

SPECIAL REPORT

THE HIGH PRICE

PAYING FOR THE PUMP West-central Wyoming's Pinedale Anticline, a 200,000-acre upwelling of rock layers rich in natural gas, bears the scars of intense energy development. Says one FWP official who visited the area last fall, "Believe me, we don't want Montana to come to that."

OF GAS


Will fish, wildlife, and scenery bear the cost of Montana's growing natural gas development?

BY TOM DICKSON



You would think Art Hayes, Jr. would want the extra water. His 9,000-acre ranch, along the Tongue River in southern Rosebud County, receives just over a foot of precipitation each year. Every summer the 63-year-old rancher, whose family has run cattle on this site since 1884, must divert water from the prairie river to irrigate his alfalfa fields. Farmers and ranchers downstream do the same. In this semi-arid region, which includes the Crow and Northern Cheyenne Indian reservations, water is the most precious natural resource.

Yet Hayes and other members of the Tongue River Water Users Association do not want the millions of gallons of water pumped from underground by the region's growing number of coal bed methane (CBM) wells. They maintain that the water, which traps the methane in coal seams and must be pumped to the surface to extract the natural gas, is polluted. >>



WASTING WATER IN A BONE-DRY REGION One of the biggest questions with CBM drilling is what to do with the millions of gallons of excess water removed from underground aquifers each day. In the Powder River Basin, the water contains high levels of sodium bicarbonate salts that could damage crops, soil, and fish populations. Currently 2 million to 3 million gallons of untreated discharge water flows into Montana's portion of the Tongue River daily. Below, workers spray discharge water from a Wyoming well.

JOEL SARTORE

Over the past several years, 2 million to 3 million gallons of highly salinated discharge water has been legally pumped into the Tongue each day from nearly 800 CBM wells in Montana's portion of the methane-rich Powder River Basin. Hayes, president of the water users association, worries that high levels of sodium bicarbonate salts in the irrigation water will concentrate in the soil over time and damage his crops, as well as kill fish and other aquatic life in the river. "No one knows what effect this polluted water has on the soil and the river now," Hayes says, "and no one has any idea what the cumulative effects will be 30 years from now."

Soon thousands more rigs will be popping up in southeastern Montana and elsewhere in the state to extract natural gas, an increasingly popular energy source for heating homes, manufacturing goods, and generating electricity. The Bureau of Land Management, (BLM) which controls the mineral rights in most of the state, predicts that 16,000 CBM wells

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will be producing in southeastern Montana within the next two decades. Throughout Montana, the BLM is selling new leases on hundreds of thousands of acres each year. In recent months, leases have been offered on sage grouse nesting areas, near the Upper

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Missouri National Wild and Scenic River, and on the Beaverhead River, a nationally renowned blue-ribbon trout stream.

Growing natural gas development concerns Montana Fish, Wildlife & Parks officials, who keep a close watch on activities that could threaten the state's highly valued elk, trout, and other species. "We understand the need for energy development, but we don't understand the need to drill before taking all the

