

# Sun Ranch

## Carbon Sequestration Case Study

### Overview

The Sun Ranch, located in the Upper Madison Valley, served as the pilot project for the Chicago Climate Exchange's (CCX) Rangeland Soil Carbon Sequestration Offset Program, launched in 2007. The protocol for the new offset program was developed by a CCX Technical Review Team in consultation with former Sun Ranch manager and range management consultant Todd Graham.



### Fast Facts

**Land owner:** Roger Lang  
**Operated by:** Sun Ranch Group  
**Ranch manager:** James Stuart  
**Location:** Cameron, Montana  
**Land Resource Region:** Rocky Mountain  
**Size:**

- 18,000 deeded acres
- 7,000 acres leased public land

**Acres enrolled:** 18,000 deeded acres  
**Project type:** Rangeland soil carbon offset  
**Year enrolled:** 2007  
**Length of contract:** 2003-2012  
**Registry:** Chicago Climate Exchange (CCX)  
**Aggregator:** Beartooth Capital  
**Verifier:** SES Incorporated  
**Carbon credits sold to date:** 2003-2007  
**Year of sale:** 2007  
**Total \$ earned to date:** ~ \$30,000  
**Trading platform used for sale:** CCX  
**Tons of CO<sub>2</sub>e offset annually:** 2,160

Sun Ranch LLC is owned by Roger Lang, who bought it in 1998 after retiring from his position as CEO of Infinity Financial Technology in California. The ranch is operated by the Sun Ranch Group, a “blended value enterprise of integrated businesses with a commitment to sustaining profitability, important landscapes and the communities within them.” Payments for carbon credits are part of a broader economic diversification scheme on the ranch which, in addition to running approximately 1,500 head of cattle, includes developing and selling ‘conservation home sites,’ operating a small eco-tourism lodge with guide services, and establishing conservation easements through groups such as The Nature Conservancy.

*“The motivation for us has more to do with being...an early adopter, an experimenter with the protocol”*

– Josh Spitzer, VP of Operations

## Range Management Practices

The Sun Ranch has garnered much attention among both the conservation and ranching worlds for its efforts to concurrently prioritize both profitable ranch management *and* provision of ecosystem services, like wildlife habitat. Located near the west entrance of Yellowstone National Park, the ranch is situated on

*"The place had been badly abused by past management."*

– Todd Graham

prime wolf, grizzly, and elk habitat and has 98 per cent of its area under conservation easements. When the Langs purchased the ranch, they began restoring the previously degraded rangelands and heavily invested in updating their approach to range management by instituting rotational grazing, using wildlife-friendly fencing, and reducing the size of their cattle herd.

The Lang's vision has been to use their ranch as a testing ground for more sustainable, yet profitable range management practices. The hope is that practices developed through trial and error on the Sun Ranch might then be adopted by more cash-poor ranchers who are unable to risk investing in unproven management practices and infrastructure.

## Developing the CCX Rangeland Protocol

Beartooth Capital Partners LLC, a conservation property investment firm based in Bozeman, Montana served as the aggregator for the initial project (for a concise description of the voluntary carbon market as it relates to rangelands, please see Appendix 1). In 2006, Todd Graham, Sun Ranch manager at the time, together with Beartooth Capital, approached CCX with the idea of creating a new category of offset protocol for rangelands. In March of 2007, the CCX released the first version of their "Sustainably Managed Rangeland Soil Carbon Sequestration Offset Project Protocol," and the Sun Ranch became the first approved project under the protocol.

### Motivating Factors

Beartooth Capital initiated the development of the rangeland protocol with the intent of eventually enrolling their own investment properties in the carbon offset market. They saw this as an opportunity to add to the diversification of the types of payments for ecosystem services they receive for managing their

*"The Sun Ranch ... could make some money by participating, and it was fitting in with what we were already doing..."* –Todd Graham

properties sustainably. The Sun Ranch had several motivating factors for agreeing to be the pilot project. From the ranch manager's perspective, they already had the documentation they would need, it fit with the management approach adopted when the ranch was purchased in 1998 and it would provide an additional source of income. Sun Ranch Group Vice President of Operations Josh Spitzer shared an interesting angle on their reason for participating: "The

economics aren't good enough to really move the needle for us. I think, frankly, the motivation for us has more to do with being in a place where R&D happens, and being an early adopter, an experimenter with the protocol, than it does in getting a small check when we sell credits."

