

THE RIFLE, SILT, NEW CASTLE
COMMUNITY DEVELOPMENT
PLAN

A COLLABORATIVE PLANNING DOCUMENT
BETWEEN THE
RSNC DEFINED AREA RESIDENTS,
ANTERO RESOURCES CORP. AND GALAXY ENERGY

JANUARY 1, 2006

A Project of the Grand Valley Citizens' Alliance

ACKNOWLEDGEMENTS

We would like to acknowledge and thank the following people for their interest, ideas and participation in preserving our community and creating this plan.

Christy Hamrick * Liz Lippitt * Bob Elderkin * Terry Dobkins * Peggy Utesch *
The Town of New Castle * The Town of Silt * The City of Rifle * Keith Lambert * Doug
Dennison * Rick Aluise * Randy Russell * Christine Burke * Curt McDonald * Dennis
and Joyce Webb * Hank and Cleo Castle * Valerie Haugen * Ann Nicholson * Jenny Zetah
* Joyce Wizer * K. Bilson * **Ken Kuhns, Jr.** * Kyle & Denise Harrison * **Michael Erion ***
Michele Pfeifer * Michael Gross * Pam Lauman * Paul Hoffmann * Rene Fisher * Robert
Porter * Ruth Kary * Shiri Hunter * Tara Meixsell * **Tony Napolitano *** AC Robinson *
Alison West * Arnee Bry * Barbie DiMarco * Bernie Boettcher * Bill Griffin * Bob and Karen
Miller * Bob Wenzell * Brian Brown * Maro Zagoros * Cathy Dejautels * Cheri Chartier *
Cheryl Christiansen * Chris Bryan * Christine Burke * Dale Nesbit * Daniell & Judy Green *
David Bartell * David Hillbrand * David Geyer * Dee Harrison * Dee Stiers * Deena Bailey-
Blair * John Blair * Duke Cox * Erin and Brian Ellspermann * Fred Cooke * George Wear
* Glenn Ault * Gregg & Ann Tamburello * Greg Russi * Helen Jones * Herb Call * Howard
Earnest * Jackie Marincic * Carol Frederick * Janet & Dick Maddock * Janice & Roger Day
* Jean Walter * Jessie & Peggy Zufall * Jim & Kimberlie Chenoweth * Jim & Pat Kephart
* Karen Call * Karla Mobely * Kathy Marapese * Kent Lohse * Kevin & Lynda Costanzo
* Kim Bilson * L. Passmore * Lerra & Charlene Troyer * Leslie Wareham * Lilian Dahlin *
Linda Colby * Linda Hansen * Marci McIntosh * Marcie Doll * Michael Langhorne * Mike
and Nettie Miller * Wendy and **Mike Mello *** Molly Ring * Donna Gray * Mr. & Mrs.
L. Bernat * Nella Barker * Norm Clasen * Pam Lauman * Pat Owen * Paul Hoffmann *
Paul Rinker * Paul Straw * Peggy and Bill Swank * Philip Bain * Randy Parsons * Rebecca
Whealersburg * Renee Fisher * Rhonda Roberts * Richard Connell * Rick Bertolini * Rick
Carter * Robb Bartels * Roger Garing * Roger Grove * Sandy and Dave Sekeres * Scott Fields
* Sharon Fazzi * Sheryl Johnson * Sommer Parks * Steve Spillane * Tammi Vines * Terrie &
Paul Samuelson * Terry Ostrom * Tom and Sue Jange * Tony Gorody * Tracey Langhorne
* Wade and Christine Schriock * Wayne Pollard * Yvonne Chambers * Sher Long * Lance
Astrella * Ralph Cantafio * Mary Ellen Denomy *
Steve Smith * Amy Hadden Marsh * Alan Rolston

RSNC COMMUNITY DEVELOPMENT PLAN

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EXECUTIVE SUMMARY

The Rifle, Silt, New Castle Community Development Plan (RSNC-CDP) is a ground-breaking project and a new blueprint for how a community and industry can work together to successfully manage natural gas development in a rural residential/agricultural area. The plan outlined in this document addresses areas of concern expressed by the community in a series of meetings and the willingness of industry to address those concerns. It also establishes a framework by which industry and the community can continue the partnership that has been established through the drafting of the plan.

Why Undertake This Effort?

Natural gas drilling in Garfield County is expanding rapidly, and as it progresses, it brings an intense level of industrial development to rural agricultural and residential settings. This scenario continues to create tension and conflict among an industry focused on rapid expansion, mineral owners seeking to develop their holdings and landowners who are impacted with little warning.

This climate of contention and sometimes open hostility has played out in a number of public meetings, particularly the 2005 Valentine's Day hearing on Kathleen Curry's proposed Surface Damage Compensation Bill, HB 1219. The level of community uncertainty continues to be driven by reports of industrial accidents, a lack of information for the community, and fear of property value reduction and loss of quality of life.

Although litigation has provided financial relief for some, it has done little to improve the relationship between industry and community. This plan represents a departure from the existing "them vs. us" thinking with the conscious intention of embracing a "them and us" partnership that can have positive results for everyone.

Is the Plan Legally Binding?

Some people have expressed concern that this plan is not a legally binding document. It was never the intention of the plan's drafters to pursue legal means to enforce the plan. The goal is to create a working relationship between community and industry whereby each entity accepts a level of responsibility and holds its partner accountable. In this scenario, the community accepts the responsibility to continue working with industry to build a relationship that is fluid, dynamic, and built on trust. Industry, in turn, accepts the responsibility to work honestly and openly with the community in order to build trust.

Honest communication will be the key to making the plan work, and rather than relying on the legal system to enforce a contract, both the community and industry must be willing to actively participate in the processes set forth. The authors believe that an ongoing exchange of information and ideas, coupled with the ability to openly express concerns and problem solve can have a greater impact in a shorter time with more positive results than relying on litigation as an enforcement tool.

Moving Forward

The adage, "If you're not part of the solution, you're part of the problem," is a phrase that characterizes the philosophy that underlies this work. The current climate of contention benefits no one. It simply must change in order for there to be progress. Whether the plan will be successful is an unknown, but rather than taking the same tried path and slamming into a brick wall again, industry and community are invited to move beyond the limitations of what they think is possible in order to create the future they envision.

BACKGROUND AND HISTORY:

Garfield County is blessed with a beautiful physical environment that has shaped the communities and people who live here. Known as the Grand Valley, its character and vitality arise from a unique patchwork of miners, ranchers, entrepreneurs, sports-minded people, artists, intellectuals and visionaries. It is a mix of third and fourth generation residents who tamed the land and newcomers who moved here for a lifestyle that includes clean air and water, small towns, and recreation.

Whether you are a rancher or hunter, a cyclist or skier, or an artist who is inspired by the natural beauty of our rivers and mountains, the common thread that weaves this mix of independent-minded individuals into communities is the beauty of the land. The quality of life we cherish is second to none.

