2001

Building public support for responsible coal bed methane development in Montana

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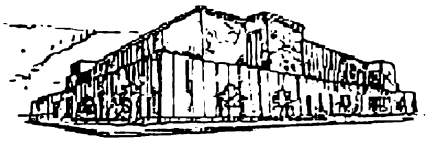

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BUILDING PUBLIC SUPPORT FOR RESPONSIBLE COAL BED METHANE DEVELOPMENT IN MONTANA

by

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B.A. University of Montana, 1996

Presented in partial fulfillment of the requirements

For the degree of

Master of Sciences

The University of Montana

November 2001

Approved by:

Chairperson

Dean, Graduate School

2-11-02

Date

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

Frykman, Amy Inman, December 2001 Environmental Studies

Building Public Support for Responsible Coal Bed Methane Development

Director: Tom Roy Tom Roy

Coal bed methane development is a new industry in Montana. The general public knows little about the potential impacts of the development on water quality and quantity, soils, air quality, wildlife, and rural communities. The state of Montana and federal government are currently preparing an environmental impact statement for coal bed methane development in Montana. A draft document is scheduled to be released in late December 2001.

The Northern Plains Resource Council is actively working to ensure that coal bed methane development does not damage Montana's water, land, air, and the interests of its people.

Doing It Right: a blueprint for responsible coal bed methane development is designed to better prepare the general public to participate in public scoping meetings and submit meaningful comments. It outlines the potential impacts of development on aquifers, rivers and streams, agriculture, wildlife, rural life, citizen involvement, cultural and historic resources, and suggests several steps state and federal agencies, the methane industry, and citizens can take to make sure methane is developed responsibly in Montana.

Doing It Right is likewise designed to gather public support for responsible development through organizational and individual endorsements. A slideshow and script is designed to help members of the Northern Plains Resource Council present the recommendations of Doing It Right to other organizations and ask for their endorsements. A list of frequently asked questions and answers is designed to help members prepare for possible questions from audience members.

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Introduction

The Northern Plains Resource Council is a nonprofit grassroots citizens' organization dedicated to land stewardship, to the preservation of family farms, ranches, and small businesses, and to providing the information and tools necessary to give citizens an effective voice in decisions that affect their lives.

Northern Plains is based in Billings, Montana, and has eleven affiliate groups in small communities in the Yellowstone River drainage in southwestern and southcentral Montana.

Northern Plains formed in the early 1970's in response to plans for 41 power plants in the interior west, 21 of which would be located between Colstrip, Montana and Gillette, Wyoming. Northern Plains' early efforts lead to the passage of a state surface owner consent law and a state coal reclamation act (the surface owner consent law was later declared unconstitutional by the Montana Supreme Court).

With these two victories, members of the newly formed Northern Plains joined with landowners across the nation to pass the Surface Mining Control and Reclamation Act (SMCRA) in 1977, the toughest reclamation law ever passed at the federal level. SMCRA does contain a surface owner consent provision barring federal agencies from leasing federal coal until the surface owner gives written permission.

Northern Plains is a democratically run, member-driven organization. The Board of Directors is made up of two representatives from each affiliate and four "at large" board members representing general, non-affiliate Northern Plains' members. The Board meets at least six times per year. Staff members follow the direction of the Board.

Council-wide issues campaigns are developed by task forces, which are made up of members interested in the issue. Council-wide issues managed through task forces include agriculture, food safety, hard rock mining, the Good Neighbor Agreement, legislative efforts, and coal bed methane.

Northern Plains became involved in coal bed methane development in early 2000 when members in the Tongue River drainage began calling with questions about reports of methane leasing and drilling activity. In March 2000, Northern Plains sued the Montana Board of Oil and Gas Conservation (BOGC) for awarding hundreds of methane drilling permits without conducting an environmental review as required by law.

In a settlement agreement, the BOGC agreed to a moratorium on drilling permits pending completion of an environmental impact statement (EIS), and Northern Plains agreed to allow the only producing coal bed methane company, Redstone Gas Partners (now Fidelity Exploration and Production Company), to develop 325 wells on its CX Field in southeastern Montana, and to allow the BOGC to award another 200 exploratory drilling permits to gather data for the EIS. The moratorium is in place until a Record of Decision is signed for the EIS.

A draft EIS is scheduled to be released in December 2001, and a final version in July 2002. Early drafts obtained by Northern Plains' members and staff confirmed fears that the EIS would fail to adequately address the concerns of landowners and citizens living in areas of proposed coal bed methane development.

In May 2001, the Northern Plains Coal Bed Methane (CBM) Task Force indicated interest in developing a document outlining provisions for responsible coal bed methane development, which would be released prior to the release of a draft environmental

impact statement currently underway by state and federal agencies. Further discussions indicated that the purpose of the document would be to build public support for responsible rules of the game for methane development in order to increase pressure on public agencies.

I indicated my interest in leading this project and submitted a proposal to develop a document called *Doing It Right: a blueprint for responsible coal bed methane development in Montana* to the CBM Task Force in early June, and to the Northern Plains Board of Directors on June 23, 2001. Both approved my proposal un-amended.

Doing It Right is designed to build public support for responsible coal bed methane development. The sixteen-page, full color document covers ten 'components,' or areas of concern: aquifers, rivers and streams, agriculture, wildlife, citizen involvement, rural quality of life, accountability and enforcement, cultural and historic resources, and 'closure,' which covers reclamation and bonding.

Each component fills one page, and includes a brief description of the component, a brief description of the problem, and Northern Plains' version of 'doing it right.' Each page includes a photo invoking the best qualities of the component.

The introduction includes a summarized list of Northern Plains' proscriptions for 'doing it right,' and a request that the reader help build support for responsible development by endorsing *Doing It Right*. Attached to the document are two cutout postcards: one addressed to Montana Governor Judy Martz asking for her support for responsible coal bed methane development and the provisions outlined in *Doing It Right*, and the other addressed to Northern Plains indicating the reader's support for *Doing It Right*.

The back page includes a "What Can You Do" section listing clear and discreet tasks that the reader can do the help build support for responsible coal bed methane development.

Because it is aimed toward a general audience with little specific knowledge of coal bed methane development and little interest in devoting much time to learning, *Doing It Right* does not include documentation. However, full documentation is available in a text-only version available on the Northern Plains' website, or in hard copy from the Northern Plains' office.

In order to ensure widespread support for *Doing It Right*, a draft version was sent to the Northern Plains Board of Directors and Coal Bed Methane Task Force, and to numerous groups and individuals throughout Montana and Wyoming who have a stake in responsible coal bed methane development. Recipients of the draft copy were given four weeks to comment and propose changes. I incorporated all edits in the final version.

The Northern Plains' staff and CBM Task Force decided to try to gather 1,000 individual endorsements, and 50 group endorsements of *Doing It Right* by the official release at Northern Plains' 30th Annual Meeting on Friday, November 16, 2001. To that end, I developed a slideshow and script that Northern Plains' members and staff can use to easily present *Doing It Right* to individuals and groups. I also developed a "FAQ" sheet listing frequently asked questions and answers for members.

Doing It Right will be released officially at Northern Plains 30th Annual Meeting on November 16th at 10:30 a.m. The official release will kick start an effort to organize and mobilize Montanan's from across the state to participate in the public scoping

process for the draft environmental impact statement, which is scheduled to be released in early January.

Documentation for

Doing It Right:

a blueprint for responsible coal bed methane development in Montana

Prepared by Amy Frykman
Northern Plains Resource Council
October 2001

Introduction

Southeastern and south-central Montana is a region marked by rolling hills, prairie rivers, and clear blue skies. The area's deep coulees, ephemeral streambeds, and sagebrush flats support thousands of family farms and ranches. Small towns dot the landscape, fueled by the trade of wheat and cattle, alfalfa, and sheep.

This region has stood the test of time. The challenges posed by the sometimes blistering hot summers, harsh winters, and periodic drought are met with proud resilience, scrappy ingenuity, and a contentment that comes from living a deliberate life.

Thick veins of coal lay several hundred feet beneath nearly every farm, ranch, and town in this region.[1] On the surface of the coal are molecules of methane gas, held in place by water pressure from the region's many coal seam aquifers. Remove the water, and the methane detaches from the coal, pools together, and rises to the surface.[2]

With rising natural gas prices and advances in technology, coal bed methane has become a valuable resource.[3] As its value increases, so do conflicts between those who

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[1] 32 billion tons of coal underlay 770,000 acres of land in just four counties in southeastern Montana: Powder River, Big Horn, Rosebud, and Custer. Matson and Bloomer, Bulletin 91. (Montana Bureau of Mines and Geology, 1973). Coal beds underlay portions of Carbon, Park, Gallatin, Yellowstone, and Musselshell Counties, and underlay most of Carter, Fallon, Prairie, and Wibaux Counties. Montana Natural Resource Information System, Map Number 01nris233. (Montana: 23 Jan. 01.

[2] M. Satriana ed., Unconventional Natural Gas: Resources, Potential, and Technology 163 (. 1980). Quoted in Darin, Thomas F. and Amy W. Beatie, "Debunking the Natural Gas 'Clean Energy' Myth: Coalbed Methane in Wyoming's Powder River Basin," Environmental Law Review 31 (2001): 10572.

> The coalification process generates methane and other gases. Because coal is porous, some of that gas is retained in the coal. CBM gas exists in the coal in three basic states: as free gas, as gas dissolved in the water in the coal: and as gas "adsorped" on the solid surface of the coal, that is, held to the surface by weak forces called van der Waals forces. These are the same three states or conditions in which gas is stored in other rock formations. Because of the large surface area of coal pores, however, a much higher proportion of the gas is adsorped on the surface of the coal than is adsorped in other rock. When pressure on the coalbed is decreased, the gas in the coal formation escapes. As a result, CBM gas is released from coal as the coal is mined and brought to the surface.

[3] Morgan Stanley Dean Witter, Coal Bed Methane: Worth the Time. (10 April 2000):

are committed to caring for the surface of the land, and those whose primary concern is to retrieve the valuable methane as quickly and cheaply as possible.[4]

The Bureau of Land Management estimates that between 14,000 and 39,000 coal bed methane wells will be developed in Montana in the next ten years, with development stretching as far west as Gallatin and Park Counties.[5] The boom is expected to last 20 to 30 years.[6]

A typical well dewaters an average of 16,000 gallons of high saline groundwater from coal seam aquifers per day.[7] Currently, most of this wastewater is discharged into rivers, streams, and unlined impoundments.[8] Methane production also brings access roads, pipelines, transmission lines, containment ponds, drill pads, compressor stations, and generators - all of which chop up agricultural land and fragment wildlife habitat.[9]

> Coal Bed Methane is fast becoming one of the hottest ... plays in the Lower 48.... Given the low risk/high return characteristics of coal bed methane production, we believe upside potential is substantial....Coal Bed Methane is gaining market prominence as natural gas expectations rise. However, recent production and technology successes, followed by infrastructure development are responsible for renewed interest.

[4] See Johnson, Clair. "Boom in gas from coal beds raises concerns." Billings Gazette. 14 July 2000. See also Janofsky, Michael, "Methane Boom in Wyoming Proves to be a Mixed Blessing." New York Times 8 April 2000: "Coal bed methane ... is touching nerves already frayed by the long battles between the owners of the land and the owners of minerals below it.... Now the methane is driving a wedge between those who applaud the economic benefits of mining and those who say it is not only damaging the land but squandering the region's most precious resource, clean water."

[5] U.S. Bureau of Land Management, Reasonably Foreseeable Development Scenario for Oil and Gas Development in Montana, (2001).

[6] See U.S. Department of the Interior, Bureau of Land Management, Buffalo Field Office, Wyodak Coal Bed Methane Project Final Environmental Impact Statement, (October 1999).

[7] United States Geological Survey, "Water Produced with Coal-Bed Methane." USGS Fact Sheet FS-156-00. November 2000. Water production rates will be discussed in further detail in Note 16 below.

[8] Fidelity Exploration & Production Company has a permit to discharge 1600 gallons of methane-produced water per minute into the Tongue River. Fidelity has constructed at least 29 unlined containment ponds on its CX Field near Decker, Montana in which it stores water that is not discharged into rivers and streams or otherwise used. In Wyoming, most CBM water is discharged into ponds or rivers and streams, and some is used to water roads or shipped to existing coal mines.

[9] All Consulting, Draft Management Common, Existing Management and their Impacts; Montana Statewide Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plan. (May 2001). 4-4 to 4-6. Prepared for the U.S. Department of Interior, Bureau of Land Management, Miles City Field Office.

This guide represents the combined insights and expertise of farmers, ranchers, townspeople, irrigation managers, water and soil experts, wildlife biologists, hydrologists, geologists, ecologists, outfitters, hunting guides and Montana citizens.