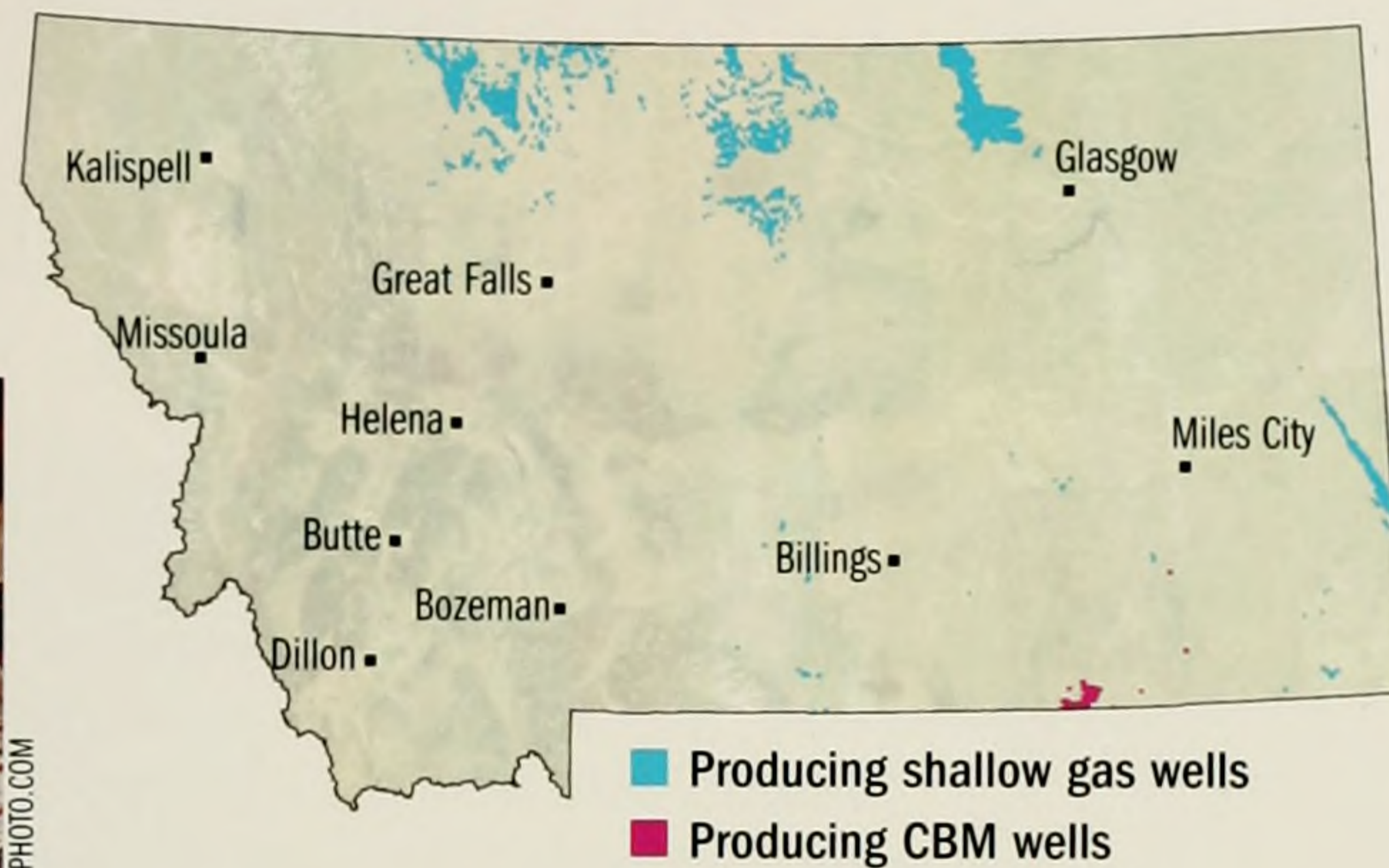
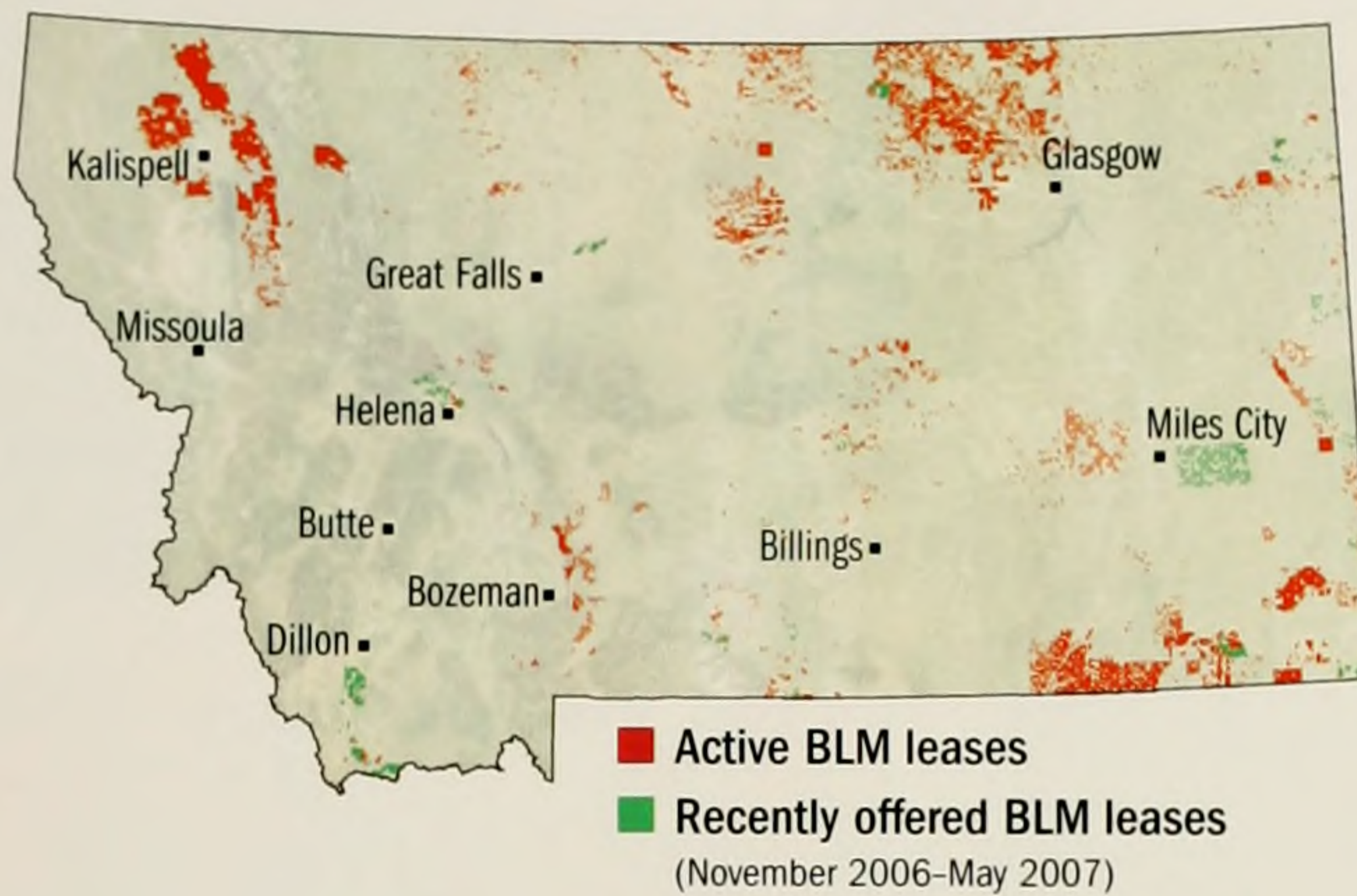
steps necessary to protect Montana's fish and wildlife," says FWP director Jeff Hagener. "The gas isn't going anywhere."