Western Garfield County is also a place of economic diversity, a tapestry woven of many threads, each of which is important to the overall design. In 2003, agriculture contributed \$1.9 million to Garfield County's economy.¹ Hunters brought in \$3.8 million², and tourism dollars from the county's west end pumped in several million more. Compared to the nearly \$13 million generated by the gas industry that same year³, these segments of the economy may seem less important, but they are the threads that have sustained the economy when the boom cycles of the energy industry vanished.

In the 1980s and 90s, energy development in the county was centered near Parachute. Natural gas development now has the potential to grow county wide. With the gas in the Piceance Basin and oil shale development in the county's west end as well as the potential for coal bed methane development from New Castle to Carbondale, there may be few untouched places in Garfield County as the nation's thirst for this fuel continues to grow.

The National Picture

The U.S. consumes roughly 28% of the world's natural gas.⁴ Its importance in the country's energy picture is undisputed. Natural gas is used for everything from manufacturing and making fertilizer to home heating and cooling and the production of electricity, which is the fastest growing use of this fuel.⁵ But unlike oil, the technology to import natural gas from abroad has not been perfected. Consequently, 99% of the natural gas consumed in the U.S. is produced in North America, where it can be transported via pipeline.⁶

Currently, Texas, Louisiana and Oklahoma produce more than half of the natural gas in the U.S., but depletion rates for new wells in those areas have grown steeply, as operators tap ever-smaller pools. In Texas, for example, the rate of decline for a typical new well is now 56% in the first year.⁷ Wells in the Piceance Basin also have a steep decline rate – 50-60% in the first year⁸ – because the gas is trapped in small pockets. With demand for natural gas growing and U.S. supplies shrinking in states that have historically been strong producers, the Rocky Mountain West's importance as an energy source is growing rapidly. Currently, New Mexico, Wyoming, Colorado and Kansas are major gas-producing states, with Montana and Utah not far behind.⁹

Colorado's & Garfield County's Role

Reliance on natural gas as an energy source in the U.S. will not diminish in the future -- an important point to understand. The U.S. Department of Energy estimated in 2001 that Colorado alone has 12,527 billion cubic feet of methane¹⁰, with Garfield County sitting atop the Piceance Basin, which is sometimes called the "Persian Gulf" of natural gas. The communities in the Grand and Roaring Fork Valleys have only seen the tip of the iceberg when it comes to the development of this fuel.

In 2001, there were fewer than 1,000 natural gas wells in Garfield County.¹¹ By the middle of 2005, that number has almost tripled, with industry predicting as many as 20,000 wells by the time the resource here has been fully developed. The question facing Garfield County and its communities is how to manage the growth of natural gas industry in a way that preserves economic diversity and the quality of life that the people living here value so highly.

A VISION FOR THE FUTURE

In some parts of the United States, it is possible to drill for natural gas at surface densities of one well per 600 acres because the gas lies in large pools underground and can be extracted with only a few well bores. The geology of the Piceance Basin, which underlies Garfield County, traps gas in small pockets within sandstone formations. Referred to as “tight sands gas,” this methane is more difficult to extract, and as recently as ten years ago, the technology did not exist to produce it economically.

Technological advances, coupled with the increasing price of gas, have now made production of the tight sands gas from the Piceance formations not only possible, but profitable. In 2003, the Colorado weighted average price for natural gas was \$4.10 per thousand cubic feet.¹² An average well in Garfield County produced about 1 billion cubic feet of gas while costing around \$1 million dollars to drill (excluding pipelines), which provided a four-fold return on investment.¹³

In order to recover the natural gas in the Piceance Basin, down hole densities ranging from 5 to 20 acres are needed, and in Garfield County, those wells are being drilled from surface pads placed at 10 to 40 acre surface spacing, as allowed by the Colorado Oil and Gas Conservation Commission (COGCC).

Since directional drilling began in earnest in Garfield County in 1999 the technology has continued to advance. It is now possible to horizontally drill up to 4,000 feet to reach some deep formations¹⁴. Although gas in the Piceance Basin lies at a depth too shallow to utilize 4,000 horizontal technology, it may be possible in the RSNC area to drill directionally from a surface location to a bottom hole 3,000 feet away.¹⁵ This advance allows for the reduction of surface well pad spacing by drilling multiple wells from a single pad. The reduction in surface disturbance when this concept is employed has the potential to preserve large tracts of land now being impacted by the use of 10 to 40 acre surface spacing, while also preserving the quality of life for residents when the pad can be placed well away from residences. It is important to note that drilling multiple wells from a single pad requires a larger pad size to accommodate the additional well heads and surface facilities.

Natural gas development in Garfield County is not going away anytime soon. The importance of working with industry as partners in order to manage the ensuing development is a philosophy that benefits industry while protecting landowners, community health and the environment. These are important, long-term goals for everyone. By working to create partnerships and being willing to try new ideas, the industry, communities and local governments can shift the current paradigm of winners and losers to one of mutual benefit that will serve the Garfield County well in the years to come. At the center of this concept is mutual cooperation – the willingness of all parties to participate in meaningful change.

THE RSNC VISION

Changing The Status Quo

While drilling is bringing money and jobs to Garfield County and helping many local businesses to grow and thrive, other segments of the community and economy are experiencing a variety of negative impacts as development rapidly expands. The result is a divided community of economic winners and losers.

Development of Garfield County's natural gas resources is likely to take more than 20 years – based on estimates by the Colorado Oil and Gas Conservation Commission. It is of paramount importance for residents and leaders to look at the long-term impacts that will result from this intense level of projected development and seek solutions that benefit both industry and residents.

As with any complex problem, there are valid concerns on both sides. The solution to moving beyond polarization requires abandoning “either/or” thinking. Residents, county government and the municipalities therein must be willing to look at all sides of this issue and proactively work on its difficult aspects. This is how economic diversity, the landscape, property values and quality of life can be sustained.

Some people use the term “doing it right.” This work uses the term *Responsible Development*, which is also the value around which this document was built.

The RSNC Approach – Building a Partnership Between Industry and Community

Amory Lovins coined the phrase, “Think globally, act locally.” The Rifle, Silt, New Castle Community Development Plan (RSNC-CDP) has taken that advice to heart. When residents of the area between Rifle and New Castle, north of the Colorado River became aware that gas drilling was poised to move into their area, which had experienced no previous development, some community members saw an opportunity. The RSNC-CDP's approach is to work with industry as the Silt Mesa/Peach Valley area is developed and create productive development while minimizing impacts to individuals and communities.

The recommendations made in this plan are proactive and realistic steps that can be implemented to create a new model for how industry and communities can work together. Through the use of best practices and state of the art technology, many if not most of the negative impacts associated with natural gas development can be mitigated.

The RSNC-CDP is part of the Grand Valley Citizens' Alliance, a grassroots community organization whose stated mission is the promotion of responsible natural gas development. The RSNC-CDP's vision statement is as follows: “To promote a win-win approach to gas development from Rifle to New Castle north of the Colorado River. This approach will include the creation of a partnership between industry and the community that implements responsible development and educates the community on gas development issues.”

