm house serves as a base there). However, the Friends Group expects that formal events will happen at the Lower Cane, where the Go Zero Tracts are located, as the Friend Group continues to grow in both volunteers and public awareness.

THE CONSERVATION FUND

Although large events are typically held at the headquarters unit, local residents use the Lower Cane River Unit for recreational activities. According to local residents and Friends group members, visitors frequently use the Lower Cane River Unit for hunting and wildlife photography and observation. Because the Lower Cane Unit is the largest unit, it has the most diverse landscape of any



Figure 6. Ducks over the Lower Cane Unit. Photo Credit: Ronnie Maum

Unit on the Refuge, and is therefore popular with photographers. The Unit is also home to significant duck populations during the winter, making it incredibly popular with hunters. Duck hunting and bow hunting for deer are both popular activities on the Go Zero Tracts and in the surrounding areas on the Lower Cane Unit.

The Lower Cane Unit has also been utilized for research by local colleges. A biology professor at the nearby Northwestern State University in Natchitoches Parish has been doing bird banding on Lower Cane for the past two summers with a group of students. Over the two years, they have banded 104 birds of 19 species including mostly cardinals, white-eyed vireos and indigo buntings (two cardinals and one Painted Bunting originally banded in 2012 were recaptured in 2013). The professor noted that birds that used the Lower Cane remained faithful to the site from season to season.

The project's positive community impact is being monitored by evaluating the community use of the Go Zero Tracts over time. In our PDD, we originally predicted that increase in usage would be modest at first and would be positively correlated with the Tract's stand development. However, community use of the Tracts jumped significantly once the Tracts were conveyed to the Red River NWR. They were previously closed to recreational usage because they were private agricultural lands. Once the Tracts were conveyed to the Refuge, there was a sharp increase in usage as the lands are now used for hunting and wildlife viewing and photography, as noted above. After this initial spike, we expect further increases to be modest over time. Increase in Refuge visitation and a rise in activity levels should lead to corresponding increases in overall fitness, health and wellbeing amongst community members

Economic Benefits

The PDD also highlighted the fact that the Red River Restoration Initiative was expected to have a positive economic impact on the neighboring community, pointing to data that showed that fishing, hunting and wildlife-watching activities were large economic generators in the Louisiana economy.⁸ The data highlighted the advantages an outdoor destination area such as a wildlife refuge can bring to a local economy, and we predicted that the expansion of the Refuge should only cause these numbers to rise.

In October 2011, Southwick Associates published a study, commissioned by the National Fish and Wildlife Foundation, further supporting this research. The study found that \$1.7 billion in economic activity is generated through recreation use on National Wildlife Refuges, and for every dollar appropriated to management of the Refuge System, the Refuges generate \$975 in economic benefits.⁹ An article in the Shreveport Times titled “Red River Refuge to give jolt to economy” specifically highlighted the contributions that the Refuge has made to the northern Louisiana economy (see Exhibit C). Another study published by the National Fish and Wildlife Foundation, published in May 2013, found that the U.S. Fish and Wildlife Service contributed about \$4.2 billion in economic activity and supported over 32,000 jobs through their management of 553 National Wildlife Refuges and thousands of smaller natural areas in the United States.¹⁰

The newly acquired and restored forestlands that were transferred by the Fund to the Service represent approximately nine percent of the total Service holdings at Red River NWR. By restoring and strengthening Red River NWR, local residents will be able to enjoy an economic advantage that accompanies an area’s elevated recreational status.

CM1.2 Stakeholder Participation in Project Planning

Since the project was implemented, stakeholders have continued to play active roles in the project. USFWS now owns and manages all of the Go Zero Tracts. The USFWS, in conjunction with the Fund and its partners including TerraCarbon, performs monitoring on the Tracts. Community members use the Tracts for outdoor recreation and educational opportunities. The Tracts are very popular with hunters and approximately two-thirds of the Tracts are open to hunting.

For additional information on stakeholder participation in project planning, please see this section in the original Project Design Document.