The six provisions listed below summarize their recommendations. Together they provide a reasonable framework for responsible development. We hope that you will help build support for responsible methane development and endorse Doing It Right.

RESPONSIBLE Coal Bed Methane Development Means...

1. Effective monitoring of coal bed methane development and active enforcement of existing laws to protect private property rights, Montana citizens, and Montana's natural resources.
2. Surface owner consent[10], surface use agreements[11] and reimbursement of attorney fees[12] to help landowners better protect their property rights.
3. Use of aquifer recharge[13], clustered development, mufflers for compressor stations, and other low-impact, best-available technologies to minimize impacts on underground water reserves, rivers and streams, and surface resources.

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[10] The Federal Surface Mining Control and Reclamation Act contains a surface owner consent provision that prohibits the leasing of federal coal minerals under private land until the federal government obtains permission from surface owner to begin mining operations. See Title 30 U.S.C. § 1304(c).

[11] Currently, minerals operators are not required to enter into a surface use agreement with surface owners under state or federal law. Under state law, which governs private and state minerals, mineral operators need only provide surface owners with written notice of intended drilling activities, including a plan of work. See 82 M.C.A.§ 2-303. Federal law, which governs federal minerals, requires mineral operators to either secure written consent and obtain a surface damage agreement, **or** post a bond for damages. See 43 U.S.C. § 299(a) and 43 C.F.R. § 3814.

[12] The Federal Clean Water Act authorizes the court to award costs of litigation "to any prevailing or substantially prevailing party." See U.S.C. 33 § 1365(d). The Montana Metal Mines and Reclamation Act likewise provides for reimbursement of attorney fees to prevailing parties. See 82 M.C.A. §4-350.

[13] Aquifer recharge consists of recycling or reinjecting coal bed methane produced water back into the same coal seam from which it was taken. See Schneider, Thomas J., Coal Bed Methane Produced Water

4. Collection of thorough fish, wildlife, and plant inventories before development proceeds to protect habitat, followed by phased-in development to diffuse impacts over time.
5. Meaningful public involvement in the decision-making process.
6. Complete reclamation of all disturbed areas and bonding that protects Montana taxpayers from all cleanup liability costs[14].

Reinjection: "Reinjection is and has been a recognized and responsible method for produced water disposal (and pressure maintenance) in the petroleum industry for decades. For example, BP (formerly Pan American Petroleum Corp. and Amoco) commenced treating and reinjecting oil field produced water in the giant Salt Creek Field in the early 1970's – shortly after the Clean Water Act – as both produced water disposal and water flood pressure maintenance methods." Available at www.nprcmt.org/media/Schneider_Reinjection_Paper.pdf.

[14] Currently, under Montana State law, coal bed methane operators are only required to bond for the amount of plugging and abandoning wells. See 82 M.C.A. § 11-123.

Aquifers

Southeastern and south-central Montana is marked by an arid to semi-arid climate. Much of the region's domestic water supply is pumped from aquifers or supplied by naturally flowing springs, and most farmers and ranchers depend on well water for stock watering.

AQUIFER DEPLETION

Coal bed methane production involves withdrawing massive volumes of groundwater from underground coal seam aquifers. The United States Geological Survey estimates that an average well in Montana withdraws 11.6 gallons of water per minute, or over 16,000 gallons a day.[15] At 10 gallons a minute, a midrange estimate of 24,000 producing wells in Montana would pump out 345 million gallons of water per day from underground water reserves, or over one trillion gallons over the life of the wells. Most of this groundwater is discharged into rivers, streams, and dry creek beds, or held in unlined impoundments, where it can seep into rivers and streams.[16]

[15] Estimates for water production rates vary, as do the rates themselves. The Wyodek EIS for methane drilling in Wyoming based its analysis on an average 12 gallons per minute (gpm). Actual pumping rates can be as high as 100 or 200 gpm at the outset of production, and decline as gas production rates decline. 10 gpm is used here as a conservative estimate. See Wyodek EIS, 2-8.

[16] At least 29 unlined impoundments ranging in size from less than an acre to over 40 acres in diameter dot Fidelity's CX Field near Decker, Montana. Downstream water rights holders worry that impoundments will hold back the natural flow of snowmelt and rainwater runoff, thereby impacting valid water rights. See "Coal Bed Methane wastewater overwhelms low flows in Tongue River." Big Horn County News. 16 August 2001. In Montana, methane operators are not required to obtain a water right to divert water into impoundments, even though impoundments can block natural flows to which other water users have valid water rights.

DRIED UP WELLS

Every drop of water withdrawn for coal bed methane production simultaneously depletes the region's precious aquifers.[17] The BLM estimates that a single well can lower aquifer levels by 34 feet within ten feet of the well.[18] The cumulative lowering of water levels from 14,000 to 39,000 wells is unknown, but coal mining studies suggest that it could take well over 1,000 years for southeastern Montana's aquifers to recharge.[19] As underground water levels drop, landowners and rural communities can expect to see their wells, seeps, sub-irrigated fields, and natural springs go dry.

MASSIVE VOLUMES

Methane water is unsuitable for irrigation because of high concentrations of dissolved salts. Industry proponents claim that methane discharge water could provide stock water for farmers and ranchers.[20] While this may seem like an ideal solution, there's one complication: all of Montana's cattle, sheep, and pigs combined would be unable to drink the amount of water that will be produced.

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[17] Marsden, Jason, "BLM says gas wells draining water table," Casper Star Tribune. 27 March 1997.
[18] U.S. Bureau of Land Management, "Draft Environmental Assessment; Tongue River Coal Bed Methane Project." (9 November 1999. 5-12).
[19] See Darin, 10573: "To date, the most telling data regarding aquifer recharge is contained in mine permits and plans for coal mines located in the PRB near Gillette. In the Buckskin mine permit, the results of groundwater recovery modeling show that it will take 1,500 years following reclamation for the coal aquifer to reach hydrologic equilibrium." Darin refers to the Triton Coal Co. Buckskin Mine Plan at 123; Triton Coal Co., Buckskin Mine Reclamation; at 102. On file with the Wyoming Department of Environmental Quality, Land Quality Division, 122 W. 25th Street; Herschler Bld., Cheyenne WY 82002.
[20] "Many ranchers and landowners have been using produced water for stock and domestic purposes," Montana Coalbed Natural Gas Alliance. Developing Montana Coalbed Natural Gas, Protecting Montana's Environment. See also WBI Holdings, MDU Resources Group, Inc. and the Coal Bed Natural Gas Story.

- **Aquifer Recharge**: While mineral owners have a right to retrieve their minerals, they do not have a right to deprive southeastern Montana of its underground water reserves. Luckily, it is possible and affordable to put coal bed methane produced water back in the ground where it is most needed.[21] Aquifer recharge is the most sustainable, reasonable, and appropriate method for dealing with water produced by coal bed methane wells.[22]
- **Water Rights**: Most uses of water in Montana require a water right. Currently, methane well operators are not required to secure a water right before using massive volumes of water. This double standard reinforces confusion over ownership and responsibility for underground water reserves. The state of Montana must clarify a rational system for the use of underground water reserves that respects existing water rights and preserves aquifer levels for the future.

[21] According to the Energy and Environmental Research Center (EERC), 63% of the 346 million barrels of gas-related produced water generated from coal bed methane and other gas sources in the lower 48 states is reinjected into salt water disposal wells. See Harju, John, An Evaluation of Produced Water Management Practices, Treatment Alternatives, and Disposal Options, ThermoRetec Corporation. Fidelity E & P, the only producing methane operator in Montana, has recently applied to the U.S. Environmental Protection Agency for four aquifer recharge wells just north of their producing field. See EPA, Underground Injection Control Program Draft Area Permit Class V Injection Wells Area Permit Number MT5901-00 (25 August 2001).

[22] See Schneider. In a related opinion editorial that was published widely across Montana, Schneider explains that after examining the viability of reinjection, he determined that "reinjection of CBM water is not only viable, but that it could mitigate or solve most of the difficult surface water problems, including degraded water quality, profound ecosystem changes, introduction of exotic species, impact on irrigation reservoirs and crop yields, water rights, erosion, aquifer subsidence and aquifer depletion." See "Do coal bed methane drilling right," Billings Outpost. 20 June 2001.

Rivers and streams

The Yellowstone and its tributaries help sustain agriculture, Montana's number one industry, and the towns, rural communities, and families that depend on farming and ranching.[23]

SALINE WATER

While coal bed methane produced water is suitable for domestic and stock use, it is toxic to Montana plants and crops.[24] As water percolates through the ground, it leaches out salts. Methane produced water can come from as deep as 700 feet below the surface, and generally contains high concentrations of dissolved salts, making it unsuitable for irrigation.[25]

DAMAGE TO SOIL

The ratio of dissolved salts (referred to as the sodium adsorption ratio, or SAR) of methane water is 10 to 12 times the level at which soil and plant productivity declines and 3 to 4 times the level Montana native plants and most crops can tolerate.[26] Soil

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[23] According to the Montana Department of Agriculture, cash receipts from agriculture in 1999 equaled $2,297,400,000, compared to $602,400,000 for mining and $268,100,000 for gas and oil. "Facts about Montana Agriculture," www.http://agr.state.mt.us/news/fist.htm.

[24] After analyzing numerous samples of coal bed methane produced water from the CX Field in Montana, Montana State University Soil and Water Quality Specialist Jim Bauder said that he "did not see a single water sample analysis which would have been suitable for irrigation." See Bauder, Jim, Coal Methane Gas and Montana Water Quality. (Montana State University: Nov. 1999).

[25] Regele, Steve and Judd Stark, Montana Department of Environmental Quality, "Coal-Bed Methane Gas Development in Montana, Some Biological Issues," Coal Bed Methane Workshop, USDI Office of Surface Mining, Denver, CO, 1 Sept. 2000.

[26] Data from Fidelity E & P's (formerly Redstone Gas Partners) CX Field show an SAR range from 45.8 to 90.9. See data contained in EPA, Underground Injection Control Program Draft Area Permit Class V Injection Wells Area Permit Number MT5901-00 (Region 8: 25 August 2001). According to Robert

irrigated with this water will accumulate these salts, which destroy soil structure and inhibit water adsorption by plants.[27]

DAMAGE TO FISHERIES

Discharging high saline coal bed methane water into Montana's rivers and streams is unacceptable. Even treated, the influx of high volumes of groundwater into Montana's rivers and streams could change stream temperature and hydrology, adversely affecting fisheries. Likewise, the increased erosion and sedimentation from discharges can plug irrigation canals and destroy spawning grounds for fish.[28] Fishing brings over a million dollars into the region each year as Montanans and visitors to the state come to catch trout, walleye, smallmouth bass, paddlefish, and catfish.[29]

Doing It Right

Mitchell, a Soil, Water and Air Specialist with the Miles City Office of the Bureau of Land Management, most crop and native species can live with an SAR below 3. Some salt-tolerant native species can survive an SAR up to 12, but no local plant species or crops can survive and SAR exceeding 12.

[27] "Plant growth can be decreased due to high concentrations of soluble salts in the root zone," Bauder, Jim "Interpretation of Chemical Analysis of Irrigation Water and Water Considered for Land Spreading." Montana State University. "The discharge of sodium rich water (sodic water) with high SAR values on to the soils in the Powder River Basin will cause the soils to disperse and adversely affect the native vegetation and soil types." Foate, Mike "Coal Bed Methane Discharge Water, Sodium, Soils and Plant Vegetation."

[28] "Types of impacts on aquatic resources, including fish, aquatic invertebrates, and their habitat, potentially resulting from CBM development activities would ... include direct removal of habitat, habitat degradation from sedimentation, altered spawning and seasonal migration because of stream obstructions, direct loss of fish from accidental spills or pipeline ruptures releasing toxic substances, increased legal and illegal harvests of fish because of increased human access, and reduced stream flows because of removing water for drilling activities." All Consulting, 4-121. See also Regele, 5: "Increased channel erosion results in loss of soil, increased sediment loads, degraded water quality, etc. These conditions adversely affect the algae, aquatic invertebrates, fish, amphibians, and other biological aspects of streams that receive these inputs."

[29] Montana Department of Fish, Wildlife & Parks, Warm Water Fishing in Montana: A Contingent Valuation Assessment of Angler Attitudes & Economic Benefits for Selected Waters Statewide May 1991.

- Aquifer Recharge: The solution that best addresses these concerns is aquifer recharge, through reinjection or similar means.[30]

- Enforcement: Careful monitoring and rigorous enforcement of existing laws, such as the Clean Water Act and Montana Water Use Act, are essential to protecting existing beneficial uses of water. The methane industry cannot be allowed to monitor itself.[31]

- Minimize Roads: Minimizing roads and requiring wells to be set back from rivers would help reduce sedimentation.

