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The Methane Range

Coalbed Methane Development, Sage-Grouse protection, and the
Ranching Way of Life

By

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B. S. The University of Colorado, 2005

Presented in partial fulfillment of the requirements for the degree of

Master of Science Natural Resource Conservation

The University of Montana

Autumn 2008

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Hayes, Jonathan G., M.S. December 2008 Resource Conservation

The Methane Range: Coalbed Methane Development, Sage Grouse Protection, and the Ranching Way of Life.

Chairperson: James Burchfield

Coalbed methane development has proliferated across much of the western United States. Campbell County, Wyoming, in the Powder River Basin is one area that has seen some of the highest amounts of this development, most of it occurring on land where the surface use is livestock grazing, resulting in conflicts over resource use. This thesis takes a grounded theory approach to understanding the meaning that the ranchers that operate on this land have attached to this development. In doing so, this paper argues that these ranchers form opinions and attitudes based on how CBM has affected “the ranching way of life” and not simply on the perceived opportunity for economic gain. It also argues that although objections raised by this population to the listing the Greater Sage-Grouse as an endangered species are largely framed as objections to the way in which scientific conclusions are drawn, this may be more representative of embedded cultural viewpoints thereby making efforts to resolve this conflict through further scientific research, futile. This paper concludes that a more collaborative approach to issues surrounding CBM may have helped to avoid much of the conflict that characterizes this issue.

ACKNOWLEDGEMENTS

This research would not have been possible without the help and cooperation of a number of people. The ranchers of Campbell County were exceedingly gracious and willing participants. Michelle Cook at the Campbell County Conservation District and BJ Kristiansen at the CBM Coordination Coalition played key roles in helping me to find my sample population.

All the professors I have taken classes from and all the students I have taken classes with have helped me learn so much. Of these I am especially grateful to Kassi Miller who was my partner in crime through most of my course work and is not nearly as bad as everyone says. Also, my advisor Jim Burchfield who agreed to take me on and guide me, as a grad. student despite his extensive administrative and teaching responsibilities. Mike Patterson, our esteemed chair, also provided much needed assistance as I dove head first into the quagmire that is qualitative analysis. Dan Spencer whose thoughtful and productive advice was a great value to me.

Most importantly I must thank my family. My father Michael Hayes who has remained proud of me even in my weakest moments. My Mother who was my first and best teacher and who has instilled in me a great curiosity and an ability to empathize that has truly shaped how I view society. The best parts of my character are a testament to their ability as parents. Lastly I thank my wife, Calle. She is the love of my life, my inspiration, my support. She braved the winters of Montana and worked her fingers to the bone waiting tables to support us. She allowed me the time I needed to do this work and always made sure that I was doing alright. This degree will be ours to share, she is indeed my partner in every endeavor.

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INTRODUCTION

Ever since President Bush told us that we as a nation are “addicted to foreign oil” the discourse surrounding the subject of domestic energy production has taken on an increasingly familiar tone. It seems that everyday there is a new headline in a western newspaper outlining a struggle between environmentalists and energy companies. The public is told about oil shale projects in Colorado and oil sand projects in Utah, coal mining in Montana and oil off the shores of California. The story is the same in most of these places. New projects to harvest energy reserves are introduced by energy companies and are accompanied by the extolling of the economic virtues of such projects and the economic benefits to specific areas and to the nation. At the same time appeals are made on behalf of our planet to insure that the ecological impacts of our actions do not create environmental peril. The arguments for and against either side are informed, passionate and often touch at some of the most contentious struggles that we as a nation face.

Often though, this discourse does not provide an adequate picture of the benefits and consequences of increased domestic energy production. The nation is captivated by talk of Exxon’s record breaking profits or the latest oil spill, but what about the simple story of the rancher with the oil derrick in his hay field or the farmer whose land is going to be used for the next wind farm. The social impacts of this sort of development go much deeper than increased tax revenue and national security. They touch on the way of life and the shared histories that make up the values and identities of many small towns across the country.

One such story is that of Campbell County, Wyoming and its largest city Gillette, otherwise known as the “energy capital of the nation”. In Gillette coal is king; in fact Campbell County is responsible for 36% of all the coal that is used for electrical generation in the entire nation. Campbell County boasts the top ten producing coalmines in the United States, which combined produced 429.3 million tons of coal in 2006 alone (Campbell County Land Use Plan). Gillette is surrounded on each side by coalmines that each send out a number of long black trainloads of coal every day. Although the first coal was taken from the ground in Campbell County around 1909, coal production did not begin to approach its current state until the 1970’s. Today, while coal still reigns supreme, a newer, lesser-known cousin of coal gets most of the attention. That new kid on the block is coalbed methane [CBM] and it has been a lightning rod for controversy since it burst on the scene in the early 90’s.