### Rangeland Protocol Development

Carl Palmer, a principal of Beartooth Capital, and Sun Ranch manager Todd Graham discussed the idea of using Sun Ranch as a pilot project for the protocol development. Graham had been monitoring and thoroughly documenting range improvements since he began working with the Sun Ranch; first as a consultant, then as ranch manager beginning in 2003. While it was unusual for a private ranch to have such detailed documentation, it turned out to be instrumental in their ability to use the ranch as a pilot project. Palmer had discussed the idea with CCX as early as 2004, convinced that an economic incentive could go a long way to encouraging ranchers to change their practices to those that were more in line with sustainable land management. "Our goal was to create a mechanism whereby we could hopefully catalyze

a lot of changes in rangeland practices across the West by creating an incentive” he says. The CCX agreed to put together a Technical Review Team (TRT)<sup>1</sup> made up of soil carbon scientists and range management experts to oversee the process of protocol development.

The TRT faced the challenge of creating one protocol that would be applicable throughout the hugely varying ecosystems that make up western rangelands. Graham participated in a few of the TRT conference calls and was able to provide input on the initial drafts of the protocol. In his interview, he expressed that he had been frustrated with the way they were going to evaluate carbon sequestration and how the protocol would be implemented. According to Graham, in the initial draft versions of the protocol, the TRT planned to devise a system wherein participating ranchers with degraded land would be compensated at a higher rate than those with land already at or close to optimal sequestration rates. Qualification for ‘degraded’ status would depend on the percentage of rangeland that was bare ground or had eroding soil conditions, consistent with the accepted USDA definition. Graham argued, however, that on degraded land in areas of relatively high precipitation in CCX-eligible regions, one would see a change in species composition to lower-producing species and noxious weeds, rather than simply bare ground or erosion. Further, the proposed protocol would provide a perverse incentive to manage rangeland in a potentially unsustainable way since noxious weeds still sequester carbon. Graham argued that vegetation composition should be taken into consideration when evaluating rangeland conditions but his suggestions were not adopted.

*“It was a lot of people trying hard to pull in all the different colors of the rainbow into something that made sense and they were struggling with it.”*

– Todd Graham

### Significant Developments in Rangeland Protocol

Since the CCX rangeland protocol was released, it has undergone approximately twelve different iterations (as of January 2010) and has changed significantly since the Sun Ranch pilot project. The most recent version of the protocol, among other things, no longer includes the ‘degraded’ status option, nor does it allow ‘backdating’. These two elements of the original protocol were removed in January 2009. According to Joel Brown, the degraded category, which received a higher crediting rate, was used as an “extra incentive” to encourage landowners to improve range management practices on some of the poorer quality lands. However, extending this incentive beyond one sign-up period risked creating a perverse incentive for having those poor quality rangelands.

Currently, ranches that can demonstrate sustainable range management (according to a number of indicators) can qualify for the program, using the “standard” crediting rates (i.e., degraded and non-degraded lands now receive the same rates). This is the only option through the CCX at this time.

*“The result was there was this sprint to enroll all these ranches by January 31<sup>st</sup> [2009], the cut-off for back-dating.”* –Todd Graham

Also significant was the expansion, in September 2009, of acceptable management practices beyond rotational grazing. Currently, the protocol simply requires participating ranches to have a formal written grazing plan that includes a prescribed grazing schedule, ensures sustainable animal forage and has a contingency plan for drought conditions. It is left to the rancher to determine the best strategy to achieve those outcomes.

## Sun Ranch Carbon Sequestration Project

The Sun Ranch, as the pilot for CCX’s newly developed protocol, dedicated a significant amount of staff time in Todd Graham in order to be approved for enrollment in the program. Sun Ranch Group

<sup>1</sup> See [http://www.theccx.com/docs/offsets/CCX\\_Sustainably\\_Managed\\_Rangeland\\_Soil\\_Carbon\\_Sequestration\\_Final.pdf](http://www.theccx.com/docs/offsets/CCX_Sustainably_Managed_Rangeland_Soil_Carbon_Sequestration_Final.pdf)

management and owners, however, were minimally involved and viewed it as a relatively easy process with Graham's and Beartooth Capital's involvement. Because their management practices already met or exceeded those required by CCX to enroll, they did not have to change any of their range management practices to participate in the program. They acknowledged that they would be sequestering the same amount of carbon if they had not enrolled, as they are now.

