TXU Energy, a pioneer in mine land reforestation, explores potential ecological asset value on two mine sites

Since 1973, TXU Energy (formerly Texas Utilities)—a leading supplier of electricity and natural gas—has been a pioneer in the reforestation of reclaimed mine lands. Because the company has achieved such positive results from its reforestation projects, TXU managers are now engaged in research to develop new ecological asset value on mine sites.

In particular, TXU, in partnership with the Electric Power Research Institute's (EPRI) Eco-Solutions program, applied EPRI's Strategic Eco-Asset Manager (STREAM) model to identify opportunities for the development of multiple ecological assets on two TXU mine sites.

The first TXU site is 1,294 acres of reclaimed pastureland. Local farmers lease this land for livestock grazing. The second site is a 70-acre parcel where mining only recently ceased. This site was graded and planted with wheat to provide site stability and sediment control, but it has yet to be fully reclaimed.

Do the sites have the potential to support multiple ecological assets?

According to TXU's initial ecological assessment, potential ecological asset management options for the two sites include: *(continued on reverse)*

Reforested site on TXU mine lands. The successful development of ecological assets requires careful planning and evaluation of results. Photo: Scott Frederick, GreenVest.

The STREAM Model—An Ecological Asset Planning Tool

The STREAM Model was developed specifically for use in ecological asset (i.e., "eco-asset") assessment, management, and valuation. Landowners and mine operators can use the model to prioritize ecological asset investment choices, forecast ecological asset investment outcomes, and understand ecological asset risks and rewards.

The STREAM model brings option value theory and other advanced financial concepts into the environmental marketplace. The model incorporates uncertainty about future market prices, as well as institutional uncertainties such as the future of ecological asset markets (e.g., carbon sequestration credits). As a result, it can provide sensitivity (i.e., "what if") analyses to help decision makers consider a full range of future scenarios.

TXU—A Reforestation Pioneer

To support its electricity generating operations, TXU operates three surface coal mines in east Texas, disturbing approximately 1,500 acres each year. To restore its mine lands to sound ecological condition, TXU established a pioneering reforestation program. Since the program began in 1973, the company has planted over 18 million trees on 25,000 acres. Since 1995, TXU has planted approximately 1.7 million trees annually on reclaimed mine land. About one-half of TXU's reforested area has been developed as wildlife habitat, which involved establishing an appropriate mix of over 40 native hardwood and coniferous tree species. The new forest provides high-quality food and cover areas for wildlife.

The other half of the reforested area is commercial forest planted with loblolly pine. Currently, these areas are being evaluated for carbon sequestration certification under the Voluntary Greenhouse Gas Reporting Program sponsored by the U.S. Department of Energy.

- Converting the 1,294 -acre pasture to tree plantations, or establishing tree plantations on the stabilized 70-acre site, to generate carbon sequestration credits and/or provide revenue from forest products
- Expanding and/or creating wetlands to generate wetland mitigation credits
- Enhancing and/or creating streams to generate stream mitigation credits

What were the overall findings of the analysis?

Once the potential ecological assets of the reclaimed lands (and acreage to be dedicated to each) were identified, the STREAM model was used to evaluate the potential value of different ecological asset development options and to compare that with the option of keeping the lands as pasture.

According to the analysis, on the lowland portions of the two properties, development of streams and wetlands would produce significantly better value than keeping the land as pasture. This is due to the potential to obtain wetland and/or stream mitigation credits. On the upland portions of the properties, reforestation would produce much better value than keeping the land as pasture. This is due to the expected timber value and potential to obtain carbon sequestration credits. These findings demonstrate how the development of ecological assets can be the best reclamation option, both economically and environmentally.

What can landowners and mine operators learn from the STREAM analysis at TXU?

The ecological asset assessment process, which may include financial analyses using STREAM or similar models, appears to be a promising new methodology for estimating and comparing different ecological asset management scenarios on mine lands and other land types. Another important lesson is that it is beneficial to consider doing an analysis of potential ecological asset value of post-mining lands before reclamation begins or even before mining operations begin.