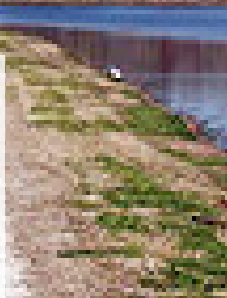


# THE NATION'S FIRST WETLAND CARBON PILOT

*"Wetland restoration will provide multiple benefits to the citizens of St. Charles parish such as reduced storm surge, potential job creation, and enhanced wildlife and fisheries."*

*-V.J. St. Pierre, St. Charles Parish President*



## GROUNDBREAKING WETLANDS RESTORATION

A revolutionary new tool is now available to help restore the Gulf of Mexico's disappearing coastal wetlands -- Louisiana's first line of defense against damaging hurricanes like Katrina, Rita, Gustav and Isaac. This new methodology for the restoration of degraded wetlands is the first of its kind; funded by Entergy Corporation, developed by New Orleans-based Tierra Resources, and approved for use by the American Carbon Registry (ACR) following stakeholder consultation and scientific peer review. The methodology opens the door to a new, self-sustaining revenue source for wetlands restoration through the sale of carbon credits.

Here's how it works: When Mississippi River Delta wetlands are restored, landowners can use the new methodology to calculate the amount of carbon dioxide and other greenhouse gas (GHG) emissions the rebuilt wetlands will absorb over time. Included in the calculation are the emissions avoided by slowing the rapid loss of existing wetlands throughout the region. This methodology enables the generation of carbon credits, which landowners can sell to companies that want to offset their GHG emissions. The proceeds from the sale of these credits help offset the landowner's costs for wetland restoration activities.

*Approximately 4 million acres in the Mississippi River Delta are eligible for restoration under this methodology.*

The new methodology is a game changer. It will, for the first time, provide a means to generate carbon credits for wetland restoration which means more funding for restoration projects that also prevent continued wetland loss. Wetlands provide the important function of reducing GHG emissions while providing habitat for thousands of species of flora and fauna, many of which are unique to wetland ecosystems. In addition, healthy wetlands help to reduce coastal flooding and improve water quality.

## PROJECT DESCRIPTION

Tierra Resources is working with Entergy Corporation to apply this new wetland restoration methodology to a pilot project known as the **Luling Oxidation Pond Wetlands Assimilation System**. The privately-owned project site is located approximately twenty miles west of New Orleans and will redirect treated municipal wastewater into an adjacent 950-acre wetland property to restore the hydrology of the wetland and boost plant and soil productivity. The treated wastewater will enhance the ecological health of the wetland as well as increase the area's carbon sequestration capacity. The Luling pilot will be the first in the nation to demonstrate the true costs and benefits of commercial wetland carbon projects. To deliver the successful restoration of the wetland, the project intends to produce and market high-quality carbon credits that are independently verified according to a trusted standard.

The project site is a characteristic coastal swamp forest whose sustainability is threatened by wetland subsidence (regional sinking) and saltwater intrusion. St. Charles Parish began to pursue alternatives to traditional nutrient removal processes in 2009. Instead of discharging the treated effluent (municipal wastewater) into a canal, where its nutrients contribute to water pollution, the treated effluent is redirected into neighboring degraded forested wetlands. This approach, referred to as wetland assimilation, is less expensive than conventional wastewater treatment technologies, and also includes additional environmental benefits.

Redirecting this effluent helps to restore the wetlands by providing much-needed nutrients and freshwater while also displacing intruding saltwater. Responding to these nutrients with enhanced growth, plants use the natural process of photosynthesis, capturing atmospheric CO<sub>2</sub> and converting it to plant tissues that also stabilize and build up the soil. By restoring the hydrology the salt water intrusion is reversed and the healthy wetland can grow vertically to counter land subsidence, so the site can once again provide natural wetland ecosystem values such as habitat and hurricane protection.

## ABOUT THE PARTNERS



### Tierra Resources

Based in New Orleans, Louisiana, Tierra Resources was founded in 2007 with a mission to conserve, protect, and restore coastal wetland ecosystems by creating innovative solutions that support investment into wetland restoration activities. Tierra Resources' services enable landowners, corporations, nonprofits, and government clients to understand the regulatory, financial, and scientific landscape to preserve and restore wetlands and monetize wetland offsets.

### Entergy Corporation

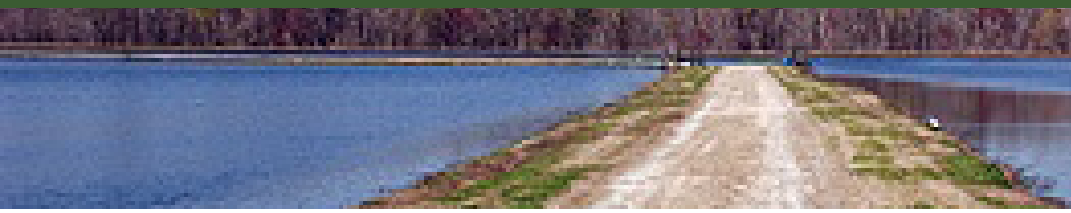
Entergy Corporation is an integrated energy company recognized for its abiding belief in environmental and social responsibility. The New Orleans-based company is engaged primarily in electric power production and retail distribution. Entergy owns and operates power plants with approximately 30,000 megawatts of electric generating capacity, including more than 10,000 megawatts of nuclear power, making it one of the nation's leading nuclear generators. Entergy delivers electricity to 2.8 million utility customers in Arkansas, Louisiana, Mississippi and Texas.