The department recently protested BLM plans to sell oil and gas leases in some parts of Montana containing critical wildlife habitat.

Hagener says the department may challenge future sales unless the BLM and the gas industry find ways to reduce disturbances to fish and wildlife—especially sage grouse, which have been petitioned for listing under the Endangered Species Act. FWP has no permitting authority for gas drilling, but it can and should "raise red flags when we believe there could be a significant threat to fish and wildlife, which are major recreational and economic assets to this state," says Hagener. With more than 4 million acres currently leased for oil and gas exploration and extraction, and more being sold each year, Hagener and other FWP officials say some parts of the state could be in danger of winding up like Montana's neighbor to the south.

Not much drilling, for now

The Bureau of Land Management, which controls mineral rights in much of Montana, has sold mineral leases on more than 4 million acres statewide. Most of these leases do not contain producing wells. But changing technology and higher energy prices could make unprofitable leases worth developing. Though Montana contains far fewer producing wells than Wyoming or southern Alberta, the number here is expected to rapidly increase. The BLM estimates that 16,000 new coal bed methane wells will be drilled in southeastern Montana alone over the next two decades.



SOURCES: BUREAU OF LAND MANAGEMENT; MONTANA BOARD OF OIL AND GAS



ISTOCKPHOTO.COM

Three Types of Gas Wells

COAL BED METHANE

How it works: Also called coal bed natural gas, CBM wells extract methane trapped by water pressure in underground coal seams by removing the water and then the gas.

Where they are: Primarily in the Powder River Basin of southeastern Montana.

FWP concerns: Wastewater harming river environments, aquifer depletion drying up springs, wildlife disturbance and habitat fragmentation from roads and infrastructure such as power lines, pipelines, and compressor stations.

SHALLOW GAS

How it works: Shallow gas wells tap natural gas reserves 1,500 feet or less underground. Initial wells are relatively inexpensive and can be installed in just a few weeks.