The implementation of this work in the RSNC-CDP area can succeed because it is a partnership between potential adversaries who have come together to create a new vision and a new way of doing business. It represents industry working with the community to define a development process that addresses a larger scope of impacts while also allowing the community to better understand industry's needs and goals.

RSNC COMMUNITY DEVELOPMENT PLAN FEATURES

Process and Goals

The Rifle/Silt/New Castle Community Development Project (RSNC-CDP) has been created by RSNC area residents in conjunction with industry in an effort to address the impacts of natural gas drilling in an area more densely populated than other rural residential areas where gas development has taken place in Garfield County as of the fall of 2005. The community recognized that in order for the plan to succeed, it would be necessary to understand industry's concerns and develop a plan that meets the needs of the community *and* industry.

To that end, RSNC-CDP leaders opened a dialog in March 2005 with Antero Resources Corporation, the exploration and production company developing this gas field. Subsequent to discussions with Antero, it was learned that Galaxy Energy will also be developing gas leases in the RSNC area, and discussions began in July 2005 with that entity.

The features of the plan are detailed in this section and represent areas of agreement that have been reached between the community, Antero Resources Corporation and Galaxy Energy.

The plan is designed to be a working model of Best Management Practices (BMPs) that constitute Responsible Development for the RSNC area, which is defined as:

- bordered on the north by the Grand Hogback;
- bordered on the south by the Colorado River;
- bordered on the east by the Town of New Castle;
- bordered on the West by the Town of Rifle and state Highway 13.

The intention of this document is to provide a vision and partnership structure for industry and residents of the RSNC area while also recognizing the right of the individual to negotiate how development will take place on their property. Often, a single landowner who will have a well pad on their property is the only person in a neighborhood who participates in the planning process for natural gas development, although all residents surrounding the site of the development are impacted.

One overall goal of this work is to create an open dialog among neighborhood residents and industry in order for development plans to include input from everyone in an area who is affected and chooses to participate. By involving many stakeholders, it is believed that development may proceed in a way that reduces conflict through discussion of the issues on both sides and working to find solutions that benefit everyone.

Best Management Practices & Responsible Development

In the publication, "Coalbed Methane Best Management Practices," the Western Governor's Association puts forth this definition; "A Best Management Practice is a proven way of conducting CBM operations, which eliminates or minimizes adverse impacts from CBM development on public health and the environment, landowners, and the natural resources; enhances the value of natural and landowner resources; and reduces conflict." Our definition removes the references to "coalbed methane" and substitutes the words "natural gas development" to make the definition more widely applicable. Our definition is as follows:

Responsible Development is a proven way of conducting natural gas development operations, which eliminates or minimizes adverse impacts from natural gas development on public health and the environment, landowners, and natural resources; enhances the value of natural and landowner resources; and reduces conflict between industry, landowners and the community.

In addition to BMPs, a cornerstone of this proposal, is the cutting-edge practice called Clustered Development.¹⁶ Advances in drilling technology make it possible to directionally drill at distances of up to 3,000 feet in some situations.¹⁷ Utilizing that technology, all wells planned for a section – or one square mile or 640 acres – could be drilled from significantly fewer well pads than currently allowed under gas development regulations. The definition of clustered development states:

Clustered development places the maximum amount of drilling activity on a minimum number of drilling pads in order to centralize infrastructure and minimize surface disruption and impact to landowners and the natural environment.

When drilling activities are clustered onto fewer pads, economies of scale may be realized by industry from a reduction in pad numbers, roads and infrastructure. The concept of a Clustered Development site also has the potential to reduce other associated impacts, such as loss of agricultural land and wildlife habitat. The visual impacts to Garfield County's natural environment are also reduced. When Clustered Development sites can be placed away from residences, impacts to landowners, such as light, noise, odors and traffic can also be reduced.

It is recognized, however, that clustered development at 640 acre surface spacing (one section) in a rural residential area may not be possible or desirable if the pad site will have an increased and prolonged level of development and cannot be located away from residences; however, the concept of increased surface spacing is encouraged at, perhaps, 80 or 160 acre spacing, in order to minimize surface impact whenever possible.

The goal put forth in this plan is for industry to work with neighborhoods to locate surface drilling sites in such a way that impacts to an area are minimized while allowing industry to economically develop the resource. The specifics of how development takes place in a given area should ultimately be arrived at by a consensus of area residents and industry working together – a best practice. It is recognized that best practices do not supercede landowner rights and preference must be given to surface owners where the well pad will be located.

Although much has been written about Responsible Development and Best Management Practices, we believe this document brings those concepts together with the idea of Clustered Development to form a concrete plan of action that moves beyond theory to implementation.

RSNC Plan Guidelines

GUIDELINE #1: Clustered Development Well Pad Spacing

Industry agrees to use Clustered Development (CD) as the default development plan for gas operations in the RSNC-CDP area. The surface site planning will begin with the assumption of one pad per quarter section, or per 160 acres, recognizing that in some areas, other surface spacing may be required due to surface and subsurface features, property boundaries, topography, buildings, and landowner preferences. However, the goal is the utilization of clustered surface development in order to minimize surface impact. In addition, it is understood that landowners agreeing to have a clustered development pad on a property would be entitled to receive either a percentage of the royalty or additional compensation for this intensive land use.

Industry will initiate this process and work collectively with landowners and neighborhoods to find ways to minimize the impacts of planned gas development for all residents in drilling areas. The goals are to define and negotiate the minimum number of drilling pad locations and create an area drilling plan that meets the needs of neighborhood areas and industry.

Antero Resources agrees to work together in good faith with any other operator in the area to reasonably minimize surface impacts in ways that avoid a “checkerboard” effect that would compromise the concept of working with neighborhoods and utilizing clustered development directional drilling. It is understood that there are sometimes geologic, contractual or business reasons that make it inappropriate or undesirable to pool, space or otherwise link leases together to accomplish combining of surface operations.

By planning the development with community involvement well in advance of drilling in order to minimize surface impacts, many of the following advantages may be realized:

- Fewer roads, pipelines and drilling pads that impact agricultural, private land and landowners
- Reduced landowner conflicts
- Fewer surface owner agreements to negotiate
- Reduced expense to industry to construct pads, gathering lines, roads and other infrastructure
- Reduced numbers of compressor stations are required to move gas into gas transportation pipelines
- Reduced traffic and road maintenance costs
- Increased ability for inspection and oversight of activities
- Possibility of bussing workers to the site, further reducing traffic on rural roads
- Reduced need for electrical transmission lines and their construction costs
- Potential to pipe water to or from the drilling site to reduce truck traffic

It is understood that directional drilling does have increased risk and cost to industry in some situations. While industry may be willing to bear those additional costs, risk factors associated with drilling must also be taken into consideration. These risk factors include:

- Potential loss of wells due to drilling problems caused by attempting long reach directional drilling;
- Significant increases in drilling and completion costs due to the complexity of drilling, logging and completing long reach directional wells.
-

Despite these concerns, industry agrees to the goal of minimizing pad size, maximizing surface density and working with area landowners in the process of developing their drilling plans and educating community members when it is not possible to comply with this guideline.