CBM, as its name implies, is a natural gas that occurs in underground coal seams that stretch out under much of Campbell County’s rangeland. Compared to its other fossil fuel relatives, CBM burns with lower greenhouse gas emissions and is touted by some as a “green” source of energy. CBM also brings with it enormous economic incentive to both the mineral owners in the area and the state of Wyoming. Along with these benefits, however, comes a heavy downside. The initial drilling and the extensive infrastructure needed to maintain production have serious impacts on land, the wildlife, and the people that make a living off the area’s natural resources. Although these people reside in the outskirts of the “energy capital of the nation” their history is not one of coalmines and methane. They are the descendants of our

nation's homesteaders and the heirs to the myths of cowboys and cattlemen. They are the ranchers of Campbell County, and it is their story in their own words that this research will explore.

The purpose of this research is to understand, through the words of this population, the meaning that has been attached to CBM development and how that impacts and is impacted by the values, opinions and attitudes with which they identify. The testimony of these individuals will offer a point of view of CBM development that is not yet sufficiently understood.

Residents of Campbell County are impacted by both the costs and benefits of CBM production. They help to elect their state officials, they negotiate with the energy industry, and their lives are affected by the policies of government on all levels. Furthermore they are the managers of vast stretches of private lands that have often been in their families for over 100 years and an understanding of their views and values could be invaluable to gaining a greater understanding of how the people of Wyoming relate to the natural resources upon which they depend and upon which so much value is placed.

BACKGROUND

Coalbed Methane in Campbell County

The history and characteristics of Campbell County are common to many places throughout the western United States. Before European settlement, the area was frequented by a number of indigenous ethnic groups including Lakota, Crow, Mandan, Hidatsa, Arikara, Cheyenne, Arapaho, Shoshone, and other tribes. The trappers, traders and U.S. military that began coming to the area in the early nineteenth century extirpated the majority of these populations as did subsequent rural settlement that resulted from government policies such as the Homestead Act of 1862 and the Desert Land Act of 1877. In Campbell County in particular, most settlement of the area by homesteaders occurred around the turn of the century. Beginning in the latter half of the nineteenth century and up until present day, the dominant land use in Campbell County has been agriculture, primarily in the form of livestock ranching. Indeed, this area of the country has a rich history of cattle and cowboys. Since the first herds were driven up from Texas, the stories that are woven into the historical fabric of this area read like a Zane Grey novel. Of particular notoriety are the accounts of the Johnson County War that took place in neighboring Johnson County in April of 1892 in which conflicts between independent small ranchers and wealthy cattle barons culminated in a series of standoffs and bloody shootouts (Smith, 1966).

While the mystique of the cowboy and the “wild west” may still be palpable in Campbell County, believing that the ranchers and the cattle industry drive the

economy of this area would be a mistake. In the past thirty years development of energy resources (primarily coal) have been the primary source of income and employment in Campbell County. As of 2006 coal production accounted for 46% of the assessed valuation in Campbell County (Campbell County Land Use Plan). The average annual income of someone employed in agriculture is only \$13,976 compared to the \$52,702 of someone employed in the mining industry (BLM, 2003). From 1995-2005 the per capita personal income of Campbell County increased by 5.8 percent compared to the national average of 4.1 percent (BEA, 2007). This rate of increase is largely due to the income generated by energy development. The increase in energy development has also caused a substantial increase in population. From 1990-2000 Campbell County's population increased by 14.7% and from 2000 to 2006 increased another 15% due largely to the implementation of the Powder River Basin CBM project (Campbell County Land Use Plan). The main city of Campbell County and the Powder River Basin, Gillette, has seen massive development as a result of this boom. In addition to the obligatory Wal Mart and Home Depot that have popped up on the southwest side of town there is substantial residential development, a new fire station, and a new fairground complex to satisfy the needs of a growing population. Gillette is no longer the quiet old cow town of the homestead days and in some people's opinions it is struggling to deal with the changes. Gillette has even been described as a "planning disaster boom-town" due to their failure to find sustainable methods of dealing with such a dynamic population (Starrs, 1998).