- Phased-in development: Phasing in development over several years would disperse impacts over time while providing public agencies with the time necessary to ensure Montana's rivers are protected.

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[30] See Note 13.

[31] On June 27, 2001, staff and members of the Northern Plains Resource Council toured Fidelity's CX Field during the discover7 phase of a Clean Water Act lawsuit in which Northern Plains charged Fidelity with, among other things, illegally discharging coal bed methane wastewater into Squirrel Creek, a tributary of the Tongue River. The Montana Department of Environmental Quality had notified Fidelity that discharging into Squirrel Creek was illegal twelve months previous to the date of the tour. The date and time of the tour had been established over a month in advance, and the tour was conducted with Fidelity representatives present. Despite the forewarning, Northern Plains members and staff discovered two illegal discharges into Squirrel Creek during the tour. Fidelity later admitted that one of the discharge points had been discharging since January 2001 – or over six months.

Agriculture

Agriculture is Montana's largest industry, generating more than $2 billion annually.[32] . In southeastern Montana, income from the trade of stock and crops provides a steady flow of cash into rural communities, and small towns provide support for the outlying farmers and ranchers.

PRIVATE PROPERTY RIGHTS

The region's agricultural economy is based on strong protections for private property rights and water rights. Individual landowners steward their own land and water with a view toward making them productive for the long term, which benefits the whole region.

MINERAL RIGHTS

Coal bed methane production, like many forms of mineral development, threatens this careful balance. Because mineral owners have a legal right to retrieve their minerals, landowners who don't own their minerals are largely powerless to stop irresponsible development on their land.[33] Meanwhile, mineral owners have little incentive to develop responsibly because, unlike landowners, they will not have to live with the long-term implications of destroyed soils, degraded water, and dried up aquifers

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[32] Montana Department of Agriculture, "News, Info & Statistics: Facts About Montana Agriculture." http://agr.state.mt.us/news/fist.htm 13 August 2001.

[33] Many landowners in Montana and Wyoming do not own some or all of the minerals under their land. "The majority of people in the [Powder River] basin do not own rights to all the minerals below, a common Western circumstance that dates from homesteading days, when the federal government retained mineral rights as a condition of land transfer. Over the years, mineral rights below many properties have been sold separately from the sale of the surface land, creating what is known as "split estates." Janofsky, Michael. "Methane Boom in Wyoming Proves to be a Mixed Blessing. New York Times. 8 April 2000.

ATTORNEY FEES

While landowners are entitled to compensation for any damages caused by mineral development, they must prove damages in a court of law, which can cost $30,000 to $50,000 in attorney's fees and expenses.[34]

Doing It Right:

- Surface Owner Consent: The best way to ensure responsible coal bed methane development is to empower landowners to have a real say in the course of mineral development on their land. Requiring methane operators to secure permission to drill from surface owners would greatly increase the ability of landowners to ensure responsible development.[35]

- Surface Use Agreements: Methane operators should be required to negotiate a surface use agreement with landowners, detailing the placement of roads, wells, drill sites, pipelines, and compressor stations.[36] The state and federal government should provide a model surface use agreement that provides strong protections for landowners.

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[34] Towe, Thomas, Attorney at Law, Personal Communication, 21 May 01.
[35] Surface owner consent is a requirement for federal coal minerals under the Surface Control Mining and Reclamation Act, which governs federal coal mining. See Note 10.
[36] Currently, mineral operators are under no obligation to negotiate a surface use agreement with landowners. See Note 11.

- Attorney Fees: Landowners who successfully prove damages to their property in a court of law should be awarded compensation for their attorney fees in order to prevent the cost of litigating from deterring landowners from seeking fair compensation.[37]

[37] See Note 12 above.

Wildlife

The relatively undisturbed semi-arid breaks and sagebrush grasslands of eastern Montana are home to a diversity of wildlife, including elk, mule and white-tailed deer, pronghorn, wild turkey, sharp-tailed and sage grouse, golden and bald eagles, falcons, and prairie dogs.

WILDLIFE BENEFITS

Along with the intangible benefits of watching pronghorn browse sagebrush or golden eagles soar overhead, southeastern Montana's wildlife brings real benefits to the region's economy. Montanans and out-of-state visitors spend millions of dollars each year enjoying the region's superb hunting and fishing opportunities. In 1999 alone, hunting for deer, pronghorn, and upland birds generated over $34 million in economic benefits for southeastern Montana.[38]

THREATS TO WILDLIFE

The access roads, drill pads, pipelines, power lines, transmission stations, compressors, and increased traffic that accompany coal bed methane development can chop up wildlife

[38] According to John Ensign, Montana Department of Fish, Wildlife, and Parks Wildlife Manager for Region 7 (which roughly encompasses areas of proposed coal bed methane development in Montana), deer, antelope, and upland bird hunting brought in $13,819,327 in the 1999 season to Region 7. According to Ensign, using a standard 2.5 economic multiplier (which assumes that each dollar brought into the region goes through the community 2.5 times), the economic activity generated was $34,548,317. These figures do not include license fees, outfitter charges, access/trespass fees, etc. They do include money spent on gas, food, lodging, and miscellaneous expenditures.

habitat and disrupt home range, winter range, and migration routes.[39] State and federal agencies estimate that each coal bed methane well disturbs three to four acres of land, and results in the construction of a quarter to a third of a mile of new roads.[40] With predictions ranging from 14,000 to 39,000 methane wells in the next ten years, methane production could disturb tens of thousands of acres of critical wildlife habitat.

Doing It Right:

- Fish, Wildlife, and Plant Inventories: In order to ensure the long-term viability of Montana's invaluable wildlife, state and federal agencies must conduct thorough biological inventories of each proposed coal bed methane field before production begins, and establish buffer zones around critical habitat.

- Clustered Development: The state and federal government should require that methane operators cluster pipelines and access roads together and bury power lines within existing rights-of-way to the extent possible. Clustered development could dramatically decrease the amount of land disturbed, and be accomplished at a minimal cost to the industry. Likewise, because gas from methane wells is normally measured at the well site, flow lines to compressor stations should be

[39] Numerous scientific studies indicate that most animals avoid roads and human activity. Some species, such as elk and golden eagles, are especially sensitive and may be displaced from critical habitats by roads and other surface disturbances. All Consulting, 4-104 to 106.
[40] All Consulting. 4-6.

shared by different operators, which will reduce surface land disturbance as well as development costs.[41]

- Phased-in Development: State and federal agencies should establish a permitting schedule that phases in development over time. This would allow the economic benefits to last longer while reducing the concentration of impacts.

- Full Reclamation: All areas disturbed during coal bed methane production should be fully reclaimed with native vegetation and soil types immediately following cessation of methane production.

[41] All Consulting. 4-56.

Rural Life

Clean air and quiet days are some of the amenities of living away from metropolitan areas. Montana's rural residents enjoy healthy air, wide-open spaces, and the peace and quiet of country life.

AIR POLLUTION

Most people don't equate methane – a so-called "clean-burning" fuel – with air pollution, but production of the gas can seriously degrade air quality. Generators are necessary to supply electricity to pump methane and power the compressor stations that compress the gas so that it can be shipped to market. Compressors and generators emit dangerous toxins such as sulfur dioxide, nitrous oxide, carbon monoxide, carbon dioxide, and formaldehyde, a known carcinogen.[42] Methane itself is a pollutant. Lowering water pressure not only releases methane into methane wells, but can vent it through fractures in the coal seam and natural faults and allow it to build up in homes, barns, and other structures.[43]

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[42] All Consulting; 4 15-17

[43] Landowners in Colorado have reported finding methane in their water, homes, and barns. See Kohler, Judith, "Landowners, drilling companies clash," Durango Herald, 28 July 2001. See also Greene, Susan. "Coal-bed methane fueling dispute," Denver Post, 9 August 2001, referring to Durango resident Teri Hawkins and her discovery of methane in her home and water supply: "Hawkins is one of hundreds of Rocky Mountain residents grappling with gas seeping into their homes, water wells drying up, hot springs gushing from their land, trees dying and tap water that's not only flammable but so contaminated that some say it turns their laundry ashen."

DUST

Dust from increased traffic on country roads can cause respiratory problems and obscure the wide-open views that so many take for granted. Dust is rarely regulated, and the burden is on local people to complain long enough and loud enough until the owner of the road takes action.

NOISE

Compressors produce noise levels that can be a serious nuisance to area residents.[44]

Doing It Right:

- Enforcement: Active enforcement of existing laws is critical to protecting Montana's clean air.

- Best Technology: Methane companies should be required to use generators and compressor stations with the lowest possible emissions, and to take every precaution possible to avoid methane venting. Generators should be fueled by natural gas, which results in lower emissions than diesel fuel, and guidelines should be established maximizing the number of wells allowed for each compressor station. Compressors should be fitted with high-quality mufflers to reduce noise.

[44] See Cooper, Stephanie, "Ranchers upset over methane noise," The News-Record, 18 July 2001.

- Dust Maintenance: To reduce dust on country roads, methane operators should be required to regularly treat gravel roads with treated methane water or other dust suppressants. Limiting the number of vehicles and roads by clustering development will help reduce overall airborne dust.

- Surface Use Agreements: Methane operators should be required to secure a surface use agreement with surface owners so that those who care about the land can have a say in the course of construction. Most landowners have a vested interest in disturbing as little land as possible, and, given the chance, will steward their land as they have for generations.

Citizen involvement

One of the cornerstones of American democracy is the involvement of citizens in decisions that affect their lives. Many state and federal laws are designed to incorporate citizen input into decision-making processes.[45]

GOOD DECISIONS

Involving the public invariably creates a longer decision-making process, but the benefits far outweigh delays. By including the public, state and federal agencies can educate citizens, while gathering invaluable on-the-ground information. The more involved citizens become in the process, the better the final outcome.

PUBLIC INPUT

The unprecedented scale of proposed coal bed methane development, along with the fact that water – Montana's most precious resource – is at the heart of the controversy, suggest that now, more than ever, state and federal agencies need to make every effort to include the public in the decision-making process.

RUSHED DEVELOPMENT

Ensuring public participation in decisions concerning the course of coal bed methane involvement is the responsibility of government agencies and individual citizens. Thus

[45] Both the Montana Environmental Policy Act (MEPA) and National Environmental Policy Act (NEPA) direct government agencies to incorporate citizen input into the decision making process. The U.S. Supreme Court has declared that NEPA is an environmental full disclosure law. See Baltimore Gas & Electric v. Natural Resources Defense Council, 462 U.S. 87, 97 (1983). MEPA is a state equivalent of NEPA.

far, state and federal agencies have focused on producing an environmental impact statement as quickly as possible at the expense of meaningful public involvement.[46]

Doing It Right:

- Adequate Public Notice: The state of Montana and the federal government must make every effort possible to include the public in a meaningful way in decisions about the future of coal bed methane development. Notice for public meetings for the ongoing environmental impact statement, as well as future environmental reviews, should be posted at least one month previous to the meetings, and should be sent to all Montana newspapers and radio stations. Written comments should be accepted for at least one month following public comment meetings.

- Public Comments: Comments gathered during public meetings should be seriously considered and incorporated into government documents. Testimony at public hearings should be thoroughly recorded and incorporated into the public record.[47]

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[46] During the scoping phase of the environmental impact statement for coal bed methane development currently underway in Montana, only two weeks notice was given before five meetings were held in five towns across the state. The meetings were held in early January, a time when many families take time off to enjoy the holidays. Despite the poor timing of the meetings and short notice, hundreds of Montanans attended. Originally, the public was given only two weeks to submit written comments following the meetings. After several parties protested the short comment period, the agencies extended the deadline another two weeks.

[47] According to attendants of public scoping meetings for the coal bed methane environmental impact statement held in five towns across Montana, public testimony was poorly recorded, with single words such as "water" or "noise" being jotted down on large sheets of paper to sum up several minutes worth of testimony.

- Public Involvement: Montanans have a civic responsibility to get involved in the decision-making process. Citizens can express their concerns by commenting on the upcoming draft environmental impact statement, testifying at public meetings, writing letters to the editor of local newspapers, or calling their elected state and federal representatives.

Accountability

Montana has numerous laws designed to protect our precious natural resources. Their usefulness is related to the extent to which they are enforced. Self-regulation and voluntary compliance, as a rule, are inadequate to hold individuals and corporations accountable.

ENFORCEMENT

If the citizens of Montana wish to hold the methane industry accountable, then our common sense laws must be enforced. Right now, data concerning the quality and quantity of coal bed methane discharges and the quality of the rivers and streams into which they flow come directly from the industry. This is akin to letting a fox guard the hen house: it just doesn't work.