GUIDELINE #2: Managing Development in Sensitive Areas

Certain areas where drilling takes place are sensitive areas and should be given special consideration when drilling takes place in or near those areas. These include:

- Rural residential areas
- Subdivisions
- Within city or town limits
- Near waterways, dams or irrigation systems
- Near wildlife areas or migratory corridors
- Near wetlands or flood plains

When an area to be drilled is in or near a sensitive area, industry agrees to use clustered development if reasonable and possible in order to minimize the impacts on residents and/or businesses. In addition, the desires and concerns of residents will be taken into consideration when determining the number of rigs to be operated on a CD pad or in a neighborhood. Consideration for safety, noise, traffic and visual impacts should be taken into consideration during the decision-making process with the goal of limiting those impacts to what is acceptable to area residents.

GUIDELINE #3: Continuity of Development

The RSNC area is unique in that the natural gas underlying the area has not been developed. By developing a gas field using Clustered Development practices, infrastructure, such as water lines to the pad, gathering pipelines, and compressor stations, can be planned in a systematic fashion that progresses across an area in a way that maximizes use and minimizes equipment and disruption to area residents. The goal is to impact an area only once rather than repeatedly over time.

When gas-drilling operations move into an area, it is acknowledged that the first step of the development process involves “proving the field” by drilling test wells. After test wells have been determined to be economically successful, the next phase is the development of the field, which is done in a “step out” manner, with new wells being drilled near the test wells and progressively moving further away. In the RSNC area, operators conducting exploratory or “proving” operations agree to:

- identify areas where drilling will take place before drilling begins in order to create a development plan utilizing Clustered Development guidelines so that pads can be used during both exploratory and development operations;
- work with all industry operators working in the RSNC-CDP area to achieve a plan that has longevity and continuity;
- locate vehicle transportation corridors prior to the commencement of drilling operations;
- locate production corridors for gas gathering and transportation pipelines as well as water and or fluid disposal pipelines, placing as many lines as possible in the same trench or corridor in order to minimize area impact.

By planning the field’s development in advance of exploration and production, development operations may take place in an orderly fashion. In addition, operators conducting development activities will strive to complete all development on a single pad needed to recover the hydrocarbons, including reclamation, before moving to a new drilling location. Operators will strive to avoid the practice of drilling a few wells from a pad, leaving the site and returning later to drill additional wells.

GUIDELINE #4: Employing Responsible Development and Best Management Practices

A report presented at the Four Corners Oil and Gas Conference in May of 2004, titled *Minimizing and Eliminating Delays in Drilling via Avoiding Conflict with Stakeholders*, along with the Western Governors' Handbook *CBM Best Management Practices* present a wide variety of practices that are successful, but used only inconsistently by industry. By utilizing Best Management Practices (BMPs) as the standard for doing business, industry and landowner conflicts can be reduced.

Industry agrees to use the following BMPs as the minimum standard in the RSNC area defined at the beginning of this section, recognizing there may be some instances where technical constraints or landowner preferences override a particular practice.

- Providing the community with a generalized semi-annual drilling plan and updating the community on substantial changes to the plan – recognizing that factors such as geology, economics and levels of production can shift;
- Industry collaboration with RSNC-CDP members to provide a periodic newsletter for all area residents informing them of development objectives, timing and phasing, mitigations, planned events and contact information;
- Working with landowners and neighborhoods to provide input for routing gathering pipelines;
- Transporting water used for drilling and fracture treatments to the well sites and produced water from the well sites should be transported in pipelines to a centralized facility rather than hauled with trucks whenever reasonable. Wastewater will be transported to permitted water disposal injection wells. No wastewater will be stored other than temporary storage in tanks. No evaporative pits will be used in the leased areas.
- Placing multiple pipelines (water and gathering) in the same trench when practical;
- Erosion control to meet all Storm Water regulations;
- A county-approved plan for management of invasive, noxious weeds;
- Heavy-duty flow-back units that reduce odors and the need for flaring by 85-95%;
- Odor control and combustion devices used on industry equipment to reduce VOCs and odors;
- Barriers or berms surrounding well pads to reduce noise, light and visual impacts when drilling takes place near residences
- Noise levels to not exceed COGCC day and nighttime standards
- Fully enclosed compressor stations equipped with noise reduction equipment to minimize noise at or below COGCC day and nighttime standards;
- Set-backs from inhabited dwellings of 500 feet whenever possible;
- Use of pit-less (closed loop) drilling systems to eliminate drilling mud, fracing flow back and petrochemical and produced water waste pits and their associated odors;
- If pits must be used, they will be lined with plastic, fenced and netted sufficient to protect domestic livestock and wildlife;
- Removal of petrochemical waste, pond liners and any surface contamination after drilling is completed;
- No horns, bells, or other noise-making devices to delineate shift changes;
- Telemetry on all producing wells to reduce truck traffic checking wells and increase safety;
- Water quality testing of all domestic wells within 1/2 mile of pad before drilling begins;
- Water quantity testing available when requested by the landowner, taking into consideration seasonal flow fluctuations;
- Monthly testing of domestic water wells that are 1/2 mile down gradient of drilling operations;
- Quarterly testing of all domestic water wells within 100 feet of a drilling pad for the first three years of operation and as necessary, but at least annually, throughout the productive life of the well;

- Random community irrigation water testing throughout the area and in specific locations where there is cause for concern.
- Graveled pads to reduce mud and the resulting dust on roads;
- Use of smaller, newer rigs to reduce noise and surface impacts;
- Compliance with the Colorado Water Quality Control Commission's storm water runoff regulations;
- All hydraulic fracturing operations ("fracing") within the RSNC-CDP area shall be conducted with "green frac" methods, utilizing only sand and water as fracing materials or other "green frac" materials agreed upon between the community and industry. The use of diesel fuel, petroleum products or chemicals containing aromatic compounds such as benzene and toluene or other compounds such as 2 BE, will not be permitted as a part of the fracing process. *Please see the appendix section of this document for the definition of a "green frac."*

GUIDELINE #5: Monitoring Activities During Drilling Operations

Monitoring area air and water quality for impacts from drilling activities is an activity that needs to be undertaken in the RSNC-CDP area. Known and documented impacts from gas drilling in Garfield County and other western states where natural gas drilling is not a new industry include:

- Surface spills of petrochemicals and hazardous wastes associated with drilling
- Contamination of domestic water wells and ground water
- Ozone-causing VOC emissions from condensate tanks and compressor stations
- Ground-level ozone impacts to vegetation and crop health and viability
- Leaching of hazardous chemicals into soils and groundwater from well pad spills
- Wildlife disruption and wildlife habitat destruction
- PM10 (airborne particulate matter measuring 10 microns or larger) impacts on crops and human health

To mitigate these impacts, the industry operators in the RSNC-CDP area agree to participate in appropriate new and ongoing monitoring activities that apply to the RSNC-area. Parameters selected will be recommended by the state agencies that oversee specific impacted areas, including:

- Colorado Air Quality Control Commission
- Colorado Water Quality Control Commission
- Colorado Division of Wildlife
- Local county weed programs
- Bureau of Land Management
- Garfield County

Working in conjunction with these agencies, monitoring will document changing conditions from drilling as well as other activities, and plans for mitigation of adverse impacts that result from natural gas drilling will be developed and implemented. Results of monitoring activities will be shared with appropriate agencies, as well as Garfield County, for incorporation into ongoing monitoring programs.

