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Energy and Conservation in the Barnett Shale

A GUIDE FOR TEXAS LANDOWNERS

© David A. Williams

THE RANGELANDS

Living in a place where an approaching thunderstorm can be seen forty miles away gives rise to big ideas and the unfettered sense of freedom Texans are known for. On the rangelands west of Fort Worth, that freedom comes with a unique set of responsibilities. There, landowners face the challenge of conserving their ranches while realizing the prosperity offered by the area's important energy resources.

NATURE'S GIFTS

The land west of Fort Worth is home to some of Texas' last large remnants of tallgrass prairie. These ancient, never-plowed grasslands support rare plants, including some found nowhere else on Earth. The region is also endowed with some of the last remaining old-growth woodlands in the state.

These natural communities are intertwined with the region's history and culture. Lush prairie grass enticed Texas' first cattlemen up the famed Chisholm Trail to Fort Worth. Today, Interstate 35 follows a nearly identical path, the concrete and steel replacing ruts etched more than a century ago by boots, hooves, and wagon wheels.

Nature also blessed the North Texas rangelands with incomparable energy resources. The fertile prairie and wooded Cross timbers lie atop the Barnett Shale, one of the largest natural gas fields in the nation and a crucial source of revenue for area landowners.

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A CHANGING LANDSCAPE

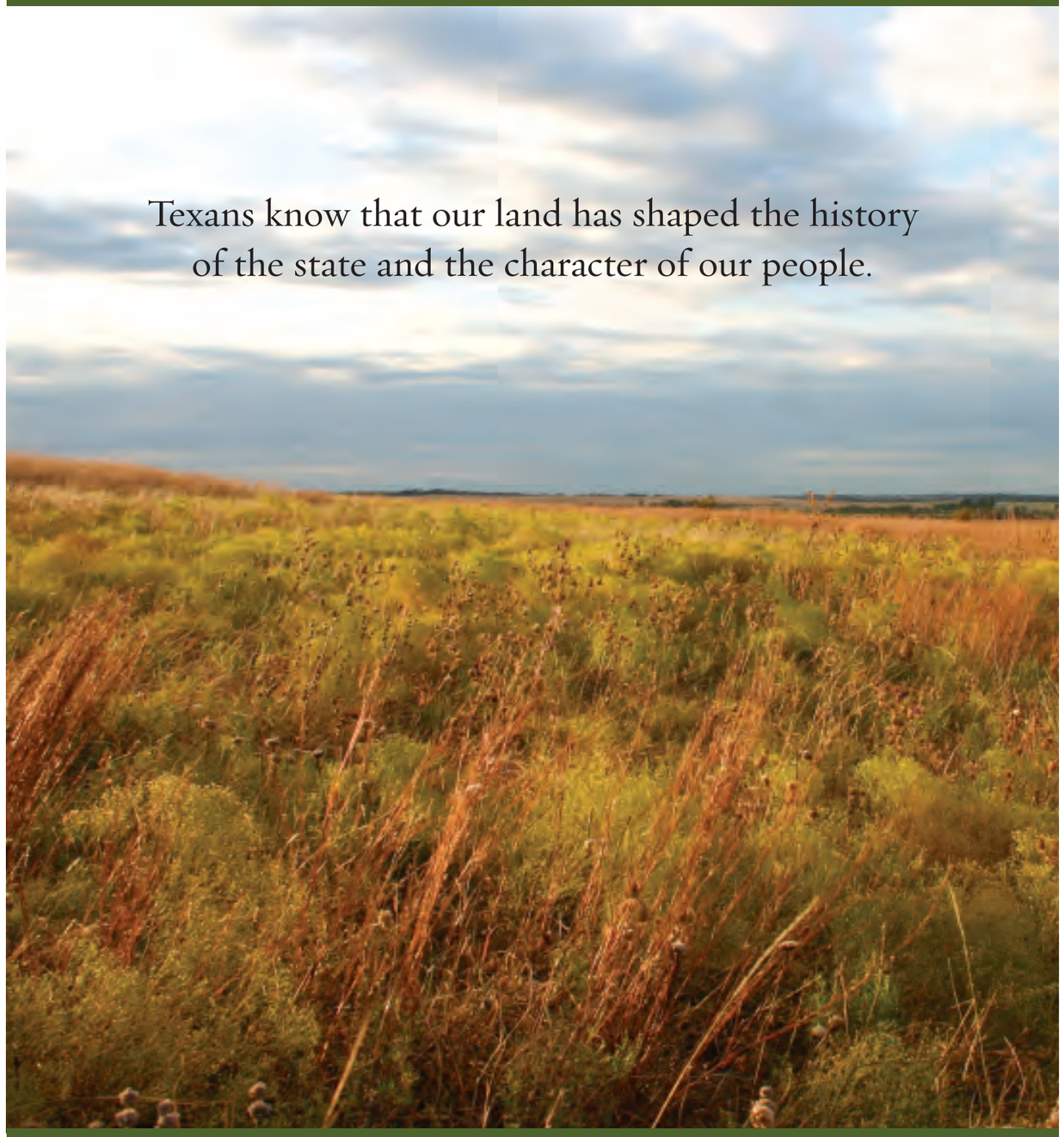
Spanning an estimated 5,000 square miles, the Barnett Shale is one of the most important geological features in the region and an integral part of the economy that supports millions of Texans. For many landowners, income from natural gas ensures continued land ownership and supplements revenue from ranching or farming. Income derived from the Barnett Shale helps maintain traditional land uses and preserves the rural character of the region by allowing landowners to avoid selling family ranches to residential or commercial developers.