ACCOUNTABILITY

A single citizen inspection of a coal bed methane field revealed two blatantly illegal discharges of methane wastewater with toxic levels of sodium and dissolved salts into a tributary of the Tongue River. Twelve months earlier, the Montana Department of Environmental Quality had notified the company that these discharges were illegal. The methane company admitted that one of the discharge pipes had been illegally discharging

for over six months.[48] Without the citizen inspection, the illegal discharges could have continued indefinitely.

Doing It Right:

- Agency and Citizen Inspections: Regular inspections of coal bed methane fields and collection of soil and water samples are essential to ensuring compliance with Montana's common sense laws. Regular inspections should occur no less than four times annually for each field, with one surprise inspection each year. Citizens and interest groups should have the right to petition for further inspections.

- Public Access: Real-time surface and groundwater flow monitors should be installed at methane water discharge points and in aquifers, and data should be made readily available to the public on the Montana Department of Environmental Quality's website.

- Fines: State and federal agencies should hold methane operators fully responsible for violations of state and federal laws, implementing fines as well as increased monitoring to detect future violations.

[48] See "DEQ notified of unauthorized water discharge by water producer," Helena Independent Record, 29 July 2001.

- Bad Actor Provision: Drilling for methane in Montana is a privilege. Any methane operator who repeatedly violates state or federal laws should be barred from receiving further permits to drill for methane in Montana.[49]

[49]The Montana Metal Mines and Reclamation Act contains a 'bad actor' provision that prohibits mining activity in Montana by any "person or any firm or business association of which that person was a principal or controlling member," who "had a bond forfeited," or "if the department otherwise received proceeds from a surety to perform reclamation on that person's behalf, or if the person's surety completed reclamation on the person's behalf." See 82 M.C.A. § 4-360.

Heritage

Southeastern and southcentral Montana is a region rich in cultural and historic resources. Nearly two hundred years ago, the Lewis and Clark Expedition traveled across the region. The Northern Cheyenne and Crow Indian Tribes live in the area, and sacred sites abound.[50]

CULTURAL AND HISTORIC SITES

Nearly 600 cultural and historic resource sites have been identified in the Tongue River drainage as eligible for listing under the National Register of Historic Places.[51] These sites and others could be negatively impacted by irresponsible development.

HISTORY

These sites tell the story of two cultures coming together, of homesteaders seeking a new life, and of the struggle to defend a homeland. For the Northern Cheyenne and Crow Tribes, these sites are an integral part of their spiritual and cultural identity. Many sites are also a source of tourism revenue. Hundreds of people travel to the area each year in remembrance of the Battle of the Little Big Horn and Custer's Last Stand.[52] History buffs

[50] The Crow and Northern Cheyenne Reservations have a combined population of over 10,000 people.
[51] Tongue River Draft Environmental Assessment: "Previous NEPA documents and cultural resource inventories have identified a total of 595 cultural and historic resource sites and 53 significant sites listed on or eligible for listing on the National Register of Historic Places under the criteria of eligibility at 36 C.F.R. § 60.4 within the Tongue River CBM Project area." This reference only refers to the Tongue River drainage.
[52] Over 390,000 people visited the Battlefield in 1999 alone. See: www.nps.gov/libi/pphtml/facts.html.

from around the nation travel great distances to trace the path of the Lewis and Clark Expedition.[53]

RISKS

Cultural and historic sites are protected under the National Historic Preservation Act. Under this Act, government agencies must consult with Indian Tribes, the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Office before taking any action that may disturb a historic, cultural, or ancient burial site.[54] Thus far, state and federal agencies have all but ignored this requirement, putting southeastern and southcentral Montana's important cultural and historic sites at risk.[55]

Doing It Right:

- Enforcement: State and federal agencies must fully comply with the National Historic Preservation Act by consulting with all affected Tribes, the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Office before putting any of Montana's important historic sites at risk. The integrity of these sites must be maintained.

[53] 8.9 million tourists are expected to visit Montana for the bicentennial of the Lewis and Clark expedition in addition to "base" tourism that would normally be expected. See: Institute for Tourist and Recreation Research, "Lewis & Clark National Estimation and Awareness Study," Research Report 76, May 2000.
[54] See 16 U.S.C. § 470(f) and 36 C.F.R § 80.
[55] For a thorough discussion of the Bureau of Land Management's failure to comply with the NHPA, see Northern Plains Resource Council, Inc v. Bureau of Land Management. Case No. CV-01-96-BLG-RWA.

Legacy

The true legacy of coal bed methane development will emerge in two or three decades when the last of the methane has been sent to market. While it is impossible to foretell the nature of that legacy, we do know that coal bed methane will be developed and the methane industry will see billions of dollars in profits.

We also know that the methane industry can afford to do it right. It takes approximately $65,000 to establish a producing well in Montana; depending on gas prices, an average well brings in $600,000 to $1.2 million over its productive life.[56] That leaves several hundred thousand dollars – a percentage of which will be paid for taxes and general operations – per well. Clearly, the methane industry can afford to do it right. Montana citizens, however, cannot afford otherwise.

BONDING

In Montana, coal companies must post a bond[57] – a monetary deposit to cover potential damages – before mining for coal. The same holds true for the hard rock mining industry[58]. Coal bed methane companies, however, need only post bonds for the cost of

[56] Well drilling and completion costs for a well in the Powder River Basin average $65,000, compared to $750,000 for the Northern San Juan Basin, $834,000 for the Piceance Basin, $750,000 for the Greater Green River play, and $435,000 for the Upper Texas Gulf Coast play. See "Reserve Finding Costs for CBM Plays," Upper Texas Gulf Coast Natural Gas Project, 27 March, 2000. According to a report prepared by the Coal Bed Methane Coordination Group, an average well grosses 300,000 million cubic feet of methane over its life. At $4 a thousand cubic feet (tcf), an average well grosses $1.2 million. Production taxes and royalties vary depending on mineral ownership, but average 9.3% overall production tax and 12.5% royalty.

[57] See 82 M.C.A. § 4-233.

[58] See 84 M.C.A. § 4-313.

plugging and abandoning a well.[59] That means methane operators can pump out millions of gallons of groundwater from Montana's aquifers, discharge poor quality methane water into Montana's rivers and streams, disturb hundreds of thousands of acres of prime agricultural land, disrupt agricultural operations, and displace wildlife, all without any financial protection for Montana citizens.

TAXPAYER RISK

Any damages not paid for by the methane industry will be borne by the farmers and ranchers who live in areas of proposed methane development, by the surrounding rural communities, and, finally, by all Montana taxpayers.

Doing It Right:

- Bonding: In order to protect Montana taxpayers and encourage responsible development, state and federal agencies must require bonds that cover the full cost of methane development.

- Full Reclamation: To ensure complete reclamation of land disturbed by methane production, state and federal agencies must establish clear and enforceable reclamation standards. Full reclamation of all disturbed lands should be a standing

[59] See Note 14 above.

provision in a model surface use agreement, and landowners should make it a bottom-line request when leasing their minerals.[60]

[60] Under federal law, upon conclusion of operations, operators are required to reclaim "the disturbed surface" in a manner approved by Bureau of Land Management. 43 CFR § 3162.5-1(b). The regulations do not specify re-vegetation requirements or specific reclamation standards.

Conclusion

Montana is at a crossroads: one path leads to a balanced future in which methane development and other industries exist side-by-side. Down the other path is the specter of dried-up wells, polluted rivers, destroyed soils, and an agricultural economy in shambles.

Montana has a rare opportunity to make sure the methane industry does it right from the beginning, thanks to a temporary moratorium on methane drilling permits.[61] However, a choice for responsible development will require that Montana citizens stand up and demand foresight and true leadership on the part of state and federal elected officials and agency personnel.

CITIZEN INVOLVEMENT

The provisions outlined in this guide point the way toward coal bed methane development that all Montana citizens can live with. Some necessitate legislative action in the halls of the Montana State Capitol or in the U.S. Congress. Many fall under

[61] In March 2000, NPRC filed a lawsuit against the Montana Board of Oil and Gas Conservation (BOGC) for violating the Montana Environmental Policy Act by permitting coal bed methane drilling without completing an environmental review of the impacts of methane development. In a settlement agreement, the BOGC agreed to a moratorium on further coal bed methane drilling permits pending completion of an environmental impact statement (EIS). Meanwhile, NPRC agreed to allow Redstone Gas Partners (now Fidelity Exploration and Production Company) to develop its CX Field (325 wells), and to allow the BOGC to grant an additional 200 permits for exploratory wells to collect information necessary to evaluate the impacts of development in the EIS. Without this court case, the state would have continued to permit coal bed methane drilling without even looking at its environmental impacts. See NPRC v. Board of Oil and Gas Conservation, No. C-DV-2000-17, 31 March 2000.

existing laws. Others rely on a strong environmental impact statement. All require that Montana citizens be informed and get involved.

BALANCE

Together, these provisions seek to balance the livelihoods of farmers, ranchers, and townspeople, and protection of Montana's land, air and water, with the rights of methane operators to retrieve their minerals.

CHOICE

One thing is clear: Montana citizens do not have to make a choice between their good water, clean air, and productive agricultural fields on the one hand, and coal bed methane development on the other. They only need to choose to develop methane responsibly.

RESPONSIBLE DEVELOPMENT

The methane industry can afford to do it right. Montana cannot afford not to. *Let's make them do it right!*

Slideshow Script

Doing It Right:
a blueprint for responsible coal bed methane development in Montana

Prepared by Amy Frykman
Northern Plains Resource Council
October 2001

NOTE *to slideshow presenters: the ALL CAPS headings are designed to break up the text and make tracking your progress easier. They are not intended to be read out loud.*

This slide show works best if one person presents the text while another person operates the slide projector. Northern Plains' staffers should be prepared to operate the slide projector. Both parties should read through the text and run through a mock slide show beforehand to familiarize themselves with the flow of slides. Presenters should likewise read through the Frequently Asked Questions sheet with answers to questions that have been asked at past presentations.

Presenters should try, if possible, to partially face the audience so as to talk to them, instead of to the slide projector. Because of the coordination required to match slides to script, presenters need to stick to the script as much as possible. You can improvise when going over the six tenets as long as you clearly read each tenet.

Please introduce yourself and your involvement with the Northern Plains Resource Council. Then thank them for allowing you to speak. You won't turn on the slide projector until you've gone through the introduction.

INTRODUCTION

As many of you know, Northern Plains formed in the early 1970's in response to plans to turn the interior west into a National Sacrifice Area for energy development.

Members of the newly formed Northern Plains passed a surface owner consent law at the state level, followed by a strong state-level coal reclamation law. Coal companies protested that it would be impossible for them to mine in Montana. Of course, that was not true. Northern Plains then joined forces with landowners across the West to pass the Surface Mining Control and Reclamation Act governing coal strip-mining, the toughest reclamation law ever passed at the federal level.

Northern Plains has 30 years of experience dealing with difficult natural resource issues, and we've worked hard to come up with creative solutions that meet the needs of both industry and Montana citizens.

We've tried to bring our experience with natural resource issues to bear on coal bed methane development to ensure the protection of Montana's water, air, productive agricultural land, and rural communities. We believe that IF methane is going to be developed in Montana, then it MUST be developed responsibly.

I'm going to go through a slide show demonstrating some of the impacts of coal bed methane development. I would love to answer any questions you might have, but please hold them until the end so that I don't lose my place in the slide show!

Turn on slide projector

OVERVIEW –

Slide 1 The Bureau of Land Management is predicting that between 14,000 and 39,000 coal bed methane wells will be drilled in Montana in the next 10 years in a region stretching East/west from the Montana/Dakota border to Park and Gallatin Counties, and north/south from the Yellowstone River to the Wyoming border.

DESCRIPTION OF REGION

This is a region marked by agricultural fields, **Slide 2** alfalfa meadows, and sagebrush flats. **Slide 3** Agriculture, which is Montana's number one industry, figures heavily into the economy and culture of the area. **Slide 4** The region is dotted with family farms and ranches.

IMPORTANCE OF RIVERS

Slide 5 This is predominantly an arid to semiarid region, with rainfall averaging 8 to 12 inches per year. **Slide 6** Because of this, rivers and groundwater play a critical part in the viability of the region's economy. **Slide 7** Farmers and ranchers use water from the area's rivers to irrigate their fields, and **Slide 8** rural communities often use river water for domestic purposes.

IMPORTANCE OF AQUIFERS

With so little rainfall, however, **Slide 9** sometimes the rivers run dry, as you can see the Powder River did this year. It is at this point that the area's groundwater reveals its centrality to life in the region. **Slide 10** Spring fed creeks run all year round, **Slide 11** water wells and natural springs provide water for domestic use and **Slide 12** stock watering; **Slide 13** sub-irrigated fields like the one pictured here are especially valuable for they require no irrigation to yield productive crops – here the alfalfa draws on a high water table for moisture instead of relying on steady rainfall or reliable irrigation water.