Guideline #6: Plugging and Abandonment of Gas Wells

With the typical producing life of a gas well between 10 and 20 years, it is recognized that the industry operator that drills the well in the RSNC-CDP area will likely not be the operator responsible for plugging and abandonment.

It is, however, understood that when a gas well is no longer capable of producing economic quantities of gas, and re-stimulation does not produce additional gas flow, the well will be plugged and abandoned, as stipulated in the COGCC regulations.

GUIDELINE #7: Control of Noxious Weeds via Collaboration with Garfield County

Noxious weed invasion is a significant threat to agriculture and wildlife habitat, rivaling urban sprawl in acres of habitat lost in many rural counties. However, studies document that the number one way weeds are spread is from seeds transported on truck tires.

Garfield County has an active weed management program. Gas industry developers in the RSNC-CDP area will develop and utilize a program in collaboration with the county and landowners to actively control the spread of noxious weeds. In conjunction with local governments, the gas industry must be accountable to mitigate any spread of noxious weeds that may result from drilling operations.

In addition to the County's weed program, this plan will take into consideration the protection of RSNC-area's organic agricultural activities and landowner preferences for weed treatment on private land.

Management of noxious weeds will apply to all areas disturbed by drilling operations, including but not limited to existing roadways and borrow pits, new roads, pipeline cuts, and well pads.

GUIDELINE #8: Interim & Final Reclamation

When drilling operations have been completed, COGCC rules require "the surface of the land to be restored as nearly as practicable to its condition at the commencement of drilling operations." Two types of reclamation are delineated – interim and final.

COGCC rules state "interim reclamation shall occur no later than three (3) months on crop land or twelve (12) months on non-crop land after such operations, unless the Director extends the time period because of conditions outside the control of the operator. This reclamation applies to disturbed areas affected by drilling except what is reasonably needed for production operations.

Final reclamation takes place when a well is no longer producing and has been plugged for abandonment. At that time, all equipment must be removed and the land re-contoured and reseeded as near to the original condition as possible.

In the RSNC-CDP area, a third type of reclamation will be utilized. Within 30 days of re-contouring and re-grading a pad or any portion of a pipeline corridor, the operator will loosen all surface soils to a depth of 8 inches and seed that area, unless the season of the year makes such activities undesirable, in which case re-seeding will take place as soon as weather and seasonable conditions are favorable.

When seed, at a minimum of 50 seeds per square foot is applied to freshly disturbed soil with an "organ grinder" or "whirly bird" seeder before crusting and compaction can take place, the success of re-vegetation is very high. This method preserves the soil's health, minimizes dust and is an inexpensive application, even if the sites have additional disturbance in the future.

Operators will work closely with landowners on all reclamation matters, including seeding mixture preferences, re-contouring and loosening of compacted soils, which impede the success of re-vegetation.

These guidelines will apply to well pads, pipeline corridors, compressor station locations, and any other construction associated with gas development.

GUIDELINE #9: Community Health and Safety in Addition to the BMPs Listed in #4

The industrial development of natural gas in rural residential areas, in and around subdivisions, and within city limits poses a variety of dangers to residents. In order to protect the health and safety of local residents, industry operators in the RSNC-CDP area will demonstrate the following:

Emergency Preparedness

- Participation in the county's emergency response plan for gas development through active participation in the Garfield County Local Emergency Planning Committee.
- Education and training of all employees and subcontractors regarding emergency plan information and their ability to respond to emergency situations involving spills, leaks, human injury, fire and explosions.

Roads and Traffic

- Work with Garfield County to review and define appropriate industry speed limits and signs and the county's Road & Bridge Department to obtain all permits, post bonds, and coordinate addressing designated routes, inadequate infrastructure and dangerous areas by creating:
 - a plan for traffic management that takes into consideration blind corners and hills, narrow roads and bridges, and dangerous intersections. In addition, school bus routes will be avoided during designated hours by industry traffic during drilling and completion operations. If a school bus route cannot be avoided during drilling and completion operations, the areas near bus stops will be monitored by flagmen or security personnel during designated hours at industry's expense to protect children loading and unloading from buses.
 - a plan for ongoing dust mitigation using environmentally responsible substances.
 - signs informing truck traffic of "no jake brake zones."
- Provide cost mitigation to the towns and the county for road upgrades and road damage.
- The operator and all its subcontractors agree to abide by all traffic rules and speed limits.

Water Issues

- A plan for avoiding disruption to irrigation, including community and individual systems, will be part of all gas development operations. When drilling operations - including roads, pads and pipelines - cross or in any way impact established community irrigation ditch systems, landowners and industry will include the applicable ditch company in the decision making process and obtain approval for mitigation of any impacts. Area ditch companies include Ware-Hinds Roseman, Cactus Valley, Farmers Irrigation Company, the Grand River Ditch Company and the Silt Water Conservation District. Considerations include: 1) prevention and repair of any disruption to the flow of irrigation water and irrigation runoff caused by roads and pipelines that cross ditches, and; 2) the possibility of piping water in areas where it is at risk of contamination.
- If fracturing or seismic operations take place in the RSNC-CDP area, the industry operator will work with all appropriate local, state and federal agencies to ensure the safety of the Harvey Gap and Rifle Gap Reservoir dams.

GUIDELINE #10: Addressing Financial Impacts

Although the gas drilling industry is bringing jobs and workers to the area, keeping restaurants and local businesses busy and fueling the local economy in many ways, some segments of the economy are

adversely impacted by the industry, and those impacts must be considered and addressed.

In the RSNC-CDP area, the industry agrees to participate as a good neighbor by helping to financially address negative impacts. Priority areas to consider include:

- Use of Surface Use Agreements and fair compensation to impacted surface owners, including the possibility of royalty payments or additional compensation when clustered development is used (compensation is negotiated between industry and individual landowners and is not subject to approval by other parties);
- Funding for community projects in the RSNC area, such as a rural community water system, multi-use trails or projects proposed by residents for the benefit of those most impacted;
- Mitigation of damage to infrastructure, including roads, bridges and irrigation systems caused by drilling activities;
- Mitigation of socio-economic impacts to schools, hospitals, emergency services, law enforcement and human service agencies;
- Participate with the county and municipalities on road and intersection improvements and signage.