CBM development is the most recent incarnation of the energy boom that has characterized much of northwest Wyoming over the past quarter century and in the

Powder River Basin of northeast Wyoming it is occurring at a breakneck speed. The Bureau of Land Management [BLM] approved a plan in 2003 that allows for the drilling of 51,000 wells by the year 2013. These 51,000 wells will affect as many as 212,000 acres of both private and public land, while tapping into the estimated 25 trillion cubic feet [tcf] of CBM that is believed to exist in the coal beds of Wyoming. The United States consumes approximately 22 tcf of methane/year. CBM is a natural gas that exists in underground coal seams. CBM development includes the building of roads, compressor stations, wells and power lines. CBM also includes the pumping of large amounts of ground water out of underground aquifers and onto the surface, making it possible to harvest the gas that the water had trapped in the porous coalbeds. According to the Wyoming Outdoor Council [WOC], in 2001 the 4,200 active CBM wells that existed in Wyoming were pumping an estimated 100 million gallons of water per day from these underground deposits. Once the water is pumped out the methane is easily removed. CBM is a relatively new source of energy; in fact until the 1980's it was actually viewed as a hazard to coal mining operations (WOC, n.d.), however CBM is now viewed by the oil and gas industry as an easily retrievable and immensely profitable resource. When 51,000 wells are active in the Powder River Basin the environmental impact of this development will be substantial and seemingly unavoidable.

CBM development is an issue that has garnered a substantial amount of attention in the popular media (see: Pasternack 2001, Shodolski 2001, Fish 2001, Lavelle 2001, Janofsky 2000 and Tomsho 1999) as well as in the research community. Substantial data were collected on the environmental impacts of the

PRB decision in the environmental impact statement [EIS] produced by the BLM (2003). The National Environmental Policy Act [NEPA] requires that the government conduct an EIS whenever there is a possibility of environmental impact from government actions and since much of the CBM that is developed is owned by the BLM or underneath BLM land and would therefore entail the leasing of minerals by the government, the environmental impacts of the CBM development proposed in the PRB had to be given a “hard look.” In the EIS the BLM acknowledges the multitude of adverse impacts this project could have on the environment including: drawdown of aquifers, increased erosion of soils, long-term loss of vegetation on 102,658 acres, reduction of the nutritional status and reproductive success of numerous big game species, decline in populations of both raptors and upland game birds, and reduction of suitable habitat for the black-tailed prairie dog.

One particularly contentious issue of concern in Campbell County is the management of Greater Sage-Grouse populations in the area. Greater Sage-Grouse (*Centrocercus urophasianus*; hereafter “Sage-Grouse”) is a gallinaceous species native only to western semiarid sagebrush habitats (Schroeder et al. 1999). Sage-Grouse are a sagebrush obligate, meaning that it is necessary that there be intact sagebrush habitats for them to survive. Over the past half century much of the sagebrush land in the west has been degraded through overgrazing, burning of sagebrush, expanding cities, and more recently energy development. In response to range wide declines in Sage-Grouse populations a number of western environmental groups petitioned for the listing of the Sage-Grouse as an endangered species under the Endangered Species Act, in the early 2000’s. The U.S. Fish and Wildlife Service

upon reviewing the scientific evidence that was presented, decided that the listing of the Sage-Grouse was “not warranted” at that time (U.S. Fish and Wildlife Service, 2005). However a 2008 decision by B. Lynn Winmill, the Chief U.S. District Judge in Idaho, remanded the 2005 decision back to the USFWS for further consideration. Research conducted since the initial effort to get the Sage-Grouse listed under the ESA has concluded that CBM development is likely to have substantial adverse impacts for these populations as well (Walker, Naugle, & Doherty 2007, Holloran 2005). Furthermore, the areas being developed for CBM have some of the highest densities of Sage-Grouse in western North America. Therefore should the Sage-Grouse be listed as an endangered species, there will be a significant impact on both the energy industry and the ranching industry as government regulations are enacted to preserve the specie’s habitat.

At the time this study was conducted, there was yet to be a decision made by the USFWS concerning the status of the Sage-Grouse. However, in order to prevent listing, the Governor of Wyoming, Dave Freudenthal, issued an executive order in August 2008 that established core areas in Wyoming that were considered crucial to conserve the species. In these core areas, development is only allowed if it can be shown that it will not cause declines in sage grouse population. State wide and local sage grouse task forces have also been assembled that are designed to aid in the management of sage grouse populations. Despite these efforts the issue of sage grouse listing still looms large in Campbell County and is the cause of much debate over the need for such listing as well as the affects of such listing should it occur.

There is little doubt however, that both the ranching and CBM industries will be greatly impacted by such a decision.