Where they are: Thousands of wells now exist north of the Hi-Line between Shelby and Malta. Tens of thousands are in southern Alberta just north of the Montana border.

FWP concerns: Habitat fragmentation from roads and infrastructure such as power lines, pipelines, and compressor stations.

DEEP GAS

How it works: Deep gas wells extract natural gas 10,000 to 15,000 feet underground. Initial wells are expensive, difficult to drill, and require up to four months to install.

Where they are: Currently there are none in Montana, though the Rocky Mountain Front has been targeted for deep gas wells, and BLM leases are being sold for deep gas drilling in southwestern Montana. Major reserves are in Wyoming and Alberta.

FWP concerns: Large well pad footprints (4 acres each) as well as habitat fragmentation from roads and infrastructure such as power lines, pipelines, and compressor stations.

A CBM well in Wyoming.



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FACT-FINDING MISSION

Though its snowy mountains, national parks, and vast pronghorn-rich prairies make Wyoming much like Montana, the state has a far less cautious approach to energy development. That has translated into huge profits for energy companies and enormous wealth for Wyoming from oil and gas royalties. It has also damaged the landscape and harmed wildlife. Those effects have been most severe on the 200,000-acre Pinedale Anticline, an upwelling of rock layers rich in natural gas 60 miles southeast of Grand Teton National Park. Last fall, FWP officials drove to Pinedale to see firsthand what 350 deep gas well pads had done to the landscape. The industrialized sites, each the size of four football fields, are filled with rigs, power lines, compressor stations, and pipelines and connected by a web of roads cutting across the prairie. "Believe me," says Larry Peterman, FWP chief of operations, "we don't want Montana to come to that. We were shocked. Each of those well pads looked like a small town."

Peterman says the sound of electrical gener-

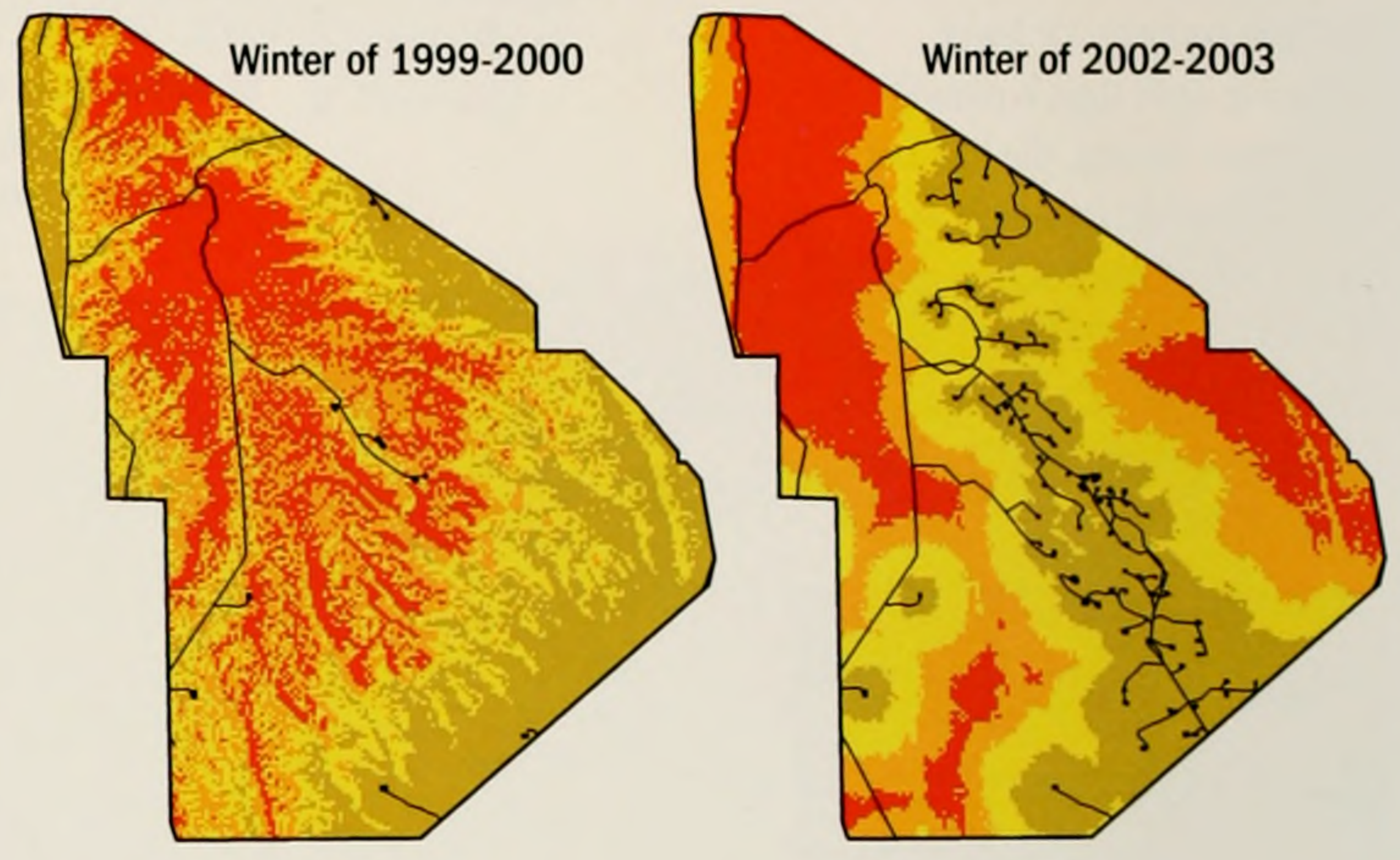
ators, diesel engines, and processing stations churned across the landscape 24 hours a day. Massive trucks rumbled along newly graded dirt roads, raising clouds of dust in what he describes as an "industrialized landscape." FWP officials also visited intensified drilling developments in southern Alberta, where more than 12,000 shallow gas wells have been drilled in the past three years, and on the Parachute Ranch in west-central Colorado.