WILDLIFE

This is a region with abundant wildlife, including **Slide 14** white-tailed deer, mule deer, elk, **Slide 15** pronghorn, golden and bald eagles, prairie dogs, and **Slide 16** sage grouse to name a few. These animals provide more than aesthetic benefits: Montanans and out-of-state visitors spend millions of dollars each year enjoying the region's superb hunting opportunities. Deer, antelope, and upland game bird hunting alone generated $34 million in 1999 alone in southeastern Montana.

COAL BED METHANE DEVELOPMENT

Coal bed methane development could dramatically impact this region. Coal bed methane is a form of natural gas that is held in coal seams by water pressure. **Slide 17** To release the gas, developers drill down to coal seams and begin **Slide 18** pumping out massive volumes of groundwater. As water pressure decreases, the methane detaches from the

coal and rises up the well to the surface. At the surface, it is collected in a pipeline and **Slide 19** sent to a compressor station, where it is compressed and then shipped to market.

Compressors can be extremely noisy and a nuisance to both rural residents and wildlife. One landowner in Wyoming compared the sound of a compressor near his house to a jet airplane taking off 100 yards from his house 24 hours a day. There are no laws specifically regulating noise in Montana or Wyoming, and compressors have been very controversial in Wyoming. The effects on wildlife are unknown, though many animals and fish are sensitive to noise.

WATER DISPOSAL

Slide 20 The water, meanwhile, is either discharged into rivers and streams, **Slide 21, 22** into unlined containment ponds, or **Slide 23** as these photos from development in Wyoming show, **Slide 24** directly onto the soil.

SODIUM CONTENT

Slide 25 Coal bed methane produced water contains high concentrations of dissolved salts, which renders it unsuitable for irrigation and toxic to plants. This chart compares the amount of sodium in several samples of coal bed methane water taken from the only producing coal bed methane field in Montana to the background levels in the Tongue River, into which these discharges flow. Sodium causes soil structure to break down and inhibits water adsorption by plants.

SODIUM ABSOPRTION RATIO

Slide 26 This chart looks at the "Sodium adsorption ratio," or SAR of several samples of methane water in Montana. SAR measures the ratio of dissolved salts and is used to determine if sodium will accumulate in soil irrigated with the water. SAR is a figure that irrigators pay close attention to in order to determine what effect a particular quality of water will have on soil. The background SAR level of the Tongue River is less than 1, or .79. Plant and soil productivity declines at an SAR of 3, and 12 is the maximum SAR tolerable to all Montana native plants and crops.

As you can see by this chart, the SAR of methane water is off the charts compared to the background level in the Tongue River. The impacts of this high SAR water on fisheries and amphibians such as turtles and frogs are unknown.

SOIL DAMAGE

Slide 27 We know what high SAR water does to soil. This soil around a discharge pipe is dry, cracked and virtually sterile. **Slide 28** These next slides are of Ed Swartz's ranch on Wildcat Creek, an intermittent stream near Gillette, Wyoming. **Slide 29** Coal bed methane discharge water with an SAR of around 12 to 14 flowed down this creek and now, where previously waist-high grasses grew, the ground is crusted with salt and nothing grows.

IMPACTS TO ED SWARTZ RANCH

Slide 30 Mr. Swartz lives downstream from methane development. This creek doesn't run all year around and he usually uses it as forage for his cattle. He has water rights to the water that does come down the creek from heavy rains or snow melt and has used it for years to irrigate his fields and help flush the natural amounts of salt that accumulate in his soils.

MORE IMPACTS TO ED SWARTZ

Now, he can't use the water at all: **Slide 31** the coal bed methane water that runs down the creek is too salty and would ruin his alfalfa fields. Here you can see the salt build-up on the creek bank from the methane water. **Slide 32** Meanwhile, to complicate matters, the coal bed methane companies have started constructing impoundments to hold excess water, further restricting the natural flow of good rain or snowmelt water. Mr. Swartz's situation is likely to be the norm for many Montana ranchers if methane developers are allowed to discharge methane water into dry gullies and creek beds.

QUANTITY OF CBM WATER

Slide 33 A single coal bed methane well pumps an average of 16,000 gallons of water per day, or around 11 gallons a minute. This meter on a coal bed methane field in southeastern Montana shows a flow of 45 gallons per minute. Pumping rates are highest in the first few years of production and decline over time. A mid-range estimate of 24,000 wells would pump 345 million gallons of water per day from coal seam aquifers.

To give you a little perspective, with a relatively new toilet, you would have to flush 9000 times to waste the amount of water an average methane well pumps each day!

Each coal bed methane well is in production for about 10 years. The BLM estimates that one well dewaters area aquifers by 34 feet within 10 feet of the well over its life. No one knows what effect up to 39,000 wells might have on the region's aquifers and the wetlands, springs, and seeps they feed, or how long aquifers may take to recharge. The best data, drawn from decades of coal strip-mining studies, suggest that it could take over 1000 years for aquifers to reach equilibrium.

CBM DEVELOPMENT: WHAT IT LOOKS LIKE

Slide 34 The wells themselves are rather innocuous looking **35**. However, along with wells come **Slide 36** drill pads, pipelines, power lines, **Slide 37** containment ponds, **Slide 38** compressor stations, and **Slide 39** access roads.

OVERALL VIEW OF DEVELOPMENT

Slide 40 The overall surface damages are immense. This is a shot of coal bed methane development in Colorado with access roads, drill pads, and containment ponds. The Bureau of Land Management estimates that an average well disturbs three to four acres, requiring the construction of a third to a fourth of a mile of new roads. **Slide 41** this slide shows methane drilling in Wyoming. **Slide 42** Here is a close-up of what coal bed methane water did to soil in Wyoming. Remember – the quality of methane water in

Wyoming's portion of the Powder River Basin tends to be of considerably better quality than in Montana.

WHAT CAN WE DO?

We believe that coal bed methane development does not have to look like this. We don't think we have to sacrifice our good water in our rivers and streams, our groundwater, our good soils and wildlife resources, and our sustainable agricultural industry in order to see coal bed methane development. We think that it is possible to develop methane responsibly, and we know that the industry can afford to do it right.

ECONOMICS OF CBM DEVELOPMENT

Slide 43 It costs about $65,000 to bring a coal bed methane well on line in Montana. That's substantially less than development costs in any other state, as you can see from this chart.

Meanwhile, depending on gas prices, a well can bring in between $600,000 (at $2 a thousand cubic feet) and $1.2 million dollars (at $4 a thousand cubic feet) over its life. Subtracting development costs and the fraction that goes to taxes and royalties, it is clear that the methane industry stands to make millions of dollars in profits. We think that the methane industry can afford to do it right. Montana citizens cannot afford otherwise.

"DOING IT RIGHT MEANS..."

Slide 44 We have a rare opportunity to make sure the methane industry right from the beginning, thanks to a temporary moratorium on methane drilling.

With that in mind, the Northern Plains Resource Council decided to try to develop an idea of what responsible coal bed methane development might look like. We drew on the insights of scientists and technical experts, farmers, ranchers, irrigators, townspeople, and people in other states who've already experienced methane development. Our findings are outlined in **Doing It Right: a blueprint for responsible coal bed methane development.**

After looking at impacts to rivers and streams, groundwater, agriculture, wildlife, the peace and quiet of rural life, and historical and cultural resources in the area, we came up with six provisions that, together, will provide a reasonable framework for responsible development. The provisions would make sure that if Montana is going to develop methane, it is done responsibly.

NOTE: At this point, you can turn the slide projector off and present each point directly to the group. It is not necessary to read each point listed underneath the provisions. Feel free to use your own examples to explain each point, all the while being sensitive to time constraints.

1. Effective monitoring of coal bed methane development and active enforcement of existing laws to protect private property rights, Montana citizens, and Montana's natural resources.

- Right now, state and federal agencies rely almost exclusively on methane industry-self monitoring and voluntary compliance.
- Just one citizen inspection of Fidelity Exploration and Production Company's CX Field in southeastern Montana revealed two illegal discharges into Squirrel Creek, a tributary of the Tongue River. The Montana Department of Environmental Quality had made it clear that these discharges were illegal over 12 months previously, and the company had been sued for the illegal discharges six months previous to the discovery. In fact, the only reason the citizen inspection occurred was because of this lawsuit – the very violation for which Fidelity had been sued was discovered on a fact-finding tour of the field.
- Four inspections of each field should occur annually, with one surprise inspection per year for each field. Citizens and interest groups should have the right to petition for further inspections.

2. Surface owner consent, surface use agreements and reimbursement of attorney fees to help landowners better protect their property rights.

- Landowners who do not own their minerals have no say in whether methane development happens on their land. They have little say in the placement of roads, wells, compressors, impoundments, power lines, pipelines, etc. This is unfair and unjust.
- Methane operators should be required to obtain permission from the owners of the surface land before beginning drilling. This is only fair. This is already the case with coal development on federal minerals in Montana. Let the landowner decide if he or she wishes to have methane drilling.
- Methane operators should also be required to negotiate a surface use agreement detailing the course of construction.
- Proving damages from methane development in a court of law can cost $30,000 to $50,000, which deters most landowners from seeking just compensation for damages to their property. Awarding attorney fees to landowners who can prove damages would provide another incentive for responsible development, while protecting the financial interests of property owners.

3. Use of aquifer recharge, clustered development, mufflers for compressor stations, and other low-impact, best-available technologies to minimize impacts on groundwater, rivers and streams, and surface resources.

- This discharge of untreated methane wastewater is inappropriate. Putting the water back into underground coal seams is the most reasonable and

appropriate method for dealing with the massive volumes of water that will be produced.

- Clustering roads, pipelines, and power lines in corridors will help reduce surface impacts.
- Noise from compressor stations can destroy the peace and quiet of country life. High quality mufflers should be installed to protect rural homeowners.

4. Collection of thorough fish, wildlife, and plant inventories before development proceeds to protect habitat, followed by phased-in development to diffuse impacts over time.

- In 1999 alone, hunting for antelope, deer and upland game birds generated $34 million in southeastern Montana. This is an important component of the region's economy, and is sustainable and renewable.
- Surface disturbance and water damages can seriously impact wildlife.
- Phased-in development would provide agencies with the time to assess impacts and damages over time.

5. Meaningful public involvement in the decision-making process.

- Notice for public meetings regarding coal bed methane development should be sent to Montana newspapers and interested parties at least one month in advance.
- Comments and written testimony must be seriously considered.
- Public involvement is as much our responsibility as it is the responsibility of state and federal agencies. We have a civic duty to participate in the decision-making process.

6. Complete reclamation of all disturbed areas and bonding that protects Montana taxpayers from all cleanup liability costs.

- Currently, methane operators need only post a bond for the amount of plugging and abandoning a well. This does not cover potential damages to aquifers, rivers and streams, wildlife, and rural communities.
- State and federal agencies must establish clear and enforceable reclamation standards.

Stop here and ask if there are any questions. When questions are answered, turn the slide projector back on and move to the last slide – What You Can Do.

ENDORSEMENTS

Slide 45 The Northern Plains Resource Council is trying to build public support for these responsible rules of the game by gathering as many individual and organizational

endorsements of these six provisions and **Doing It Right** as possible before the official release at Northern Plains' 30th Annual Meeting, on November 16th. We want to have a strong show of support before the draft environmental impact statement is released in late December or early January.

WHAT YOU CAN DO: ENDORSEMENTS

I would like to ask _____ to formally endorse this document, and to ask each of you to endorse it individually by signing a petition that I have here. You can endorse it as a group by passing a resolution, and/or by sending a letter to Montana Governor Judy Martz indicating your support.

WHAT YOU CAN DO: GATHER MORE ENDORSEMENTS

I would also like to ask if there is any interest amount any of you here in helping us gather more endorsements. If you belong to an organization that you think has a stake in seeing coal bed methane developed responsibly, please let me know and we can arrange to have someone from the Task Force do a similar presentation for your group. Or, if you think that you could gather signatures from family and friends, please take one of these petition forms.

WHAT YOU CAN DO: COMMENT ON EIS

A draft environmental impact statement is scheduled to be released in January. Please help us push for responsible development by commenting at a public scoping hearing or in writing. Contact Northern Plains for more information.

DOING IT RIGHT RELEASE

You can individually endorse **Doing It Right** on our website – www.northernplains.org. You will also find complete documentation of all of our sources we used to develop **Doing It Right**, and more information about coal bed methane development.