Unfortunately, energy development impacts the natural resources—land, water and vegetation—that ranching and wildlife management depend on.

Extracting natural gas puts tremendous stress on the land and the plants and wildlife it supports.

This pressure takes many forms. The first and most obvious is fragmentation of intact lands. Gas wells are located on pad sites often as large as three to five acres. The roads constructed to service those wells must be large enough to accommodate multi-axle vehicles such as semi-trailer trucks. Ranches in the Barnett Shale area are further fragmented by pipelines constructed to support the gas wells. This fragmentation and increased vehicle traffic encourages the spread of unwanted invasive and non-native plant species, which can displace native grassland and impact wildlife, including desirable game species such as bobwhite quail.

Texans know that our land has shaped the history of the state and the character of our people.



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WORKING SOLUTIONS

Landowners have a variety of options when seeking to preserve the native qualities of their land within the Barnett Shale and other energy-rich areas. There are stewardship practices that can help mitigate the impacts of energy development.

What follows are suggestions to lessen the impact of oil and gas production on sensitive ranch lands without imposing undue restrictions on energy development.

Construction of a typical pad site in the Barnett Shale © David Bezanson/TNC

LESSENED DENSITY

Currently, Texas state limits the density of well sites to no more than one well per 20 acres. At this density, wells may irrevocably impact conservation and the agricultural potential of the land. One simple way to lessen the impact of drilling is to reduce well density.

While it is difficult to define an ecosystem's tolerance for fragmentation resulting from energy development, studies indicate one well per 120 to 160 acres may be compatible with maintaining healthy grassland. This density has been successfully modeled in New Mexico's Vermejo Park Ranch, where sustainable grazing and land conservation occur in concert with coal bed methane extraction.

Simply put, fewer wells means more unaffected land.

In addition to fragmenting the land and creating corridors for invasive plant species, roads can also accelerate erosion, which impacts water quality and the agricultural value of land. When these factors are considered, the area eventually disturbed by the new road far exceeds the original construction footprint.

One simple way to lessen these impacts is to use existing roads when possible. When new roads are needed, they should avoid crossing creeks and follow the natural contours of the land. Roads placed on ridge tops or within floodplains are especially harmful to the natural ecology of an area and should be avoided.