Although energy development in this area is the primary economic force, ranching remains the dominant surface land use. CBM development can have a substantial effect on the traditional agricultural practices of these ranchers. In an area where water is a scarce resource, landowners now have to deal with the problem of having too much water. The groundwater that is pumped out of the subsurface coal beds is sometimes adequate for irrigation purposes but often its high salinity precludes such use. Therefore, this water either has to be treated so it can be put to agricultural use or it must be diverted or disposed of. In the PRB EIS the BLM required that for all CBM wells installed the operator must include a Water Management Plan (BLM, 2003). The WMP submitted by the operator must comply with the laws, standards, and criteria set forth by all the state and federal agencies involved. These WMP's detail a variety of characteristics of the discharge of the CBM byproduct water. Such characteristics include the location of discharge points, reservoirs, and disposal areas; the quality of the water and the levels of certain constituents in this discharge water; and characteristics of the land onto which it is discharged (slope, potential for erosion, headcuts, etc.). Analysis of water quality can be done on samples taken within six miles of the proposed well as long as it is done on water from the same coal seam or layer. The BLM also requires that a landowner be compensated for any effect that the dewatering of aquifers had on any existing wells.

When the water is disposed of, many ranchers are forced to dig new ditches and drainages to deal with the excess unusable water. Sometimes these diversions divide and fragment pastures that have been grazed for generations. Other ranchers have seen hayfields completely submerged by this water byproduct. Pumping water out of underground aquifers can also deplete the water available in existing wells used by ranchers for both domestic and agricultural uses. The problems associated with water are not the only impacts felt by these ranchers however. Infrastructure such as roads and power lines can also cause problems by impacting wildlife populations often hunted by these landowners and even affecting viewscapes that may have remained unchanged for over a hundred years. The interaction between ranchers and CBM developers is further complicated by the patterns of ownership of the mineral resources in the area.

The timing of the first major settlement of Campbell County resulted in the area having some interesting features, in terms of the mineral estate, that still impact the way energy is developed today. The homesteads that were established before 1916 were established under the jurisdiction of early homestead laws that granted even the subsurface mineral rights to the homesteader. In 1916 Congress passed the Stock-Raising Homestead Act, which allowed for the granting of 640-acre parcels to homesteaders but retained the subsurface mineral rights under federal ownership. This change in the law of the land occurred right around the time that establishment of homesteads was progressing westward across Campbell County resulting in much of the subsurface minerals east of the City of Gillette being privately owned while the

minerals west of the city of Gillette were largely owned by the federal government in an arrangement known as split estate.

To have an adequate understanding of what a split estate is, it is important that ownership of a property be understood as a bundle of rights. Ownership of property is not simply ownership of the surface. Included in that ownership can be a number of things including water rights, mineral rights, access to resources or even more abstract things like economic opportunity. When someone owns the entire bundle of rights on their particular estate they are referred to as a fee simple owner. Often though, an estate does not include this entire bundle. In many cases owners will sell certain parts of the estate or a previous owner will have retained some parts. The owner can legally sell or lease practically any part of the estate. In situations where the surface owner does not own the mineral estate the term that is used to describe it is split estate. In Campbell County and in most of Wyoming the majority of the split estate land is a result of the government retention of mineral rights in the Stock-Raising Homestead Act of 1916 (Micheli, 2006). In some cases however, split estates in Campbell County resulted from state retention of mineral rights under land that had previously been owned by the state or retention of mineral rights by previous private owners. Split estates may also exist when the federal government owns the surface and the mineral rights are owned by a private interest. However, the vast majority of split estates in Campbell County are situations where federal minerals underlie private surface.

In situations where the mineral estate has been severed from the surface, the mineral estate is considered the dominant estate. The reasoning behind this is that

“the severance of the mineral estate from the surface estate is thought to promote the public’s interest in the development of mineral wealth” (Mergen, p.1, 1998) and by granting dominance this public interest is most easily realized. Private developers are granted access to federally owned minerals under private surface through a leasing process. The Stock-Raising Homestead Act of 1916 requires that the mineral developer compensate the surface owner for crops and improvements (man made structures added to property after homestead was established) that are damaged by mineral development. Congress in 1993 amended the Stock-Raising Homestead act to require a surface use plan and the posting of a bond that would cover damages that were also amended to include all surface resources. Furthermore, common law has established that the mineral owner can only use as much of the surface that is reasonably necessary, the mineral owner is liable for excessive or negligent surface use, and the mineral owner may be held responsible for the creation of nuisance per local statutes (Mergen, 1998). Wyoming has also passed a number of statutes that require, among other things, that the surface owner be notified no less than 5 days before nonsurface disturbing activities are commenced by mineral developer, that good faith negotiations be conducted and a surface use agreement be completed, or that a surety bond be executed by the mineral developer should no surface use agreement be reached. Prior to entering onto the land to develop the minerals the developer must also provide the ranchers with at least 30 days and at most 180 days notice of their plan for development. They must also provide notification of any changes to these plans. (W.S. 1977 § 30-5-402)