⁸ Red River CCP, available at <http://www.fws.gov/southeast/planning/CCP/RedRiverFinalPg.html>

⁹ *The Economics Associated with Outdoor Recreation, Natural Resources Conservation and Historic Preservation in the United States*. For: The National Fish and Wildlife Foundation. By: Southwick Associates, October 10, 2011.

¹⁰ *The Conservation Economy in America: Direct Investments and Economic Contributions*. For: The National Fish and Wildlife Foundation. By: Southwick Associates, February 18, 2013.

CM1.3 Conflict Resolution and Grievance Procedures

Per communication with the Refuge Manager, there have been no grievances to date regarding the Red River Restoration Initiative.

CM2. OFFSITE COMMUNITY IMPACTS

CM2.1 Potential Negative Offsite Community Impacts

There have been no potential negative impacts from restoring the Go Zero Tracts and conveying the land to Red River NWR. The tenant farmers who previously worked on the Tracts are currently farming on other lands near the Refuge. Therefore, no jobs have been lost in the community due to the cessation of farming on the Tracts.

There was also relatively little impact on taxes because Revenue Sharing Payments have been made to each Parish where USFWS now owns lands.

CM2.2 Mitigation of Negative Impacts

As stated above, there are no anticipated negative impacts caused by the restoration of the Tract. As noted in CM2.1, the tenant farmer who was previously working on the land is continuing to work on other agricultural property, so no jobs were lost due to the project. There was also relatively little impact on Natchitoches Parish tax rolls even though lands are being taken out of private ownership because, as stated above, Revenue Sharing Payments are made by USFWS to each Parish where USFWS owns lands.¹¹ These payments are based on the appraised value of the lands and, in many cases, are similar to or even greater than the anticipated tax revenues.

¹¹ These payments are made according to the Revenue Sharing Act (16 U.S.C. 715s). The Service receives revenue from certain products or privileges like timber sales, grazing fees and right-of-way permits and this revenue is then deposited into the National Wildlife Refuge Fund for revenue sharing payments. If there is not enough money in the NWR Fund to cover the payments, Congress is authorized to appropriate money to make up the difference.

CM2.3 Net Social and Economic Impacts

There have been no negative impacts caused by the restoration of the Go Zero Tracts and conveyance of these Tracts to the USFWS for addition to the Red River NWR. Restoring the land to native forest and conveying it to USFWS has conferred many benefits on the surrounding community, as described in CM1.1. Thus, the net effect on the community continues to be positive.



Figure 7. Local residents enjoying Red River NWR. Research has shown that Refuges provide positive impacts to the surrounding communities. Photo credit: Lynn Stewart. Front Cover Photo Credit: Lynn Stewart.

CM3. COMMUNITY IMPACT MONITORING

CM3.1 Monitoring Plan

Since the PDD was published, the Red River NWR has grown in size and in capacity to provide services to local citizens. Refuge staff has been monitoring the community benefits generated by the Red River Restoration Initiative, as described in CM1.1, with specific attention paid to the anticipated rise in community use of the Go Zero Tracts. As noted in CM1, there was a sharp increase in visitor usage once the lands were opened to the public for recreation as part of the Refuge. As the public discovers these new Refuge lands and the seedlings develop into a mature bottomland hardwood forest, public activity on the Tracts is expected to increase even further.

At this time, Refuge staff have been monitoring the use of the Go Zero Tracts primarily through visual observation. The Refuge is not currently utilizing daily use cards but that could become another monitoring tool in the future. According to Refuge staff, the community is using and visiting the Tracts at rates comparable to other Refuge lands. There are two parking lots near the Tracts which help facilitate visitor use. Approximately two-thirds of the Go Zero acreage is open to hunting, and hunters, especially duck hunters, are the primary users of the Tracts at this time. As noted in CM1, the Tracts are also very popular with bird watchers and photographers because the Lower Cane Unit has a very diverse landscape and many different species (including birds and mammals) can be found there.