Gas development on such a scale is no friend to fish and wildlife. Erosion from new roads sends silt into streams, where it smothers fish eggs. Torrents of wastewater from CBM sites can erode riverbanks. Undiluted discharge water has been shown to kill native minnows. "There are so many unknowns," says Brad Schmitz, FWP regional fisheries manager at Miles City. "What if current [water protection] standards aren't strict enough? If you lose an aquatic system like the Tongue River, you'll never get it back the way it was."

Some of the worst disruption to wildlife comes from new roads that fragment habitat



MASSIVE SPREAD A recent study funded by the gas industry and conducted in cooperation with Wyoming agencies tracked mule deer movement in Wyoming's Pinedale area as gas drilling and exploration expanded across the landscape. Though direct habitat loss from development was small, the presence of roads and pads displaced deer, pushing them to the fringes of their habitat. Hall Sawyer, study coordinator, found that mule deer numbers in the Pinedale area declined by 46 percent from 2001 to 2005, from 5,228 to 2,818. "Considering how much energy development is going on," he says, "it's amazing how little information has been gathered on the impacts of drilling to wildlife."



Well pads and roads: 
 Predicted level of use by mule deer:  High  Medium-high  Medium-low  Low

SOURCE: HALL SAWYER/WESTERN ECOSYSTEMS TECHNOLOGY, INC.

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into pieces too small for animal use. Recent research at the Pinedale Anticline shows that gas drilling drove mule deer away from essential winter habitat and led to a 46 percent population decline from 2001 to 2005. Another study shows that pronghorn shun all developed areas of Wyoming's Upper Green River Basin. In other heavily developed areas, populations of grassland birds such as sage sparrows and Brewer's sparrows have plummeted. And Russian thistle and other exotic plant species carried by trucks and equipment from other states are crowding out native forage needed by wildlife.

Worst hit are sage grouse. David Naugle of the University of Montana recently finished studies on the large prairie birds in the Powder River Basin, about 80 percent of which is in northeastern Wyoming and 20 percent in southeastern Montana. The basin now holds more than 30,000 CBM wells, 97 percent of them in Wyoming. Naugle and his associates found that sage grouse populations declined by 86 percent from 2000 to 2005 in

developed areas. The main causes, says Naugle, were roads, construction, noise, and traffic scaring the birds off historic mating grounds. Naugle also found that gas development drives sage grouse from high-quality winter range, where the birds must feed heavily on sagebrush leaves to survive. In another research project, a University of Wyoming scientist concluded that if the rate of decline he documented in the Pinedale area continues, his study population of 1,200 sage grouse will

“Montana is sandwiched between Wyoming and Alberta, which have some of the most intense, high-impact gas drilling in North America.”

disappear within 20 years.