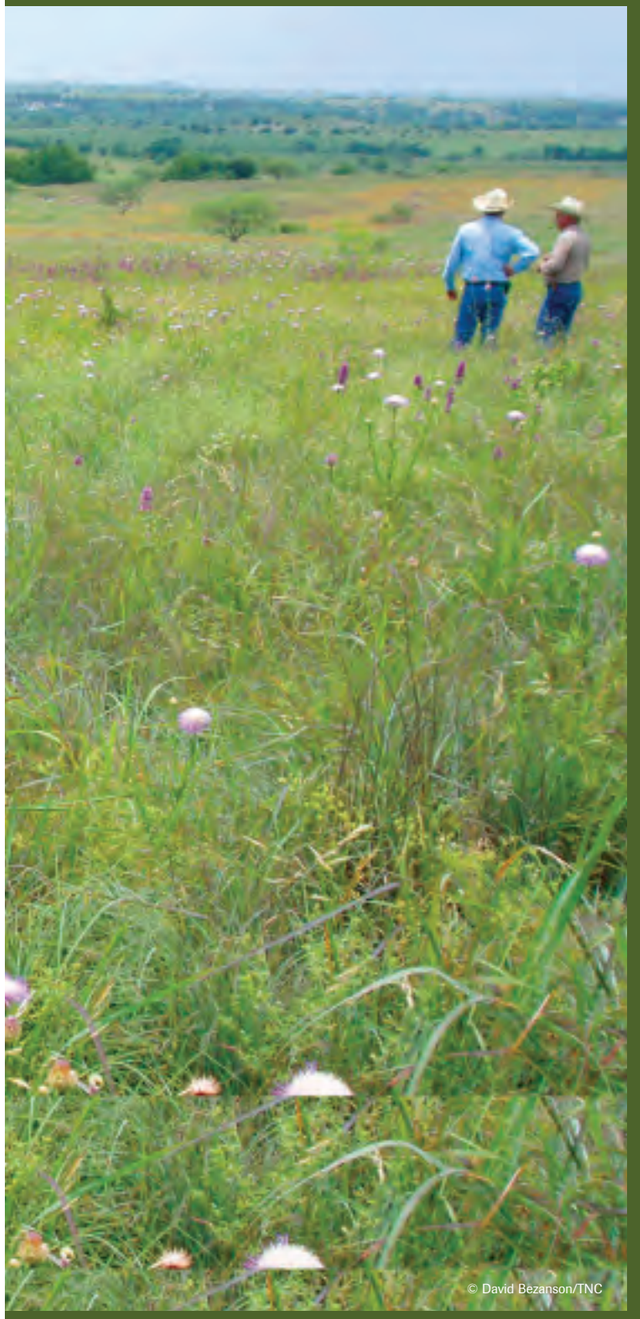
Smart, careful planning of road construction can make a huge conservation difference.

PROTECTING THE CORE

Maintaining the integrity of a natural area's core is important. Energy operations focused on the interior of a parcel can create a patchwork of land fragmented by roads and weakened by invasive species. Once fractured and divided, land tends to lose its ecological value.

Instead, placing wells around the perimeter of a parcel and using directional drilling to access gas-producing formations limits the number of roads and pad sites and lessens fragmentation of habitat on the property.

To maintain the ecological core of the land, well sites and roads should be located along the perimeter of a property, leaving its core intact.



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Gene and Kathleen Walker: Planning for Tomorrow

Like many other Texans, Gene and Kathleen Walker feel a special connection to their land. Their 285 acres in south Parker County is the last remaining piece of a 2,000-acre family ranch begun after the Civil War. That pedigree is something to be proud of, but their love of the land is tied to more than just the past. They treasure its natural features—the sloping, wooded hills; the flat stretch of honey-colored grass opening onto the Brazos River and the deer and turkey roaming the property—and are determined to keep it all unchanged.

"We hated the thought that once we're gone this land would probably be broken up and divided up into tracts," says Gene. "So we reached out to The Nature Conservancy to help us protect it."

The Walkers also wanted their children and granddaughters to have the same opportunity to connect with the land, but keeping the property in the family would require a long-term investment. So they decided to lease the gas rights on their property to an energy company.

When the time was right, they listened to several proposals and chose a company they could work with. "We negotiated hard with both the energy and pipeline companies," Gene says, "and we used an attorney familiar with energy leases." By negotiating a single pad site and helping to choose the paths for the gathering lines, they protected the wooded section of their land, as well as their surface and ground water.

As a result, the Walkers have received additional revenue while protecting the natural integrity of their land. And thanks to their conservation easement, that land, water and wildlife will remain intact for generations to come.