NORTHERN PLAINS 30TH ANNUAL MEETING

As I said before, the official release will be at the Northern Plains' 30th Annual Meeting on Friday, November 16th at 10:30 A.M in Billings. We will also be screening a video about coal bed methane development produced by Northern Plains. We hope that you will join us then to help celebrate the work of the last 30 years, and to look forward to many successes in the future.

NOTE: Make sure that you leave with the petition sheet for individual endorsements. Ask a representative of the group if he or she would like you to follow-up on your request with a phone call or otherwise. Ask if there is anything else they need from you to make a decision.

Frequently Asked Questions

Doing It Right:
a blueprint for responsible coal bed methane development in Montana

Prepared by Amy Frykman
Northern Plains Resource Council
October 2001

1. What is going on with your lawsuits? What is your legal strategy?

Northern Plains has filed a total of five lawsuits to ensure responsible coal bed methane development in Montana. We have done so because we understand that laws are only effective if they're observed, and only observed if they're enforced.

We filed our first suit against the Montana Board of Oil and Gas Conservation for permitting hundreds of methane wells even though no environmental review had been completed. The only reason we have an environmental review currently underway, and the only reason we have a temporary stay on development until that environmental review is finished, is because of this lawsuit.

We've filed three Clean Water Act suits: two over illegal discharges of poor quality coal bed methane water into Montana rivers and streams, and another over the discharge of fill material into Montana rivers without obtaining the necessary permits.

Our final lawsuit has to do with the fact that the Bureau of Land Management (BLM) has leased 600,000 acres of methane in Montana without conducting a pre-leasing environmental review as required by law. This is necessary because the minute a lease is awarded, the lessee has a property interest in the methane. That means that if the BLM discovers through an environmental review that a certain area should not be developed, they've already "sold" the mineral to a company that now thinks it has a legal right to retrieve the mineral. Leasing 600,000 acres without doing an

environmental review was very irresponsible and puts the government in a very difficult position.

In all cases we had to file these suits because the government has refused to enforce state and federal laws.

2. Is CBM water poisonous to children?

None of the samples we've seen are "poisonous" to children. Coal bed methane water, in general, is drinkable, though it generally does not taste all that good.. But, just because we can drink it does not mean that it is OK for other uses. We drink all sorts of things that we would never use to water our plants. Remember: plants don't have kidneys like we do!

3. Does endorsing Doing It Right mean I can't oppose coal bed methane development?

No. Groups and individuals are still free to oppose development if that is what they choose. By supporting *Doing It Right*, you are saying that IF coal bed methane development is to proceed in Montana, then it must at a very minimum adhere to the guidelines outlined in *Doing It right*.

4. Hasn't the Montana Supreme Court declared surface owner consent unconstitutional?

Montana passed a surface owner consent provision for coal mining, which the Montana Supreme Court declared unconstitutional. At the same time, it is perfectly constitutional at the federal level: lessees of federal coal must secure surface owner consent before mining for coal. The Montana Supreme Court decision was with regards to a very particular case and particular wording. That does not mean that a surface owner consent law for coal bed methane would necessarily be unconstitutional.

5. What about technology like directional drilling? What does Northern Plains think about that?

Northern Plains encourages any attempt to develop technologies that lessen the impacts of coal bed methane development. We are very interested in seeing this technology developed, but do not know enough about it at this time to decide either way. To cover the development of technologies like directional drilling, we have a provision that supports the use of low-impact, best available technologies.

6. Won't the currently low prices for natural gas slow the boom down?

The natural gas market will likely see many booms and busts over the next few years, but what we've seen indicates that gas prices will increase overall, which will fuel methane development. Plus, the federal government provides incentives to the natural gas industry to develop methane because it is still considered an "alternative fuel." Likewise, many companies have also hedged their financial position by signing forward and long-term contracts at a high rate.

7. What is Northern Plains' position on "fracing"?

We are opposed to fracing. Fracing is a process whereby methane operators inject liquid substances into the coal seams at very high pressure to fracture the coal, thereby releasing the methane. This practice has been widely used in Alabama, and such substances as guar gel, nitrogen or carbon dioxide gases, gelled oil, diesel oil, sodium hydroxide, hydrochloric acid, sulfuric acid, fumeric acid, as well as other additives have been injected into coal seam aquifers to release the methane. Doing so contaminates the aquifer.

8. What does Northern Plains think about methane development in residential areas?

Landowners need to organize and be prepared for methane development so that they can have a say in the placement of compressor stations and the like. Zoning districts could potentially be effective in addressing resident's concerns.

9. Are existing laws adequate?

Yes and No. The laws we do have need to be enforced and strengthened. Just enforcing existing laws with active monitoring and consequences for violations would have an enormous impact on the course of development in Montana. However, even then, we'd have a long way to go. Surface protection laws are far from adequate, and we will have to work hard to level the playing field for surface owners. Montana's water quality laws are generally good, but they are not enforced, and amendments to the Montana Water Quality Act passed in 1995 substantially weakened state water quality laws. We would support repeal of those amendments. Laws protecting cultural and historic resources are good, but are not enforced. The recent gutting of the Montana Environmental Policy Act is unfortunate, but at this point, the provisions of the law that remain are not even being enforced.

10. If not, then do you have a plan to change the laws?

Right now, Northern Plains is working with other groups across the West on federal legislation to pass four amendments that would strengthen surface owner rights, enforcement and bonding provisions, and make it illegal to discharge untreated coal bed methane wastewater into surface waters. We will consider developing state level laws as the legislative session gets closer.

11. Why hasn't more development occurred in Montana? Why is this just coming up?

Up until the last five or so years, coal bed methane has not been financially attractive. But, rising natural gas prices and advances in technology have made it much more so. Likewise, methane development is on hold right now in Montana because of a moratorium on drilling permits until the EIS is done, which is the result of our first lawsuit.

12. What will be the hardest part of Doing It Right for industry to swallow?

Having to get permission from surface owners before drilling for methane.

13. How far around the wells is the groundwater impacted?

The BLM estimated the drawdown in aquifers caused by the pumping of a single CBM well in a draft environmental assessment prepared for the CX Field. It concluded that over its life, one well would produce approximately 34 feet of drawdown within 10 feet of the well; 10 feet of drawdown within one mile of the well; and 5 feet of drawdown within five miles of the well. The assessment further states that "additionally, overlapping of effects from adjacent wells would cause greater drawdowns."

14. What are the cultural ramifications of this type of development?

No one knows. There are hundreds of sites in the Powder River Basin listed as eligible for listing on the National Register of Historic Places. The Northern Cheyenne and Crow Tribes live in the area and cultural and historic sites abound. Thus far, state and federal agencies have all but ignored requirements that they consult with the Tribes and the National Historic Preservation Office.

15. Isn't there a permit requirement for impoundments?

Yes. Impounding water is considered an appropriation of water under Montana State law and requires a water right. Thus far, the Montana Department of Natural Resources and Conservation has not required the only producing methane operator in the state to acquire water rights for the water it pumps from aquifers and stores in impoundments.

16. Doesn't the state have the authority to sample anywhere, anytime?

Yes. Under the Montana Water Quality Act, the Montana Department of Environmental Quality has the authority to "at reasonable times enter upon any private or public property to investigate conditions relating to pollution of state waters or violation of permit conditions.... Or sample any effluents which the owner or operator is required to sample." See 75-5-603.

17. How salty is the water?

It is hard to make this comparison. There are several kinds of dissolved salts. The one we use to make our food taste good is sodium chloride. That is not the kind of salt found in coal bed methane produced water. We do know that it contains salt levels four to seven times the level intolerable to all Montana plants and crops, and twelve times the level at which plant and soil productivity declines.

18. Can you quantify the amount of methane water that will be produced in terms that people can understand?

If you have a relatively new toilet, you would have to flush your toilet 9000 times to waste as much water as a single coal bed methane well does in just one day.

19. Can we make a conditional endorsement?

Some groups have endorsed *Doing It Right*, and then sent another letter to Montana Governor Judy Martz elaborating their position. For example, if you are totally opposed to coal bed methane development, then you could endorse *Doing It Right* by saying IF coal bed methane development is developed in Montana, then it should observe the principles outlined in *Doing It Right*. Or, even if you think some of the provisions of *Doing It Right* are unrealistic, you can still endorse Doing It Right as a

good idea and something to shoot for, without necessarily expecting that all of the provisions will become a reality.

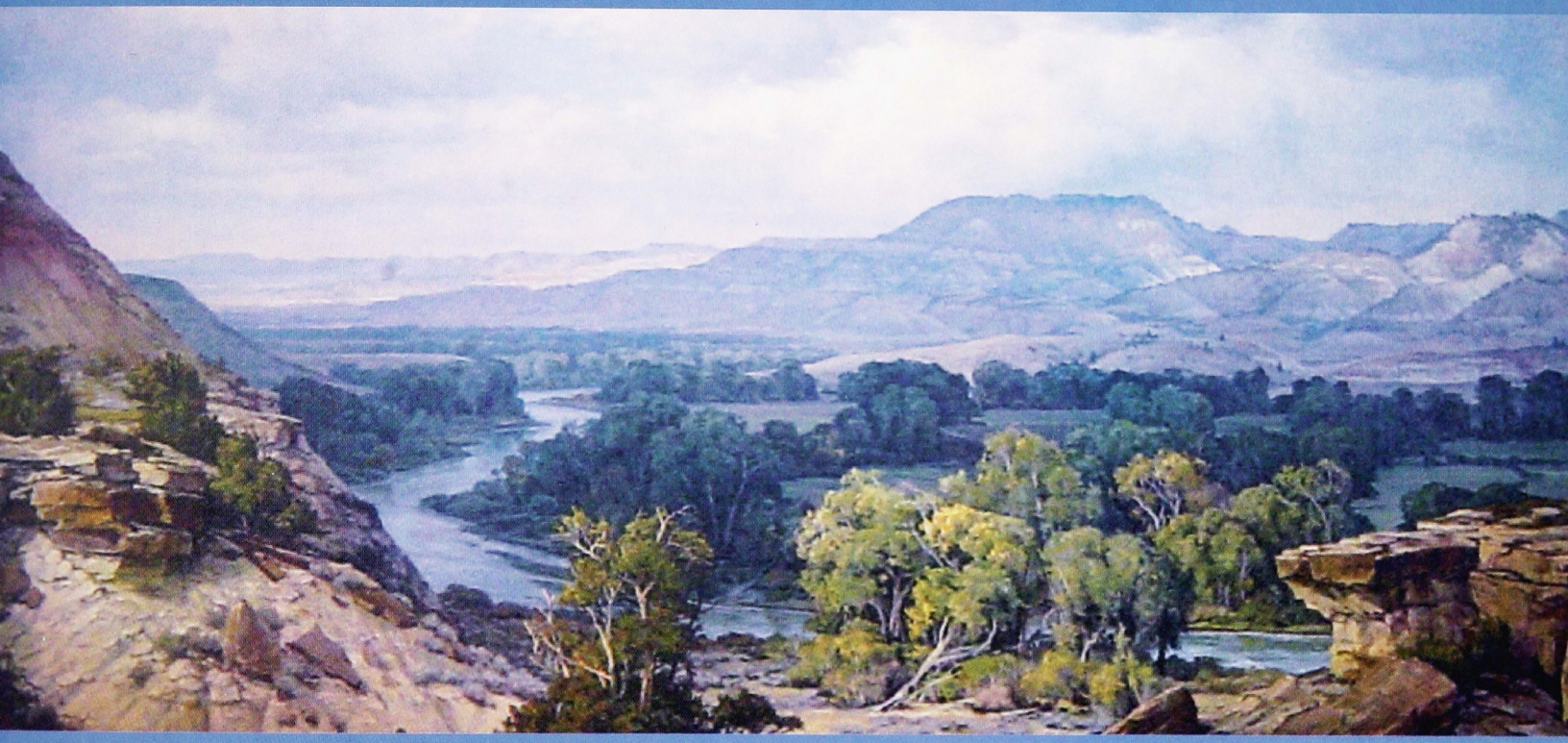
20. Do you address the issue of "special areas" that shouldn't be developed?

We have not yet addressed that issue, but we would be willing to work with other groups to develop a common position. We supported a provision for non-development of certain areas under federal coal laws.

21. If a group wants to stop CBM altogether, how is this consistent or inconsistent with Doing It Right?

Coal bed methane is being developed in Montana right now, and it's being done badly. Endorsing *Doing It Right* only means that you recognize that this is the case, and that insofar as development is happening; it at least needs to meet the standards outlined in *Doing It Right*.

Doing It Right



a **blueprint** for responsible
coal bed methane development
in Montana

Southeastern and southcentral Montana is a region marked by rolling hills, prairie rivers, and clear blue skies. The area's deep coulees, ephemeral streambeds, and sagebrush flats support thousands of family farms and ranches. Small towns dot the landscape, fed by the trade of wheat, cattle, alfalfa, and sheep.