Such reports worry hunters and conservationists. They should also concern anyone who uses public lands. "If this drilling starts impacting habitat for sage grouse and moun-

tain plovers, and then those species are federally listed [as endangered species], you could see severe cutbacks on grazing, recreation, and other public land uses," says Hagener.

As native wildlife in drilling areas has declined, human habitation has increased, often to the detriment of local communities. In Wyoming's Sublette County, population 7,000, nearly 3,000 roughnecks have come to work in the boomtown economy since 2000. Most are men in their 20s and 30s living in company-built "man camps." Violent crime and drug use has escalated. According to a recent county report, arrests during the past six years increased by nearly 300 percent, and crystal meth arrests more than quadrupled from 2004 to 2005.

THE SANDWICHED STATE

Industry representatives say it's misleading to use Wyoming to predict what might happen in Montana. "The geology is completely dif-

DIANE HARGREAVES



A BUST FOR BOOMERS Sage grouse numbers have increased recently in parts of Wyoming and Montana, but not in areas of gas development. In a study funded by industry and Wyoming and federal agencies, University of Montana research scientist David Naugle found that the sage grouse population declined by 86 percent over five years in developed areas of the Powder River Basin. In a University of Wyoming study, the lead researcher concluded that his study population of 1,200 sage grouse could disappear in 20 years. The scientists say noise, traffic, and other disturbances are driving the birds away from historic spring booming grounds and winter sagebrush habitat.

ferent,” says Dave Galt, executive director of the Montana Petroleum Association. BLM officials agree, noting that they expect only six gas wells to be drilled in all of Beaverhead County. The agency also maintains that existing state and federal regulations adequately protect Montana’s fish and wildlife from projected increases in energy development.

Conservation groups are skeptical. “Montana is sandwiched between Wyoming and Alberta, which have some of the most intense, high-impact gas drilling in North America,” says Bruce Farling, executive director of Montana Trout Unlimited. “BLM projections on drilling near Dillon don’t account for future technologies, evolving information about deposits, or changing economics. It’s hard for me to find comfort in their claims that we have nothing to worry about when they promote exploration next to a nationally acclaimed treasure like the Beaverhead River.”

Another concern conservationists and ranchers share are “split estate” laws. Landowners usually don’t own subsurface rights to

their property. The federal government does, and it can sell those rights as leases. “Mineral leases convey a property right,” says Steve Belinda, who spent 16 years as a wildlife biologist with the BLM and now works in Pinedale for the Theodore Roosevelt Conservation Partnership, a hunting and conservation advocacy organization. “If a company owns a lease and can’t work something out with the property owner, it can still go in and drill.” That’s even true for property in conservation easements, which FWP and land preservation groups buy to protect critical wildlife habitat from subdivision and other development.

The gas industry says it is working to lessen harm to the landscape and wildlife. According to Galt, energy companies in the Powder River Basin have begun building narrower roads and burying power lines. “The industry has done a lot of analysis, and there’s been a lot of data gathered from scientists,” he says. The BLM requires companies to replace or restore damaged wildlife habitat and make site-specific development

PATRICK RUMMANS



FWP calls for a “new model” of energy development

FWP officials acknowledge that energy development will and should continue to grow in Montana. But to ensure that wildlife and fish are not put at risk, the department and conservation groups are calling for a “new model” of energy development and production.

Currently, intensive natural gas drilling can occur all at once across a landscape, disrupting wildlife populations and damaging wildlife habitat. Under the new model, which would control the geographic scope and rate of gas development expansion, Montana would:

- Make critical habitats for key species such as sage grouse and mule deer off-limits to drilling.
- Require incremental development so that gas drilling would be concentrated in one area at a time.
- Apply stipulations to leases and drilling permits. (Also known as “best management practices,” the stipulations would set standards of well spacing, power line location, road width, and other development to reduce disturbance and damage to wildlife and habitat. They would also require developers to begin restoring habitat as soon as natural gas was extracted from a site.)
- Require developers to submit habitat mitigation funds and restoration plans for a site before drilling could begin.
- Monitor wildlife populations during the development to determine if the best management practices were working or needed to be adjusted.