### **Registered Acres**

The project enrolled 18,000 acres in 2007 after the CCX released their rangeland protocol, with credits back-dated to 2003 and forward to 2012. The Sun Ranch was able to prove, using existing documentation, that the ranch had not been sequestering as much carbon under past management practices (prior to the Lang purchase) as it was at the time they enrolled. Consequently, they were able to qualify for the higher-paying 'degraded' status.

### **Sequestration Rates**

Backdated credits (degraded) from 2003-2007 were enrolled at a carbon sequestration coefficient of .28 metric tons/acre/year. The Sun Ranch signed a contract with CCX for 2008-2012 credits that would be registered as 'non-degraded' with a sequestration coefficient of .12 metric tons/acre/year.

### **Tons Offset Annually**

At an estimated sequestration coefficient of .12 metric tons/acre/year the Sun Ranch is purportedly sequestering approximately 2,160 metric tons of CO<sub>2</sub>e annually.

### **Carbon Credits Sold**

In 2007, Beartooth Capital LLC sold registered 2003-2007 carbon credits from the Sun Ranch on the CCX trading platform. At the time, credits were selling for approximately \$1.85 per metric ton, according to Court Smith. The sale grossed approximately \$30,000. The Sun Ranch Sequestration Project also has carbon credits registered with CCX from 2008 and 2009 but they are not selling currently due to the low price of carbon.

## **Key Partners**

### **Beartooth Capital Partners, LLC**

One of the key developments in the creation of the fledgling rangeland soil carbon offset market was the award of a Natural Resources Conservation Service (NRCS) Conservation Innovation Grant (CIG) to Beartooth Capital that covered much of the costs associated with the enrollment and verification process for early participants. For most land owners, the verification cost subsidy likely made the difference between deciding to participate or not, especially those who enrolled when the price of carbon had fallen below the \$1 mark and had no guarantee of any return on their investment. According to Graham, "if it were not for getting the NRCS grant to pay for verification costs and the possibility of backdating and achieving degraded status, it would not be worth our while participating in these programs, even with carbon at high prices."

Beartooth Capital, while the initial driving force in the development of the rangeland protocol, is now aggregating under the National Carbon Offset Coalition (NCOC) license. Soon after the Sun Ranch project was approved, Beartooth Capital's investments increased significantly enough that the staff time and infrastructure costs, coupled with high aggregator fees charged by CCX, were too high to continue aggregating on their own. Beartooth still has associates that work on enrolling ranches, but now do so as "sub-aggregators" in partnership with NCOC. Initially motivated to develop the rangeland offset protocol in order to enroll their own investment ranches in CCX, Beartooth Capital has found that the average size of their ranches is too small to enable profitable carbon market participation at this time.



After the rangeland protocol was released, other businesses that were already set up for farm and forestland offset projects immediately began aggregating rangeland offsets as well. Beartooth Capital's Court Smith, who was involved in the protocol development process, looks positively on their involvement in this project: "...it was really fun to be part of ... building the program. But, I think at the end of the day there are probably people who would be a lot better than we would at aggregating and selling the program."

#### **Natural Resource Conservation Service**

Beartooth Capital still manages the NRCS CIG funds but can pass on the verification reimbursements to NCOC-aggregated projects, although grant funding ran out at the end of 2009. The NRCS did not play any significant role in developing the Sun Ranch pilot project.

#### **National Carbon Offset Coalition**

NCOC is now the official aggregator in charge of the Sun Ranch Sequestration Project, but was not involved in the development of the range protocol with CCX.

## **Future Outlook**

For the Sun Ranch Group, participating in the CCX carbon-trading program is one part of a very large array of payment for ecosystem service programs and opportunities in which they participate. When asked if they were planning on enrolling any other property holdings, such as the 7,000 acre Schreoder Ranch near Missoula, Montana, Josh Spitzer did not hesitate to answer 'yes.' He did add, however, that they were not looking into it at the moment because at the current price of carbon, it is not financially attractive.