This region has stood the test of time. The challenges posed by the hot summers, harsh winters, and periodic drought are met with proud resilience, scrappy ingenuity, and a contentment that comes from living a deliberate life.

Introduction

Thick veins of coal lay beneath nearly every farm, ranch, and town in this region. On the surface of the coal are molecules of methane gas, held in place by water pressure from the region's many coal seam aquifers. Remove the water, and the methane detaches from the coal, pools together, and rises to the surface.

With rising natural gas prices and advances in technology, coal bed methane has become a valuable resource. As its value increases, so do conflicts between those who are committed to caring for the surface of the land, and those whose primary concern is to retrieve the valuable methane as quickly and cheaply as possible.

The Bureau of Land Management estimates that between 14,000 and 39,000 coal bed methane wells will be developed in Montana in the next ten years, with development stretching as far west as Gallatin and Park Counties. The boom is expected to last 20 to 30 years.

A typical well dewaters an average of 16,000 gallons of high saline groundwater from coal seam aquifers **per day.** Currently, most of this water is discharged into rivers, streams, and unlined impoundments. Methane production also brings access roads, pipelines, transmission lines, containment ponds, drill pads, compressor stations, and generators – all of which chop up agricultural land and fragment wildlife habitat.

This guide represents the insights and expertise of farmers, ranchers, townspeople, irrigation managers, water and soil experts, wildlife biologists, hydrologists, geologists, ecologists, outfitters, hunting guides, and other Montana citizens.

The six provisions listed below summarize their recommendations. Together they provide a reasonable framework for responsible development. We hope that you will help build support for responsible methane development and endorse **Doing It Right** by signing and mailing the postcards on the back.

Let's do it right!

RESPONSIBLE Coal Bed Methane Development Means...

1. Effective **monitoring** of coal bed methane development and active **enforcement** of existing laws to protect private property rights, Montana citizens, and Montana's natural resources.

2. **Surface owner consent**, **surface use agreements** and reimbursement of **attorney fees** to help landowners better protect their property rights.

3. Use of **aquifer recharge**, **clustered development**, **mufflers for compressor stations**, and other low-impact, best-available technologies to minimize impacts on underground water reserves, rivers and streams, and surface resources.

4. Collection of **thorough fish, wildlife, and plant inventories** before development proceeds to protect habitat, followed by **phased-in development** to diffuse impacts over time.

5. Meaningful **public involvement** in the decision-making process.

6. **Complete reclamation** of all disturbed areas and **bonding** that protects Montana taxpayers from all cleanup liability costs.

Southeastern and southcentral Montana is marked by an arid to semi-arid climate. Much of the region's domestic water supply is pumped from aquifers or supplied by natural springs, and most farmers and ranchers depend on well water for stock watering.

Every drop of water withdrawn for coal bed methane production simultaneously depletes the region's precious aquifers.

Aquifers

AQUIFER DEPLETION

Coal bed methane production involves withdrawing massive volumes of groundwater from coal seam aquifers. The United States Geological Survey estimates that an average well in Montana withdraws 11.6 gallons of water per minute (gpm), or over 16,000 gallons a day. At 10 gpm, a mid-range estimate of 24,000 producing wells would pump out **345 million gallons of water per day from underground water reserves.** Most of this groundwater is discharged into rivers, streams, and dry creek beds, or held in unlined impoundments, where it can seep into rivers and streams.

DRIED UP WELLS

Every drop of water withdrawn for coal bed methane production simultaneously depletes the region's precious aquifers. The Bureau of Land Management estimates that a single well can lower aquifer levels by 34 feet within ten feet of the well. The cumulative lowering of water levels from as many as 39,000 wells is unknown, but coal mining studies suggest that it could take over 1000 years for aquifers to recharge. As underground water levels drop, landowners and rural communities can expect to see their wells, seeps, sub-irrigated fields, and natural springs go dry.

MASSIVE VOLUMES

Methane water is unsuitable for irrigation because of high concentrations of dissolved salts. Industry proponents claim that methane discharge water could provide stock water for farmers and ranchers. While this may seem like an ideal solution, there's one complication: all of Montana's cattle, sheep, and pigs combined would be unable to drink the amount of the water that will be produced.

Doing It Right

Aquifer Recharge: While mineral owners have a right to retrieve their minerals, they do not have a right to deprive southeastern Montana of its underground water reserves. Luckily**, it is possible and affordable to put coal bed methane produced water back in the ground where it is most needed**. Aquifer recharge is the most sustainable, reasonable, and appropriate method for dealing with water produced by coal bed methane wells.

Water Rights: Most uses of water in Montana require a water right. Currently, methane well operators are not required to secure a water right before using massive volumes of water. This double standard reinforces confusion over ownership and responsibility for underground water reserves. The state of Montana must clarify a rational system for the use of underground water reserves that respects existing water rights and preserves aquifer levels for the future.

The Yellowstone River and its tributaries help sustain agriculture, Montana's number one industry, and the towns, rural communities, and families that depend on farming and ranching.

Discharging high saline coal bed methane water into Montana's rivers and streams is unacceptable.

Rivers and Streams

SALINE WATER
While coal bed methane produced water is suitable for domestic and stock use, it is toxic to Montana plants and crops. As water percolates through the ground, it leaches out salts. Methane produced water can come from as deep as 700 feet below the surface, and generally contains high concentrations of dissolved salts, making it unsuitable for irrigation.

DAMAGE TO SOIL
The ratio of dissolved salts (referred to as the sodium absorption ratio, or SAR) of methane water is 10 to 12 times the level at which soil and plant productivity declines and **3 to 4 times the level Montana native plants and most crops can tolerate**. Soil irrigated with this water will accumulate these salts, which destroy soil structure and inhibit water absorption by plants.

DAMAGE TO FISHERIES
Discharging high saline coal bed methane water into Montana's rivers and streams is unacceptable. Even treated, the influx of high volumes of groundwater into Montana's rivers and streams could change stream temperature and hydrology, adversely affecting fisheries. Likewise, the increased erosion and sedimentation from discharges can plug irrigation canals and destroy spawning grounds for fish. **Fishing brings over a million dollars into the region each year as Montanans and visitors to the state come to catch trout, walleye, smallmouth bass, paddlefish, and catfish.**

Doing It Right

Aquifer Recharge: The solution that best addresses these concerns is **aquifer recharge**, through reinjection or similar means.

Enforcement: Careful monitoring and rigorous enforcement of existing laws, such as the Clean Water Act and Montana Water Use Act, are essential to protecting existing beneficial uses of water. **The methane industry cannot be allowed to monitor itself.**

Minimize Roads: Minimizing roads and **requiring wells to be set back from rivers** would help reduce sedimentation.

Phased-in development: Phasing in development over several years would disperse impacts over time while providing public agencies with the time necessary to ensure Montana's rivers and streams are protected.

Agriculture is Montana's largest industry, generating more than $2 billion annually. In southeastern Montana, income from the trade of stock and crops provides a steady flow of cash into rural communities, and small towns provide support for the outlying farmers and ranchers.

The best way to ensure responsible coal bed methane development is to empower landowners to have a real say in the course of mineral development on their land.

Agriculture

PRIVATE PROPERTY RIGHTS
The region's agricultural economy is based on strong protections for private property rights and water rights. Individual landowners steward their own land and water with a view toward long term productivity, which benefits the whole region.

MINERAL RIGHTS
Coal bed methane production, like many forms of mineral development, threatens this careful balance. Because mineral owners have a legal right to retrieve their minerals, landowners who don't own their minerals are largely powerless to stop irresponsible development on their land. Meanwhile, mineral owners have little incentive to develop responsibly because, unlike landowners, they will not have to live with the long-term implications of destroyed soils, degraded water, and dried up aquifers.

ATTORNEY FEES
While landowners are entitled to compensation for any damages caused by mineral development, they must prove damages in a court of law, which can cost $30,000 to $50,000 in attorney's fees and expenses.

Doing It Right

Surface Owner Consent: The best way to ensure responsible coal bed methane development is to empower landowners to have a real say in the course of mineral development on their land. **Requiring methane operators to secure permission to drill from surface owners would greatly increase the ability of landowners to ensure responsible development**.

Surface Use Agreements: Methane operators should be **required** to negotiate a **surface use agreement** with landowners, detailing the placement of roads, wells, drill sites, pipelines, and compressor stations. The state and federal government should provide a model surface use agreement that provides strong protections for landowners.

Attorney Fees: Landowners who successfully prove damages to their property in a court of law **should be awarded compensation for their attorney fees** in order to prevent the cost of litigating from deterring landowners from seeking fair compensation.

The relatively undisturbed semi-arid breaks and sagebrush grasslands of eastern Montana are home to a diversity of wildlife, including elk, mule and white-tailed deer, pronghorn, wild turkey, sharp-tailed and sage grouse, golden and bald eagles, falcons, and prairie dogs.

Along with the intangible benefits of watching pronghorn browse sagebrush or golden eagles soar overhead, southeastern Montana's wildlife brings real benefits to the region's economy.

Wildlife

WILDLIFE BENEFITS

Along with the intangible benefits of watching pronghorn browse sagebrush or golden eagles soar overhead, southeastern Montana's wildlife bring real benefits to the region's economy. Montanans and out-of-state visitors spend millions of dollars each year enjoying the region's superb hunting and fishing opportunities. In 1999 alone, hunting for deer, pronghorn, and upland birds generated over $34 million in economic benefits for southeastern Montana.

THREATS TO WILDLIFE

The access roads, drill pads, pipelines, power lines, transmission stations, compressors, and increased traffic that accompany coal bed methane development can chop up wildlife habitat and disrupt home range, winter range, and migration routes. State and federal agencies estimate that each coal bed methane well disturbs **three to four acres of land**, and results in the construction of **a quarter to a third of a mile of new roads**. With up to 39,000 methane wells predicted in the next ten years, methane production could disturb tens of thousands of acres of critical wildlife habitat.

Doing It Right

Fish, Wildlife, and Plant Inventories: In order to ensure the long-term viability of Montana's invaluable wildlife, state and federal agencies must conduct **thorough biological inventories** of each proposed coal bed methane field **before production begins**, and **establish buffer zones** around critical habitat.

Clustered Development: The state and federal government should require that methane operators cluster pipelines and access roads together and bury power lines within existing rights-of-way to the extent possible. Clustered development could dramatically decrease the amount of land disturbed, and be accomplished at a minimal cost to the industry. Likewise, because gas from methane wells is normally measured at the well site, flow lines to compressor stations should be shared by different operators, which will reduce surface land disturbance as well as development costs.

Phased-in Development: State and federal agencies should establish a permitting schedule that **phases in development over time**. This would allow the economic benefits to last longer while reducing the concentration of impacts.

Full Reclamation: All areas disturbed during coal bed methane production should be **fully reclaimed** with native vegetation and soil types immediately following cessation of methane production.

Clean air and quiet days are some of the amenities of living away from metropolitan areas. Montana's rural residents enjoy healthy air, wide-open spaces, and the peace and quiet of country life.

Most landowners have a vested interest in disturbing as little land as possible, and, given the chance, will steward their land as they have for generations.

Rural Life

AIR POLLUTION

Most people don't equate methane — a so-called clean-burning fuel — with air pollution, but production of the gas can seriously degrade air quality. Generators are necessary to supply electricity to pump methane and power the compressor stations that compress the gas so that it can be shipped to market. Compressors and generators emit dangerous toxins such as sulfur dioxide, nitrous oxide, carbon monoxide, carbon dioxide, and formaldehyde, a known carcinogen. Methane itself is a pollutant. Lowering water pressure not only releases methane into methane wells, but can vent it through fractures in the coal seam and natural faults and allow it to build up in homes, barns, and other structures.

DUST

Dust from increased traffic on country roads can cause respiratory problems and obscure the wide open views that so many take for granted. **Dust is rarely regulated, and the burden is on local people** to complain long enough and loud enough until the owner of the road takes action.

NOISE

Compressors produce noise levels that can be a serious nuisance to area residents.

Doing It Right

Enforcement: Active enforcement of existing laws is critical to protecting Montana's clean air.

Best Technology: Methane companies should be required to use generators and compressor stations with the lowest possible emissions, and to take every precaution possible to avoid methane venting. Generators should be fueled by natural gas, which results in lower emissions than diesel fuel, and guidelines should be established maximizing the number of wells allowed for each compressor station. Compressors should be fitted with high-quality mufflers to reduce noise.

Dust Maintenance: To reduce dust on country roads, methane operators should be required to regularly treat gravel roads with treated methane water or other dust suppressants. **Limiting the number of vehicles and roads by clustering development** will help reduce overall airborne dust.