© James Mellard

A LEVEL FIELD

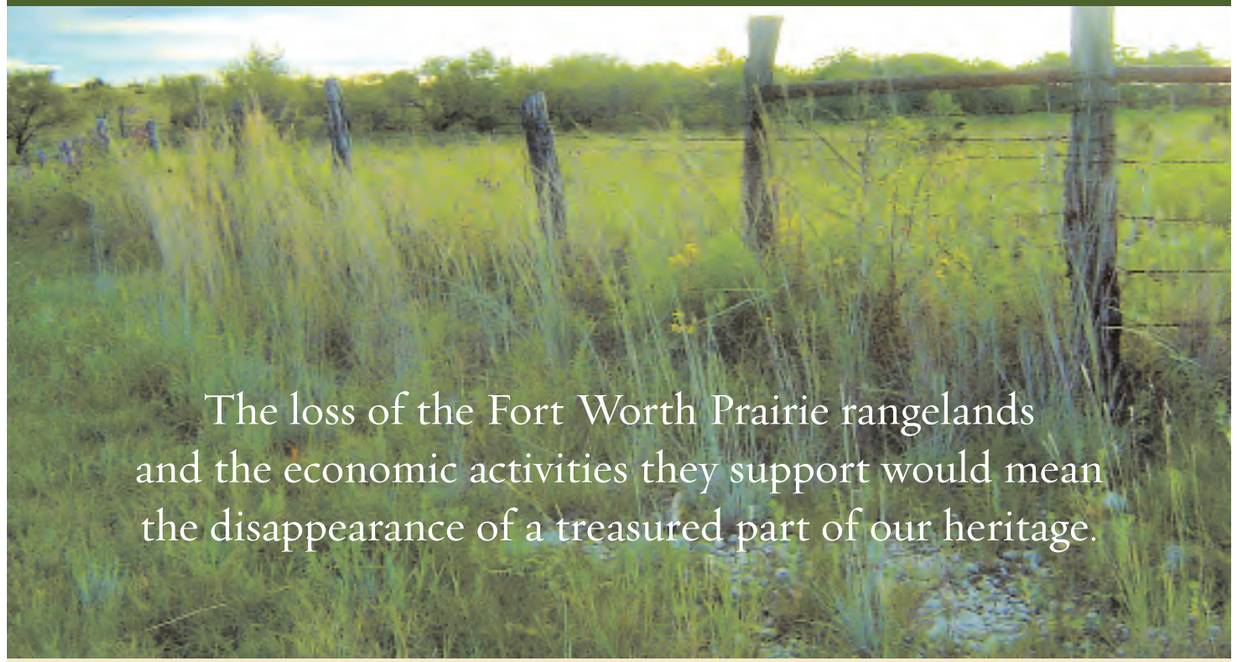
It stands to reason that the smaller the footprint of an energy operation, the more land surface use and value is retained. Carefully placing wells on smaller pad sites and clustering multiple wells on each pad site can greatly decrease the impact on ranching and wildlife.

Proper revegetation of disturbed but unpaved areas using appropriate native plant species also minimizes the damage to native rangeland health and wildlife that can result from energy operations.

"Hillside carving" occurs when drilling occurs on uneven surfaces. Because of the steep slopes and frequent lack of soil on carved hillsides, replanting of native grasses and wildflowers may be difficult. These restoration activities are crucial to prevent erosion and maintain wildlife. In addition, rare plant species of the Fort Worth Prairie often occupy thin-soiled slopes, making them susceptible to harm from hillside drilling.

Drilling operations should avoid shallow-soiled hillsides whenever possible, relying on directional drilling to avoid the necessity for locating wells on sensitive sites.

Whenever possible, wells should be placed on level land to give nature the best chance to recover.



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PLANNING FOR THE FUTURE

Texans know that our land has shaped the history of the state and the character of our people. The culture of ranching—which began with and is sustained by native grasslands—is intrinsic to the very identity of Texas. The loss of the Fort Worth Prairie rangelands and the economic activities they support would mean the disappearance of a treasured part of our heritage.

Landowners always have choices. Before signing a new lease or renegotiating an existing lease for oil and gas development, landowners should consult with professionals and consider negotiating an agreement to ensure that good surface management practices are followed. Taking this step will help conserve Texas' natural grasslands and will ensure that heritage ranching remains a part of the Fort Worth Prairie for years to come.

To learn more about lessening the impact of energy extraction on your land, visit us today at

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