### St. Charles Parish

St. Charles Parish is a coastal parish located in southeastern Louisiana with a population of approximately 53,000. Wetland loss has left the parish subject to hurricane-related flooding and tidal surges from the Gulf of Mexico. The parish has suffered from 18 hurricanes in the last 30 years resulting in at least ten federal disaster declarations. The mission of the St. Charles Parish government is to provide high quality, efficient services to sustain and enhance the quality of life for all residents.



# THE NATION'S FIRST WETLAND CARBON PILOT



The wetlands of the Mississippi River Delta are important both locally and nationally. Much of the U.S. depends on sustaining the navigation, flood control, energy production, and seafood production functions of the Mississippi River Delta and river system. Each of those functions is currently at severe risk due to coastal wetland loss. The Mississippi River Delta's wetlands and waterways contribute tens of billions of dollars to the national economy every year and support millions of jobs.

## A PLAUSIBLE PROJECT ACTIVITY BASELINE

The amount of carbon sequestered that can be counted towards carbon credits depends on the difference between the carbon sequestration rate under an approved baseline that represents "business-as-usual" practices, and the carbon sequestration rate that results from the restoration activity. For example, if trees existed prior to implementation of a restoration measure, only the increased rate of production, or the enhanced woody growth can be counted, whereas if trees did not exist and are planted, then all production can be counted towards carbon credits.

Many areas of coastal Louisiana face imminent wetland loss that can also be incorporated into the baseline. The high wetland loss rates can be included in the baseline scenario by conservatively projecting the decrease in total wetland project area due to wetland loss that would occur over a 40 year crediting period if no project activity, in this case wetlands assimilation, were to take place.

The realistic net sequestration (difference between baseline and project) is expected to be about 1,000-7,000 metric tonnes of CO<sub>2</sub>-equivalent per year for the 950-acre project. The baseline scenario for this area assumes it would eventually convert to open water without the restoration activity.

## DEVELOPING A MONITORING PLAN

The ACR methodology requires monitoring changes in wetland cover, GHG emissions and carbon stock changes. There are five general carbon storage pools in wetlands that may be monitored: above- and below-ground tree biomass; herbaceous vegetation; surface litter; dead wood; and soil organic matter. Changes in the amount of carbon stored in these pools, as well as the rate of wetland GHG emissions, will be measured and estimated for this pilot project to determine the project's net emission reduction benefit and number of carbon credits.

## HOW LONG BEFORE THE PROJECT STARTS DELIVERING BENEFITS?

Wetlands naturally recover quickly once their surrounding conditions are restored. The wetland immediately starts growing faster with the discharge of the treated effluent at the Luling project site. Some cypress seedlings are also being planted since the wetland is no longer naturally regenerating. Visible increases in the health and productivity of these seedlings are expected in about two years. Carbon credits from the project may be issued once the field measurement and monitoring is complete and audited by an independent verifier.

## WHERE DO WE GO FROM HERE?

There are at least 15 wetland assimilation projects in Louisiana and others are currently being planned, including the Central Wetlands Assimilation system that will be the largest in the world. Of traditional wetland restoration techniques, wetland assimilation systems are one of the best suited for carbon project development and are believed to capture some of the highest rates of carbon.

The modular format of the Tierra methodology facilitates expansion: new modules can be added that will broaden eligibility to other regions by addressing the various causes of wetland loss and restoration techniques in other areas. Tierra plans to expand the methodology to be more broadly applicable to coastal wetlands in general including California's Sacramento-San Joaquin Delta and other wetlands such as Florida's Everglades and wetlands in Virginia, Maryland and the Carolinas. This methodology could eventually be expanded to be applicable to other critical deltas around the world such as the Amazon, Congo, Mekong, Yangtze, Ganges, and many other smaller areas.

For more information about this project, please visit [info@tierraresourcesllc.com](mailto:info@tierraresourcesllc.com).

*Experts across the nation have declared Louisiana's loss of coastal wetlands "nothing short of a national emergency."*

## ABOUT THE PARTNERS



### The Climate Trust

The Climate Trust is a 501(c)(3) nonprofit organization with more than 15 years of carbon financing experience. Our mission is to provide expertise, financing, and inspiration to accelerate innovative climate solutions that endure. In order to arrest the rise in greenhouse gas emissions and to avoid the most dangerous impacts of climate change, The Trust works to accelerate project implementation, develop financing solutions, and establish a supportive policy environment in the renewable energy, agriculture, forestry, wetlands, energy efficiency and transportation sectors.

### Comite Resources, Inc.

Comite Resources, Inc. is a private ecological consulting firm located in Zachary, LA, and its scientists are committed to wetland restoration in coastal Louisiana. Scientists at CRI have more than 75 years of combined wetland research experience, including evaluating, designing, and monitoring coastal restoration projects. CRI also has extensive experience establishing wetlands to assimilate point and non-point source discharges of treated municipal effluent.