COMMUNITY DEVELOPMENT PLAN IMPLEMENTATION

The Process to Date

The RSNC-CDP idea began on January 28, 2005 with a community meeting at the Rifle Middle School that was attended by over 300 area residents. A second meeting of 80 concerned residents produced a list of items the community felt must be addressed in order for the community to feel protected from the negative impacts of gas drilling that have occurred in other parts of the county. A smaller group then volunteered to work with GVCA, community leaders and industry to create a plan.

RSNC-CDP leaders opened a dialog in March 2005 with Antero Resources Corporation, the drilling company developing this gas field. Subsequent to discussions with Antero, it was learned that Galaxy Energy will also be developing gas leases in the RSNC area, and discussions began in July 2005 with that entity.

Although the municipalities in the area have not been participants per-se, they have reviewed various drafts of the work, have been very supportive of the process, have formally endorsed the plan, and are excited to see the final document be implemented.

Community Participation

Community collaboration with industry throughout the RSNC-CDP design phase has resulted in this planning document, and it will be continued community participation in the implementation and maintenance of the CDP that achieves its success. The components included in the plan represent the community's opinions and wishes for the future and are therefore the community's responsibility to create.

Because the RSNC-CDP is a "gentleman's agreement" – a non-legally binding document – it has been designed to include processes by which the community can be educated and informed while continuing to engage in a positive relationship with industry. In this way, the community becomes a partner with industry to manage natural gas development and problem solve as issues arise.

RSNC leaders will continue to utilize a variety of approaches to solicit community participation and input to be sure the plan reflects the community's desires. The approaches that have been employed to create this plan include:

- Ongoing RSNC biweekly public meetings;
- Ongoing e-mail updates to approximately 160 citizens who expressed interest in the process;
- Utilization of findings from "Oil and Gas Regulations: For the People, By the People" (see appendix), a community forum of landowners, concerned citizens, and county officials to discuss needed changes to Colorado oil and gas development regulations;
- Inclusion of the press to assure that the public is informed, particularly at critical junctures;
- Two community meetings in November of 2005 (Silt/New Castle and Rifle) to explain the final draft and seek community input before completing and implementing the plan;
- Presentation of the plan to affected municipalities and the county for endorsement;
- Presentation of the plan to business and business leaders in the community to solicit endorsement and financial support for implementation.

Any and all of these methods of communication and involvement are encouraged as the plan is implemented and maintained over time.

Implementation Guidelines

The goals listed below represent specific tasks envisioned as necessary to implement the plan. These are recommendations made by the plan's designers, however, it is understood that once the community board is formed and the process begins, changes to the implementation process may be necessary and desirable. The community board that includes industry is welcome to add or revise steps in the implementation process in order to meet unanticipated needs and situations.

The RSNC-CDP, including the implementation steps outlined here, is a living document, and its evolution will reflect the ongoing community/industry partnership that has been established. Finally, the CDP will remain a project under the Grand Valley Citizens' Alliance for the first year, and GVCA's continued participation will be included in the year-end review process.

Below, key activities are described in some detail, including timeline goals, for the first year. Following this description of activities is a general calendar of activities that is meant to serve as a framework for the board. It is recommended that this calendar be reviewed at each community board meeting to revise and expand activities and deadlines as the implementation process proceeds.

Goal One: Establish a volunteer community board that will be comprised of at least five area residents, a GVCA member and at least one representative from each of the gas drilling companies that have agreed to participate in the Plan. In January 2006, the working group that created the plan will hold a community meeting to "roll out the plan" and solicit volunteers for the board. Leaders will have already approached active community members prior to the meeting to suggest their participation. (By 1/31/06)

Goal Two: Print and mail the plan to all addresses in the RSNC-CDP defined area. Grant funding will be used to have the plan reproduced and pay for mailing costs to be sure all community members are aware of its information and have the opportunity to participate. Utilize GVCA's bulk mail permit. (By 1/31/06)

Goal Three: The community board will establish a monthly meeting schedule, a complaint/feedback process, a decision making process and purchase a laptop computer to be used by the board for its business, including keeping the plan updated with changes as they occur. Grant funding through GVCA and community donations will be utilized for part or all of these expenses. (By 2/28/06)

Goal Four: Working with GVCA, the community board will establish the schedule for educational classes and begin identifying instructors and securing class locations. GVCA has already offered classes on leasing, surface use agreements, understanding drilling operations and citizen inspection. Offering these classes in conjunction with GVCA and known instructors can happen easily. The community board will establish industry participation in educational activities and approach Colorado Mountain College to determine their interest in supporting ongoing educational classes. (By 2/28/06)

Goal Five: Advertise for and hire a half-time staff person who will work with the community board to implement the plan. Explore the possibility of contracting a staff person from Western Colorado Congress for this work. This goal is dependent on receipt of grant funding to pay for the position. (By 3/31/06.)

Goal Six: Working with the GVCA, the community board will send out a quarterly newsletter in 2006 to area residents to keep them apprised of progress, activities and meetings. (By 4/30/06)

Goal Seven: The community board will establish a periodic review process for the plan and solicit community and industry participation to evaluate its effectiveness, address concerns, and amend the plan as needed. The meetings will be advertised via e-mail, newsprint, and mailed announcements. (By 12/31/06)

PROPOSED 2006 CALENDAR

January 2006

- Have plan printed
- Distribute plan to all residents of the RSNC-CDP area
- Distribute plan to municipalities and Garfield County
- Establish a community board that will implement and oversee the plan, to include industry, residents and GVCA
- Establish a monthly meeting schedule for the community board
- Establish a decision making and complaint and feedback process

February 2006

- Community board meets
- Begin work on newsletter – focus on how the community feedback process will work
- Antero and other industry participants to present annual drilling plan to the community
- Begin work on community education classes – location, instructors, content
- Determine Colorado Mountain College's and industry's interest in participating
- Begin advertising class schedule
- Community board to work with Garfield County on road, speed limit, and signage issues
- Purchase laptop
- Begin advertising or negotiating w/WCC for a half-time staff person (grant funding dependent)

March 2006

- Community board meets
- Hold first educational class (mineral leases and surface owner agreements)
- Conclude staff hiring or contracting activities

April 2006

- Community board meets
- Review first quarter progress and issues
- Plan updated to incorporate any need changes or additions
- Distribute first quarterly newsletter
- Hold second educational class (Understanding the drilling process)

May 2006

- Community board meets
- Third class offered (What's on a well pad?)