Surface Use Agreements: Methane operators should be required to secure a surface use agreement with surface owners so that those who care about the land can have a say in the course of construction. Most landowners have a vested interest in disturbing as little land as possible, and, given the chance, will steward their land as they have for generations.

One of the cornerstones of American democracy is the involvement of citizens in decisions that affect their lives. Many state and federal laws are designed to incorporate citizen input into decision-making processes.

The state of Montana and the federal government must make every effort possible to include the public in a meaningful way in decisions about the future of coal bed methane development.

Citizen Involvement

GOOD DECISIONS

Involving the public invariably creates a longer decision-making process, but the benefits far outweigh delays. By including the public, state and federal agencies can educate citizens, while gathering invaluable on-the-ground information. The more involved citizens become in the process, the better the final outcome.

PUBLIC INPUT

The unprecedented scale of proposed coal bed methane development, along with the fact that water — Montana's most precious resource — is at the heart of the controversysuggest that now, more than ever, state and federal agencies need to make every effort to include the public in the decision-making process.

RUSHED DEVELOPMENT

Ensuring public participation in decisions concerning the course of coal bed methane involvement is the responsibility of government agencies and individual citizens. Thus far, state and federal agencies have focused on producing an environmental impact statement as quickly as possible at the expense of meaningful public involvement.

Doing It Right

Adequate Public Notice: The state of Montana and the federal government must make every effort possible to include the public in a meaningful way in decisions about the future of coal bed methane development. Notice for public meetings for the ongoing environmental impact statement, as well as future environmental reviews, should be posted at least one month previous to the meetings, and should be sent to all Montana newspapers and radio stations. Written comments should be accepted for at least one month following public comment meetings.

Public Comments: Comments gathered during public meetings should be seriously considered and incorporated into government documents. Testimony at public hearings should be thoroughly recorded and incorporated into the public record.

Public Involvement: Montanans have a civic responsibility to get involved in the decision-making process. Citizens can express their concerns by commenting on the upcoming draft environmental impact statement, testifying at public meetings, writing letters to the editor of local newspapers, or calling their elected state and federal representatives.

Montana has numerous laws designed to protect our precious natural resources. Their usefulness is related to the extent to which they are enforced. Self-regulation and voluntary compliance, as a rule, are inadequate to hold individuals and corporations accountable.

State and federal agencies should hold methane operators fully responsible for violations of state and federal laws.

Accountability

ENFORCEMENT

If the citizens of Montana wish to hold the methane industry accountable, then our common sense laws must be enforced. Right now, data concerning the quality and quantity of coal bed methane discharges and the quality of the rivers and streams into which they flow come directly from the industry. This is akin to letting a fox guard the hen house: it just doesn t work.

ACCOUNTABILITY

A single citizen inspection of a coal bed methane field revealed two blatantly illegal discharges of methane wastewater with toxic levels of sodium and dissolved salts into a tributary of the Tongue River. Twelve months earlier, the Montana Department of Environmental Quality had notified the company that these discharges were illegal. The methane company admitted that one of the discharge pipes had been illegally discharging for over six months! Without the citizen inspection, the illegal discharges could have continued indefinitely.

Doing It Right

Agency and Citizen Inspections: Regular inspections of coal bed methane fields and collection of soil and water samples are essential to ensuring compliance with Montana's common sense laws. Regular inspections should occur no less than four times annually for each field, with one surprise inspection each year. Citizens and interest groups should have the right to petition for further inspections.

Public Access: Real-time surface and groundwater flow monitors should be installed at methane water discharge points and in aquifers, and data should be made readily available to the public on the Montana Department of Environmental Quality's website.

Fines: State and federal agencies should hold methane operators fully responsible for violations of state and federal laws, implementing fines as well as increased monitoring to detect future violations.

Bad Actor Provision: Drilling for methane in Montana is a privilege. Any methane operator who repeatedly violates state or federal laws should be barred from receiving further permits to drill for methane in Montana.

Southeastern and southcentral Montana is a region rich in cultural and historic resources. Nearly two hundred years ago, the Lewis and Clark Expedition traveled across the region. The Northern Cheyenne and Crow Indian Tribes live in the area, and sacred sites abound.

These sites tell the story of two cultures coming together, of homesteaders seeking a new life, and of the struggles to defend a homeland.

Heritage

CULTURAL AND HISTORIC SITES

Nearly 600 cultural and historic resource sites have been identified in the Tongue River drainage as eligible for listing under the National Register of Historic Places. These sites and others could be negatively impacted by irresponsible development.

HISTORY

These sites tell the story of two cultures coming together, of homesteaders seeking a new life, and of the struggle to defend a homeland. For the Northern Cheyenne and Crow Tribes, these sites are an integral part of their spiritual and cultural identity. Many sites are also a source of tourism revenue. Hundreds of people travel to the area each year in remembrance of the Battle of the Little Big Horn and Custer's Last Stand. History buffs from around the nation travel great distances to trace the path of the Lewis and Clark Expedition.

RISKS

Cultural and historic sites are protected under the National Historic Preservation Act. Under this Act, government agencies must consult with Indian Tribes, the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Office before taking any action that may disturb a historic, cultural, or ancient burial site. Thus far, state and federal agencies have all but ignored this requirement, putting southeastern and southcentral Montana's important cultural and historic sites at risk.

Doing It Right

Enforcement: State and federal agencies must fully comply with the National Historic Preservation Act by consulting with all affected Tribes, the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Office before putting any of Montana's important historic sites at risk. The integrity of these sites must be maintained.

The true legacy of coal bed methane development will emerge in two or three decades when the last of the methane has been sent to market. While it is impossible to foretell the nature of that legacy, we do know that coal bed methane will be developed and the methane industry will see billions of dollars in profits.

We also know that the methane industry can afford to do it right. It takes approximately $65,000 to establish a producing well in Montana; depending on gas prices, an average well brings in $600,000 to $1.2 million over its productive life. That leaves several hundred thousand dollars — a percentage of which will be paid for taxes and general operations — per well. **Clearly, the methane industry can afford to do it right. Montana citizens, however, cannot afford otherwise.**

Any damages not covered by the methane industry will be borne by the farmers and ranchers who live in areas of proposed methane development, by the surrounding communities, and, finally, by all Montana taxpayers.

Legacy

BONDING

In Montana, coal companies must post a bond — a monetary deposit to cover potential damages — before mining for coal. The same holds true for the hard rock mining industry. **Coal bed methane companies, however, need only post bonds for the cost of plugging and abandoning a well**. That means methane operators can pump out millions of gallons of groundwater from Montana's aquifers, discharge poor quality methane water into Montana's rivers and streams, disturb hundreds of thousands of acres of prime agricultural land, disrupt agricultural operations, and displace wildlife, all without any financial protection for Montana citizens.

TAXPAYER RISK

Any damages not paid for by the methane industry will be borne by the farmers and ranchers who live in areas of proposed methane development, by the surrounding rural communities, and, finally, by all Montana taxpayers.

Doing It Right

Bonding: In order to protect Montana taxpayers and encourage responsible development, state and federal agencies must require bonds that cover the **full** cost of methane development.

Full Reclamation: To ensure complete reclamation of land disturbed by methane production, state and federal agencies must establish clear and enforceable reclamation standards. Full reclamation of all disturbed lands should be a standing provision in a model surface use agreement, and landowners should make it a bottom-line request when leasing their minerals.

Montana is at a crossroads: one path leads to a balanced future in which methane development and other industries exist side-by-side. Down the other path is the specter of dried-up wells, polluted rivers, destroyed soils, and an agricultural economy in shambles.

Montana has a rare opportunity to make sure the methane industry does it right from the beginning, thanks to a temporary moratorium on methane drilling permits. However, a choice for responsible development will require that Montana citizens stand up and demand foresight and true leadership on the part of state and federal elected officials and agency personnel.

Montana has a rare opportunity to make sure the methane industry does it right from the beginning, thanks to a temporary moratorium on methane drilling permits.

Conclusion

CITIZEN INVOLVEMENT

The provisions outlined in this guide point the way toward coal bed methane development that all Montana citizens can live with. Some necessitate legislative action in the halls of the Montana State Capitol or in the U.S. Congress. Many fall under existing laws. Others rely on a strong environmental impact statement. **All require that Montana citizens be informed and get involved.**

BALANCE

Together, these provisions seek to balance the livelihoods of farmers, ranchers, and townspeople, and protection of Montana's land, air and water, with the rights of methane operators to retrieve their minerals.

CHOICE

One thing is clear: Montana citizens do not have to make a choice between their good water, clean air, and productive agricultural fields on the one hand, and coal bed methane development on the other. They only need to choose to develop methane responsibly.

RESPONSIBLE DEVELOPMENT

The methane industry can afford to do it right. Montana cannot afford not to. ***Let's make them do it right!***

The Northern Plains Resource Council is committed to providing the information and tools necessary to give citizens an effective voice in decisions that affect their lives. Recognizing the need to balance the quest for economic gain with social and environmental concerns, members of Northern Plains work to protect Montana's land, air, and water, and to preserve sustainable family agriculture in Montana.

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Doing It Right: a blueprint for responsible coal bed methane development was produced by the Northern Plains Resource Council in October, 2001.

For additional copies, please call (406) 248-1154, or email us at **info@nprcmt.org**. You can also download it from our website at **www.northernplains.org**. For a complete documentation of sources, go to **www.northernplains.org**.

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Page 1:	Tongue River near Birney, Montana. Photo by Megan Dishong.
Page 2:	Rocker Six Cattle Company. Photo by Megan Dishong.
Page 3:	Windmill powered water well in southeastern Montana. Photo by Tana Patterson.
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Page 9:	Street sign in Billings, Montana. Photo by Amy Frykman.
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Page 11:	Aerial view of methane drilling in Colorado. Photo by Rebecca Clarren, courtesy of *High Country News*.
Page 12:	Neighbors chatting in Birney, Montana at the annual Birney BBQ. Photo by Alan Rolston.
Back:	Farmland near Decker, Montana. Photo by Amy Frykman.

Thoughts on responsible coal bed methane development...

"We must hold the methane industry to the highest standards to ensure that coal bed methane development contributes in a positive way, rather than continuing a legacy where the economic benefits go primarily to developers, while environmental risks, costs, and impacts are forced on Montana . We must demand that our state and federal agencies establish solid and responsible rules of the game necessary to protect our heritage and our ecosystem before further coal bed methane development begins in Montana."

Thomas Schneider, Petroleum Engineer and former
Chair of the Montana Public Service Commission.

"It certainly appears that coal bed methane extraction can be an important part of the solution to our energy stress; however, I believe it must and certainly can be done in a prudent and orderly manner."

William Edwards, former Wyoming State Legislator, Ph.D.

"Those of us who depend on good water for irrigation and productive land for our livelihoods know that if we don t stand up and demand that state and federal agencies enforce the laws that are designed to protect our interests, then we are out of luck. We don t want to be out of luck."

Roger Muggli, Manager of the Tongue
and Yellowstone Irrigation District

Place 21 cent stamp here

Northern Plains Resource Council
2401 Montana Avenue, Suite 200
Billings, Montana 59101

Place 21 cent stamp here

The Honorable Governor Judy Martz
State Capitol
Helena, Montana 59620-0801

Take action!

what you can do

1. **Endorse Doing It Right** and help build support for responsible coal bed methane development in Montana! Sign the right-hand postcard below and drop it in the mail. It's that easy!

2. **Send a postcard to Montana Governor Judy Martz** indicating your support for the common sense provisions outlined in **Doing It Right**. Sign the left-hand postcard and drop it in the mail.

3. **Volunteer to solicit other endorsements**. Spread the word! Call (406)-248-1154 or email info@nprcmt.org for more information.

4. **Comment on the upcoming draft environmental impact statement** to be released in mid-December. Let your voice be heard! Log onto www.northernplains.org or call (406)-248-1154 for more information.

Dear Governor Martz,

Please support the following common sense provisions outlined in **Doing It Right: a blueprint for responsible coal bed methane development in Montana**:

1. Effective monitoring of coal bed methane development and active enforcement of existing laws.
2. Surface owner consent, surface use agreements, and reimbursement of attorney fees to landowners.
3. Use of aquifer recharge, clustered development, mufflers for compressor stations, and other low-impact, best available technologies.
4. Collection of thorough fish, wildlife, and plant inventories before development proceeds, and phased-in development over time.
5. Meaningful public involvement in the decision-making process.
6. Complete reclamation of all disturbed areas and adequate bonding.

Sincerely,

_____

_____ I support the following common sense provisions outlined in **Doing It Right: a blueprint for responsible coal bed methane development in Montana:**

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Sincerely, _____

Please include your name, address, and email!

_____

_____

_____

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