The people interviewed for this case study shared a common set of opinions on the outlook of carbon offset trading programs and on how to encourage ranch owners to participate. First, there is a great need for better, more reliable and affordable science on how to quantify soil carbon sequestration rates on rangeland. The CCX protocol based on precipitation rates across large generalized swaths of land has received significant criticism related to perceptions of inaccuracy and too much prescription. Secondly, in any government-regulated trading scheme, it will be essential to develop and maintain trustworthy, authentic, intermediary relationships to bridge the gap between producers and the government and/or market officials. Aggregators currently fill this role, to varying degrees. The interviewees stressed the need for "professional and social networks that ranchers trust" to reach those ranchers who will potentially have to change their management practices in order to participate. In addition, it would be beneficial for these intermediaries to be knowledgeable about the range of 'payment for ecosystem services' programs available to ranchers, in addition to the carbon market opportunities. Lastly, interviewees agreed that the NRCS would be the logical federal agency to manage an offset program under cap and trade legislation. Concern was expressed, however, about the lack of staff, knowledge, and infrastructure within NRCS to handle this type of program.

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## Appendix 1. Rangeland Carbon Offset Basics

Currently within the United States, the mechanisms for buying and selling carbon sequestration offsets are strictly through the voluntary market. The Chicago Climate Exchange (CCX) is the only legally binding system for trading emission sources and offset projects, although many carbon credits (each representing the reduction of one metric ton of carbon dioxide emissions) are bought and sold directly, usually through a private broker, as “over-the-counter” (OTC) transactions. Regardless of the mechanism for exchange, carbon credits are generally associated with some type of standard or protocol that verifies the amount of carbon sequestered by a given project.

Carbon credits sold on the CCX are generic, since they can come from either forestry, methane capture, renewable energy or agriculture and rangeland soil carbon projects. Over the past year, prices for these generic credits have ranged from over \$7/ton in May 2008 down to their current price of \$0.10/ton ([www.chicagoclimatex.com](http://www.chicagoclimatex.com) as of April 5, 2010). Prices for CCX credits sold OTC are generally higher, since they are traceable to a specific offset project.

At present, the CCX is the only organization with a protocol for carbon offsets from rangelands. Led by a Technical Review Team of soil scientists, the CCX developed their Rangeland Soil Carbon Offset protocol in 2007. Landowner participation in the program requires a long term (minimum of 5 years) “legally binding commitment to defined management practices which increase soil carbon stocks on rangelands” (CCX 2009). Most landowners in the Midwest and West work with an aggregator, allowing them to be part of a pool of carbon credits from multiple properties. These aggregators (e.g. North Dakota Farmers Union, National Carbon Offset Coalition) guide landowners through the process of engaging in the carbon market.

The protocol uses Land Resource Regions, defined by the National Cooperative Soil Survey, as a geographic basis for issuance rates for below ground carbon sequestration and outlines a list of eligible practices to increase carbon sequestration (e.g. prescribed grazing schedules, ensuring sustainable forage for livestock and wildlife, contingency management plan for drought conditions) that must be documented in a range management plan. Practices must be voluntary, and above and beyond “business-as-usual” (CCX 2009).

To enroll, projects must be reviewed by a third party verifier to ensure they meet the eligibility criteria and that they “adopt and demonstrate conformance with a formal grazing plan” which, at a minimum...meets or exceeds the Natural Resource Conservation Service standard” for Best Management Practices (CCX 2009). With aggregated pools, only a random sample of 10 percent of the ranches in the pool are selected for in-field verification, though all ranches over 30,000 acres must be field verified during the first year. A Verification Report is submitted to the CCX for approval and landowners have the option to register their credits for sale through the CCX, for which they are charged a \$0.15/credit registration fee, or they can sell them OTC.

The first iterations of the protocol included several provisions designed to encourage early participants in a fledgling market, such as 1) the ability to “back date” acres, allowing landowners to receive credit for “pre-compliance” with the protocol by enrolling rangeland managed using eligible practices initiated on or after January 1, 1999; and 2) the ability to enroll acres with “degraded status” which qualified for a higher carbon sequestration crediting rate. Both of these were eliminated in 2009, as they had served their purpose of attracting early actors to the carbon market; and the degraded status option posed the risk of creating perverse incentives to purposely degrade land and enroll it under that status in order to qualify for higher payments.