“This is a step-by-step process that makes sure Montana avoids the boom-and-bust approach we’re seeing in Wyoming and elsewhere,” says FWP director Jeff Hagener. “It allows the state and industry to learn which mitigation practices work and which don’t, so we can continue improving as we go along.” Hagener says he firmly believes Montana can develop energy and protect fish and wildlife at the same time: “We’ve begun working with all interested parties to develop and, I hope, carry out a new approach to energy development that recognizes and protects Montana’s fish, wildlife, and recreational resources.” ■





BURNING ISSUE FWP officials and most conservationists acknowledge the necessity and inevitability of energy development in Montana. But they believe gas drilling should not be allowed to damage fish and wildlife habitat. Says one Kalispell hunter, "Montana doesn't need to be the boiler room for Las Vegas and Los Angeles. Destroying some of the best wildlife anywhere is not only a waste, it's a pointless, needless waste."



DEEP GAS DRILLING IN WYOMING BY JOEL SARTORE

modifications to reduce environmental damage. Recently, a gas company operating in Montana announced it had applied for state permits to reinject CBM discharge water back into the ground. Reinjection became more interesting to many companies after 2005, when the Montana Board of Environmental Review required that all new discharges into the Tongue River must be treated to meet minimum water quality standards.

Taking any additional measures to protect wildlife, say industry representatives, will cut into profits and state royalties and hamper efforts to hasten the country's energy independence. "We talk about reducing our dependency on foreign oil," says Galt, "but there's no reasonable solution without developing our own resources in this country."

Conservationists and FWP officials say efforts by gas companies and the BLM to mitigate the effects of drilling fall short of what is needed. For example, wells may be sited as close as one-quarter mile from sage

“It doesn't make sense to endanger the state's wealth aboveground while extracting the wealth from belowground.”

grouse breeding areas, called leks, during mating season and 2 miles when the hens disperse and begin rearing their young. FWP is calling for a 1-mile buffer during mating season and a 4-mile buffer during chick rearing. According to Belinda, BLM requirements for habitat mitigation (replacement) often don't help species harmed by development. "There is some good mitigation and reclamation work," he says, "but a developer can destroy a sage grouse lek and then plant aspen trees 100 miles away." Belinda adds that when he worked for the BLM the agency "approved most requests for what are called 'exceptions,'" one-time waivers to federal restrictions intended to protect wildlife and other natural resources.

As for the country's energy independence, Farling of Trout Unlimited notes that even if all the natural gas in the entire Powder River Basin (roughly 25 trillion cubic feet) were extracted tomorrow, it would only supply the country's gas needs for slightly more than one year. "It's

foolhardy to sacrifice, perhaps permanently, some of the nation's best fish and wildlife habitat for an unachievable energy objective," he says.

JUST SAY WHOA

Recently even Wyoming began having second thoughts about its approach to gas drilling. Alarmed by research showing steep declines in sage grouse and mule deer populations, Governor Dave Freudenthal has called for strengthening federal environmental regulations to protect wildlife habitat from energy development. In May he asked the U.S. Forest Service to delay new exploratory drilling in western Wyoming, which he said could be "the first domino" in the total industrialization of forest land in that state.

It won't be long before Montana sees its own escalation of gas well drilling. The installation of 16,000 new CBM wells in the state's portion of the Powder River Basin has been delayed only temporarily by a lawsuit

brought by the Northern Plains Resource Council requiring the BLM to revise its initial environmental impact statement (EIS). "Once the [new] EIS is signed, rigs and crews now in Wyoming will move right up into Montana," Belinda says. Also troubling are lease

locations. For example, recent tracts for sale near Monida Pass, just a few miles from the Red Rock Lakes National Wildlife Refuge, contain tributaries that hold native westslope cutthroat trout, a state species of concern.

Due to potential harm to critical fish and wildlife populations and habitat, FWP officials and conservation groups are saying "whoa" to new lease sales and advocating a new model of development (see box, page 27). Hagener points out that Montana has changed in recent years as citizens and state leaders increasingly recognize the relationship between healthy natural environments and healthy economies. He says that fish, wildlife, and scenery support the state's \$2 billion tourism and hunting- and fishing-based industries. "We need to find ways to develop Montana's energy resources that don't pose a threat to our fish and wildlife," Hagener adds. "It doesn't make sense to endanger the state's wealth aboveground while extracting the wealth from belowground." 