June 2006

- Community board meets
- Hold community meeting to gather input on second quarter plan progress
- Plan updated to incorporate any needed changes

July 2006

- Community board meets
- Review second quarter progress and issues
- Distribute second quarter newsletter

August 2006

- Community board meets

September 2006

- Community board meets
- Begin second class series: (Leasing and SUAs)

October 2006

- Community board meets
- Review third quarter progress and issues
- Distribute third quarter newsletter
- Continue class series: (Understanding the drilling process)

November 2006

- Community board meets
- Continue class series: (What's on a well pad?)
- Begin planning CDP annual evaluation process

December 2006

- Community board meets
- Continue CDP evaluation process planning

January 2007

- Hold daylong community meeting to review all components of the plan and include the board, industry, community members, municipalities and the county.
- Incorporate feedback from community meeting into plan
- Solicit new/additional participants for the community board
- Establish 2007 CDP work plan, including meetings, oversight, review, education, and emerging community and industry issues
- Distribute fourth quarter newsletter
- Evaluate the need for GVCA's continued participation

Plan Enforcement, Complaints and Dispute Resolution

As stated earlier in this document, the RSNC-CDP is not a legally binding document. It is an agreement that has been reached between industry and the community intended to serve as a best practices guide to responsible natural gas development that meets the needs of landowners, mineral owners and the companies that are extracting the natural gas.

In order for the plan to succeed, community members must take an active role in holding industry accountable to the content of the plan. Educational opportunities for the community are included as part of the plan in order for the community to have the information they need to participate.

The community board will establish a system through which complaints may be made and a process by which complaints may be resolved. Because industry has participated in the plan's design and voluntarily agreed to participate in its implementation, it is hoped that few complaints are received. (It is worth noting that EnCana Oil and Gas, USA has recently implemented a complaint tracking system that could be replicated in whole or part in the RSNC-CDP area.)

Residents of the RSNC-CDP area who have questions about whether their issue is a violation of Colorado Oil and Gas Conservation Commission (COGCC) rules should contact Garfield County's Oil and Gas Liaison at (970) 625-5691 or COGCC Garfield County office at (970) 285-9000. All emergency situations should be reported to 911 immediately.

Residents of the RSNC-CDP area also have the option to contact industry directly to resolve their complaint rather than using the process that will be outlined by the community board

COMMUNITY EDUCATION

Many of the difficulties that arise between industry and landowners can be attributed to a lack of knowledge on the part of community members about gas development operations. Often, when natural gas drilling moves into a community, the people living there have little knowledge about their rights, how the industry operates, the state rules and regulations that govern the industry, or the complex issues that arise from Colorado split estate laws. For many landowners, it is like being asked to play a complex board game without knowing the rules.

Therefore, a centerpiece of the RSNC-CDP is community education. An informed community will be the key to reducing industry/landowner conflicts, and an educated community has the ability to approach the challenges of managing industrial development in rural residential areas with more creativity.

This plan calls for the RSNC community board to establish a series of community education classes that will be offered twice per year. Initially, those classes will address surface and mineral leasing, negotiating a surface use agreement, understanding drilling operations, and understanding the community development plan, all of which were educational needs expressed by community members. (Please see implementation section for additional detail.) It is understood that over time, educational needs will change and evolve, and it will be the RSNC community board's responsibility to respond to those needs.

The RSNC community board may network with other entities in the community to develop and offer educational seminars, including the Grand Valley Citizens' Alliance, industry, Colorado Mountain College and local experts whose knowledge can meet an expressed need.

This section addresses some frequently asked questions that arise for land and mineral owners at various stages of the natural gas development process. It also lists additional educational resources that land and/or mineral owners may want to pursue to increase their understanding and activate their rights throughout the process.

The following section, as well as the entire CDP, is not to be construed as legal advice. Anyone having a matter that requires expert assistance should seek legal council.

Frequently Asked Questions

What should I do if there is a possibility of gas development in my area?

The state of Colorado has what are called "split estate" laws, where different parties can own the surface of the land and the minerals beneath the surface. Additionally, several parties may own the mineral rights. If the surface property owner does not own all of the mineral rights, a "split estate" exists.

In the case of a split estate, the rights of the mineral owner are dominant, and a mineral owner(s) can lease their mineral rights to a gas development company without the permission or knowledge of the surface owner. It is therefore important for landowners to determine whether they own all or a part of their mineral rights if the possibility of gas development exists.

To determine ownership of a property's minerals, the legal description of the property is needed, which can be found on the Deed of Trust or at the County Clerk's office. This information, along with a copy of the landowner's insurance title may be taken to the County Assessor's office, where staff can assist in a search of property records for information on mineral ownership.

An easier and perhaps more accurate approach could be to hire a title company, since a search through the records for someone inexperienced may be difficult or confusing.

How do I begin to educate myself about gas drilling issues and split estate laws?

The Western Colorado Congress publication, "Your Land, Your Rights" is a good starting point to begin understanding split estate issues. It covers surface and mineral leasing in western Colorado and has good information and suggestions for negotiation that are useful to anyone living in communities where gas drilling is taking place. To receive a copy, call the Western Colorado Office at (970) 256-7650.

What do I do when a gas company would like to lease my minerals?

When a gas company wants to lease the minerals you own, it is important to know your rights. The following are suggestions you may want to follow if you are approached to lease your mineral rights.

- Never sign the lease given to you by industry without a thorough review and understanding of its contents;
- Consider hiring legal council or other professional to assure your rights are protected;
- Talk to others in the community who have leased their minerals to help determine what to include in your lease;
- If you also own the surface of the property, consider negotiating a surface use agreement at the same time as the mineral lease to protect your property rights;
- Ask for everything that is stated by the company during negotiations to be included in the legally binding mineral lease agreement and be sure to carefully read the final document before signing;
- Consider working with the surface owner to protect their rights through the mineral lease.

I received a check in the mail to lease my minerals, and I haven't signed a lease.

Leases that are received in the mail from gas development companies are typically to the benefit of the gas development company and not the landowner. If you cash the check, it may be considered an implied contract, and you could lose your ability to negotiate the terms of the lease.

The leasing agent says I need to sign the mineral lease very soon, but I don't have all the information I need?

The company may tell you they are in a hurry to begin drilling and push you to sign the lease as quickly as possible. Beware of these unreasonable deadlines. Mineral owners may take as much time as they feel necessary to negotiate a mineral lease. Ask lots of questions, and read everything twice.

What do I do if a gas company wants to drill on my land and asks me to sign a surface use agreement?

In Colorado, the rights of the mineral owner(s) are dominant to that of the surface owner. Industry is required by law to provide the surface owner with a "notice of intention to drill," but surface owner permission is **not** required for entry onto your property. The notice must be provided 30 days before the "exploration period" begins. The exploration period then lasts for 60 days, during which time industry may access your property for surveys, road and well pad sighting and other, non-invasive activities, but they are not allowed to use mechanized equipment, construct roads, drill pads, or use hazardous materials.

This can be an intimidating time for a landowner. If you find yourself in this situation, you may call

the Garfield County Oil & Gas Liaison for assistance at (970) 625-5691. You may also want to contact an attorney to help you negotiate a surface use agreement.