The President of the Red River Friends group has also confirmed that local residents use the parcels for both duck hunting and bow hunting for deer. She noted that, judging from the call volume and numbers of questions received regarding the Go Zero Tracts, many community members were interested in using these lands for recreational purposes and stated that this area was a popular recreation spot for the local community.

CM4. CAPACITY BUILDING

CM4.1 Accommodates Communities

As noted in the PDD, this project will increase knowledge transfer across the public and private sectors regarding the science of carbon sequestration via reforestation. USFWS employees at both the regional and national levels have been successfully leveraging the private dollars that result from these carbon sequestration projects as a way to facilitate acquisition and restoration of public lands. USFWS employees, especially in the southeastern United States, have exchanged lessons learned and best management practices for carbon sequestration projects, allowing for the successful replication of projects in other communities. Members of the Go Zero project team have been instrumental in this information exchange and have attended workshops to share lessons learned about conducting carbon projects on Refuge lands. Go Zero team members have also worked with regional Service staff to explore other types of carbon sequestration projects, such as those involving peatlands, on other Refuges. As noted above in Section G8, the Service is in the process of publishing a Biological

THE CONSERVATION FUND

Sequestration Activities and Accomplishments Report, which highlights many of the community benefits of these projects, including flood control and storm water management. The Red River Restoration Initiative is featured in this report.

CM4.2 Inclusion of All Groups

Please refer to this section in the Project Design Document

CM4.3 Inclusion of Women

Please refer to this section in the Project Design Document

CM4.4 Community Participation

Community members continue to be enthusiastic and involved supporters of the Refuge. In January 2012, the Refuge held a grand opening ceremony for the new Refuge Visitor Center, which was attended by hundreds of residents of the local community.

CM5. BEST PRACTICES IN COMMUNITY INVOLVEMENT

CM5.1 Knowledge of Local Customs

Please refer to this section in the Project Design Document.

CM5.2 Stakeholder Employment

Please refer to this section in the Project Design Document.

CM5.3 Workers' Rights

Please refer to this section in the Project Design Document.

CM5.4 Worker Safety

Please refer to this section in the Project Design Document.



Figure 8: Red River NWR Visitor Center Grand Opening Event. Photo Credit: Ronnie Maum

BIODIVERSITY SECTION

B1. NET POSITIVE BIODIVERSITY IMPACTS

B1.1 Net Positive Biodiversity Under the Project Scenario

In our PDD, we noted that the Red River Restoration Initiative will restore key parcels within the boundary of Red River NWR and will have significant positive effects on biodiversity and the wildlife that depend on bottomland hardwood forests. Red River NWR is an especially important area for many bird species, especially migratory birds. However, the agricultural lands that existed on the Go Zero Tracts before the land was restored did not--and could not--support a large variety of birdlife because many bird species require habitat that includes complex vertical and horizontal structure for nesting or foraging. As noted in our PDD, research on avian colonization in the Lower Mississippi Valley has shown that bird species richness rises as bottomland hardwood forests age due to an increase in this structural complexity.¹² The newly planted forests will provide the complex habitat necessary for successful breeding, nesting, and overall survival. Figure 9 illustrates the anticipated increase in bird species richness as a result of the Go Zero project.

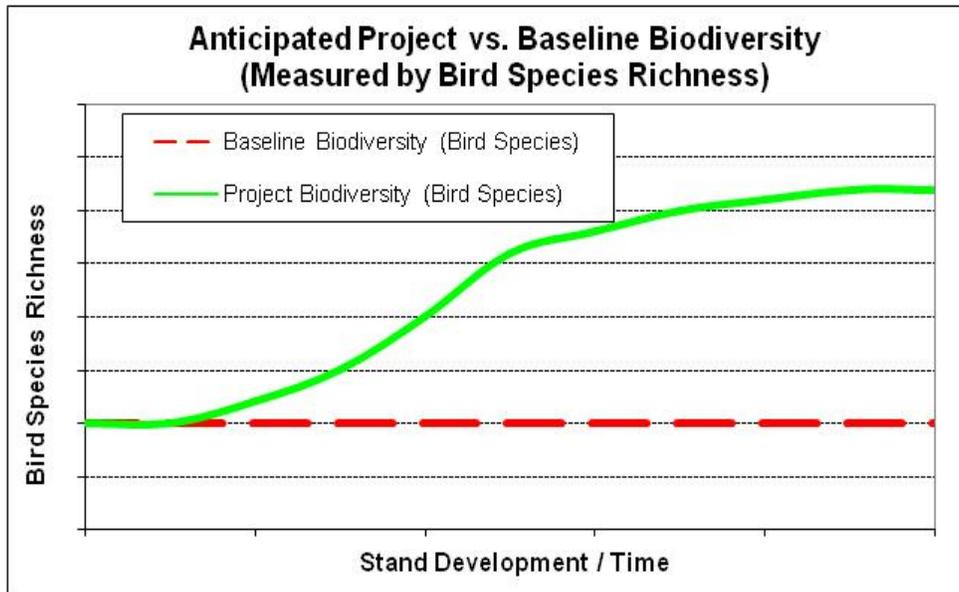


Figure 9: Anticipated Project vs. Baseline Biodiversity Over Time

¹² Wilson, R.R. and D.J. Twedt. 2005. Bottomland Hardwood Establishment and Avian Colonization of Reforested Sites in the Mississippi Alluvial Valley. Pages 341-352 in L.H. Frederickson, S.L. King and R.M. Kaminski, editors, Ecology and Management of Bottomland Hardwood Systems: The State of Our Understanding. University of Missouri-Columbia. Gaylord Memorial Laboratory Special Publication No. 10, Puxico.

Without the project, the land would remain in agricultural production which would have an adverse impact on biodiversity. Habitat fragmentation negatively impacts species migration, breeding, and overall survival rates; fragmentation due to land conversion for agriculture has led to the decline of many avian species.¹³ In small patches, forest birds are subjected to more competition with other species, increased parasitism, increased likelihood of predation, and increased isolation and inhibition of dispersal. Larger, more connected areas of natural habitat, including that made possible by the Go Zero Tracts' restoration, will benefit the many species that rely on bottomland hardwoods at Red River NWR. Therefore, the net biodiversity impact of the Go Zero project has been, and is expected to continue to be, very positive.

B1.2 Possible Adverse Effects of Non-Native Species

Only native species were used for the Red River Restoration Initiative.

B1.3 Threatened Species

Please refer to this section in the Project Design Document.

B1.4 Species Used by the Project

Please refer to this section in the Project Design Document.

B1.5 Genetically Modified Organisms

All Go Zero projects are planted with natural, native trees. No genetically modified organisms were used to generate carbon credits from this project.

B2. OFFSITE BIODIVERSITY IMPACTS

B2.1 Potential Negative Offsite Biodiversity Impacts

Biodiversity offsite has only benefitted from the restoration because the negative effects associated with fragmented forestlands have decreased. All positive biodiversity impacts associated with the Go Zero Tracts are extended offsite to adjacent USFWS-owned lands and the entire Red River NWR.

B2.2 Mitigation Plans

N/A

¹³ Twedt, D.J., R. R. Wilson, Management of Bottomland Hardwood Forests for Birds. Proceedings of 2007 Louisiana Natural Resources Symposium, *available at*: <http://www.lmvjv.org/research.htm>

B2.3 Net Effect of Project on Biodiversity

The net effect of the restoration of the Go Zero Tracts on biodiversity has been highly positive on both the Go Zero Tracts and Red River NWR as a whole.

B3. BIODIVERSITY IMPACT MONITORING

In our PDD, we stated that the Refuge staff would conduct a species richness bird survey on the Go Zero Tracts every five years after planting is completed. Since planting of both phases was completed by 2010, that survey is scheduled to happen in 2015. In order to assess biodiversity impacts in the interim, the Refuge staff biologist conducted a preliminary survey in June 2012.