It is wise to negotiate a surface use agreement in order to protect your property. If you choose to do so, the following course of action is recommended:

- Don't sign the boilerplate surface use agreement provided by industry;
- Consider hiring legal council or a knowledgeable professional to assure your rights are protected;
- Document the condition of your property including vegetation health, road condition, fencing, and water quality and quantity (refer to the resources section later in this chapter.);
- Talk to other community members who have negotiated surface use agreements;
- Determine possible impacts and items that are important to your needs to assure that they are incorporated in to the surface use agreement;
- Take the time to completely understand the implications of your surface agreement before signing;
- Be sure everything you have negotiated is put into the agreement in writing;
- Don't let industry intimidate you;
- Do not be afraid to negotiate and to ask questions.

How do I protect my rights once the gas development has started on my property?

In order for landowners to protect their rights, they should be well informed about what is acceptable gas development practice and allowed under Colorado's laws, rules and regulations. Additionally, become familiar with the responsible development best practices to which industry has agreed in the RSNC-CDP area. Community members are encouraged to study this document and take an active role in holding industry accountable for "doing it right." Landowners may also take advantage of educational seminars offered through the RSNC-CDP and other community groups. Finally, the resources list below provides links to printed information, Web sites and individuals who can answer specific questions.

RESOURCES LIST:

Printed Materials

1. *Your Land, Your Rights* - Western Colorado Congress (970) 249-1978 or (970) 256-7650
2. *Oil and Gas At Your Door – A Landowner's Guide to Oil and Gas Development* - Oil and Gas Accountability Project (970) 259-3353
3. *Our Drinking Water At Risk* - Oil and Gas Accountability Project (970) 259-3353
4. *What Every Westerner Should Know About Energy* – Center for the American West/University of Colorado at Boulder (303) 492-1671
5. *Filling the Gaps: How to Improve Oil and Gas Reclamation and Reduce Taxpayer Liability* – Western Organization of Resource Councils available on the Web: www.worc.org
6. *Law and Order in the Oil and Gas Fields: A Review of Inspection and Enforcement Programs in Five Western States* – Western Organization of Resource Councils Web site: www.worc.org
7. *Coal Bed Methane Best Management Practices Handbook* – Western Governor's Association (303) 623-9378
8. *Methane Madness: A Natural Gas Primer* – The Community Office of Resource Efficiency (970) 544-9808
9. *Oil and Gas Well Notification, Consultation, and Reclamation Rules: Information for Oil and Gas Operators, Surface Owners and Surface Tenants* – State of Colorado Oil and Gas Conservation Commission (970) 285-9000 or (303) 894-2100
10. *Typical Questions From The Public About Oil and Gas Development in Colorado* - State of Colorado Oil and Gas Conservation Commission (970) 285-9000 or (303) 894-2100

Web Sites

1. Oil and Gas Accountability Project: www.ogap.org
2. Western Organization of Resource Councils: www.worc.org
3. Western Colorado Congress: www.wccongress.org
4. Western Slope Energy Solutions: www.wescolo.com
5. Garfield County: www.Garfield-county.com
6. Community Office of Resource Efficiency: www.core.org
7. Colorado Oil and Gas Conservation Commission: www.oil-gas.state.co.us
8. Western Governor's Association: www.westgov.org
9. Center for the American West, Colorado University at Boulder: www.centerwest.org

Organizations and Individuals

1. The Grand Valley Citizens' Alliance: (970) 984-3107
2. Antero Resources: (970) 625-9953
3. Garfield County Oil and Gas Liaison: (970) 625-5691 or (970) 309-5441
4. Jamie Adkins – Colorado Oil and Gas Conservation Commission Garfield County Office
(970) 285-9000 or (970) 250-2440
5. Western Colorado Congress Grand Junction Office: (970) 256-7650
6. The Oil and Gas Accountability Project: (970) 259-3353
7. Western Organization of Resource Councils: ((406) 256-9672
8. Garfield County Energy Advisory Board (via Doug Dennison): 970) 625-5691
9. Bureau of Land Management Glenwood Springs Field Office: (970) 947-2800
10. Colorado Division of Water Resources: (970) 945-5665
11. Colorado Region VIII Environmental Protection Agency: (800) 227-8917
12. Colorado Oil & Gas Conservation Commission complaints: (800) 235-1101

END NOTES

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2. Editors, *Colorado Division of Natural Resources Management Proposal for the Roan Plateau*, Department of Natural Resources (Denver, 2003).
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4. Steve Andrews and Randy Udall, *Methane Madness: A Natural Gas Primer*, Community Office of Resource Efficiency, (Carbondale/Denver 2002).
5. Ibid.
6. Ibid.
7. Ibid.
8. Western Governors' Association, *Coal Bed Methane Best Management Practices – A Handbook*, (Denver, April 2004); available from www.westgov.org; accessed July 2005.
9. Ibid.
10. The Oil & Gas Accountability Project, *Oil and Gas at your Door? A Landowner's Guide to Oil and Gas Development*, (Durango, 2004).
11. Colorado Oil and Gas Conservation Commission Web site: www.oil-gas.state.co.us; accessed July 2005.
12. Mary Ellen Denomy, Certified Minerals Manager, Certified Public Accountant, Accredited Petroleum Accountant, Garfield County Oil and Gas Consultant, *Fact Sheet on Colorado Natural Gas Production and Sales*, (Garfield County, February 2005).
13. Ibid.
14. John Campbell, *Conference Follow-up*, Rocky Mountain Oil Journal, Vol.85, No. 36, (Douglas-Converse County WY, Sept. 2, 2005).
15. Terry Dobkins, Vice President – Production, Antero Resources Corporation
16. Bob Elderkin and Keith Goddard, *Management Guidelines for Oil and Gas Development*, The Colorado Mule Deer Association, (January 2005).
17. Antero Resources Corporation

APPENDIX

Green Fracturing Language

Antero Resources Corporation is taking steps to assure that chemicals used in the fracturing process will be biodegradable, non-toxic neutral pH, residual free, non-corrosive, non-polluting and non-hazardous in the forms and concentrations being used. The company also reviews the material safety data sheet (MSDS) to assure the chemicals are not known carcinogens in the methods or concentrations being used. We are careful in making statements about a substance being non-carcinogenic simply because many substances can be carcinogenic if inhaled or ingested in an undiluted form but are not carcinogenic in the method being used in the fracturing process.

Antero Resources has reviewed all of the MSDS for the chemicals to be used in the cementing and fracturing process. These are available to the RSNC community upon request. The company is going to extra lengths to use chemicals that are considered to be “green”, meaning they are biodegradable, non-toxic, non-polluting, non hazardous and non-carcinogenic in the form and concentrations being used on the sites. When reviewing the MSDS information, please keep in mind that virtually any substance in the wrong concentration or wrong application can be harmful. For instance, too much water ingested or breathed can be fatal. Chlorine and Fluorine are used in our water supplies daily but are toxic if consumed in the wrong concentrations. This is true of the chemicals used in the fracturing process.