According to the USFWS protocol, the Refuge biologist conducted eight, five-minute point counts sampling half of the Go Zero reforestation fields. At this time, three species utilized the reforestation areas: dickcissel (34), red-winged blackbird (27) and mourning dove (3), with dickcissel and blackbirds making up the vast majority of individuals recorded. Painted buntings, Carolina wrens, yellow-billed cuckoos, cardinals, and indigo buntings were heard from the tree lines surrounding the fields. A total of 73 individuals were counted with an average of 9.125 individuals/pt. The average number of species per point was 3.38 if the birds such as cardinals heard from the tree line are included. If the birds from the tree line are not included, the average number of species is 2.25 per point.

The results of the 2012 preliminary survey are consistent with our predictions that species richness will increase very slowly at first because the trees are still very small and the fields still most closely resemble open fields. Dickcissels are the majority of individuals currently utilizing the fields and they are neotropical migrants that depend on grasslands for their breeding habitat. Dickcissels winter in enormous flocks in Venezuela where they are considered agriculture crop pests and have been poisoned by farmers.

Refuge staff noted that as the forest grows in the next five years, species richness will increase dramatically. Birds that will soon be utilizing the fields include indigo buntings, yellow-breasted chats, painted buntings, blue grosbeaks, orchard orioles, common yellowthroats and possibly prairie warblers.

As noted in our PDD, biodiversity within Red River NWR is actively studied and monitored by USFWS staff. Refuge management issues an annual report containing updates and information on fish and wildlife on the Refuge, including the results of waterfowl surveys and bird breeding surveys. As noted in section B1.1, the Red River Restoration Initiative is



Figure 10: Indigo bunting will benefit from the new Go Zero trees. Photo credit: US Fish and Wildlife Service

expected to have a significant positive impact on the richness and variety of bird species found on the Tracts due to the increased habitat area and greater habitat complexity provided by the newly planted bottomland hardwood forest.

B4. NATIVE SPECIES USE

In accordance with the Fund's planting principles, all Go Zero carbon sequestration projects are planted with native trees.

B5. WATER AND SOIL RESOURCE ENHANCEMENT

The restoration of the Go Zero Tracts and subsequent management of the Tracts by USFWS have conferred many benefits to soil and water quality. The soil quality on the restored Tracts is healthier due to increased diversity of plant life and biomass accumulation associated with forest regeneration. Erosion is reduced due to new forest establishment, which has replenished both soil carbon and soil nutrients. In addition, the previous landowner had maintained the roads within the Tract by grading and dragging them, which kept them in a bare dirt condition. USFWS maintains the roads in a vegetated condition, which also reduces erosion.

The Red River Restoration Initiative has also improved flood control on the Tracts. In general, bottomland hardwoods serve a critical role in the watershed by reducing the risk and severity of flooding to downstream communities because they provide areas to store floodwater. Specific management activities taken by USFWS on the Tracts have also helped improve flood control. Since project inception, Refuge staff have added culverts along the road to improve drainage. Additional water control structures may also be added in the next 10 years after the trees are more established. The water control structures can attract beavers so they must be carefully maintained.

Finally, overall water quality has improved because soil, nutrient, and chemical inputs associated with agriculture have been reduced due to the cessation of farming on the Tracts. As the trees grow, the replanted areas should improve water quality by filtering and flushing nutrients, processing organic wastes and reducing sediment before it reaches open water.

CONCLUSION

The Red River National Wildlife Refuge Restoration Initiative was implemented to restore Louisiana's native bottomland hardwood forests and help mitigate climate change while conferring community and biodiversity benefits to northern Louisiana. In addition to sequestering carbon dioxide from the atmosphere, the restored Go Zero Tracts are now providing benefits to birds and wildlife, enhancing water quality along the Red River and surrounding waterways, and creating new public recreation areas for all to enjoy.