Since much of the CBM development is occurring under these split estate conditions it is necessary for negotiations to take place between CBM developers and the surface owners. What makes this situation difficult for ranchers is the dominance of the mineral estate already mentioned. Even if a surface use agreement is not reached through negotiations, all the CBM developer need to do is post a surety bond and present their plans to the Wyoming Oil and Gas Commission for approval. The surface owner can demand that they receive their damages and that the developer abides by the surface use plan, but other than that they cannot stop the developer from harvesting the resources that the government has given them the right to harvest. In cases where the rancher owns the rights to the minerals being developed they have the right to refuse access to the CBM companies. Infrastructure that accompanies development, such as pipelines and power lines, has also been built on the land. In these cases the surface owner is again largely powerless because of the ability of the state to enact eminent domain proceedings should a landowner object to these projects that are viewed as for the benefit of the greater public of the State of Wyoming.

It is under these conditions that the CBM boom is occurring in Campbell County. Members of the ranching community have seen the economy change from livestock to energy in their lifetimes. The resources are getting developed out from underneath them and their operations are being significantly affected by it. In some cases they are greatly compensated for the minerals and damages while in other cases they are not. The city and county have been inundated with new people and are struggling to keep up. Add to this the debate over “rangeland reform” that took place

in the 90's where restrictions were considered on grazing allotments on BLM surface resources, and the progress made by the environmental movement in terms of wildlife and land management, and what begins to emerge is a narrative of changing land use within the ranching community. For many these changes are welcome and necessary while for others they are scary and undesirable.

Grounded Theory

A grounded theory (Corbin and Strauss, 2008) approach will be taken to understand the meaning attached to CBM by this population of ranchers. The reasoning behind the choice of grounded theory, instead of other more conventional social science methods, is based in assumptions about the reality of social systems. In choosing grounded theory this study acknowledges that epistemic foundations of research must be considered in light of their assumptions about ontology. Therefore the choice of grounded theory is deemed necessary because it is consistent with the assumptions accepted here about the nature of the reality in which social systems exist. In particular the topic being explored in this study is a complex one within which are embedded multiple value systems, cultural singularities, economic variability, and a multitude of complex attitudes and opinions.

Corbin and Strauss (2008) describe “a world that is complex, often ambiguous, evincing changes as well as periods of permanence; where action itself though routine today may be problematic tomorrow; where answers become questionable and questions ultimately produce answers” (p. 6). Therefore societal “realities” can only be understood as symbolic representations of reality at best and to

these symbols we attach meaning that is the basis for our understanding. Corbin and Strauss (2008) further explain meanings as “aspects of interaction, which are related to others within systems of meaning. Interactions generate new meanings as well as alter and maintain old ones” (p. 6). As interactions and actions take place “contingencies” arise and temporal progression brings changing context. With these changing contexts there is change in meaning and change in the way one identifies knowledge with themselves and thus attaches further meaning. Group identity and individual idiosyncrasies are constantly changing and being remade in a way that defies causality and orderly explanation. Thus we need a detailed and “thick” description of context and society.

The nature of the reality of society that is accepted here bars one from inductively forming generalized theory about society from observed conditions and it also bars one from using deduction to conclusively refute an already established theory. Therefore the research that lies herein was conducted with the belief that the only true statements that can be made from observed conditions are singular and not universal. The best this research project can hope to do is state that under these conditions, at this time, this sample was observed to behave in this way. The results of this study are not, however, merely a series of statements of observed facts. Theory is established from the conditions that are observed, but this theory is not generalized to a larger population and there is no argument for the probability that other populations will behave in the same way. Instead the theory that is derived from this study is grounded in the data (as is implied by the title of this methodology). When concerns about relevance are inevitably raised then it can only be stated that

generalizations or predictions of larger behavior derived from the findings of this study cannot be logically defended. It is the belief of the researcher that the value of this study still remains intact if for no other reason than it tells an intriguing and truthful story of a certain time and place in the social fabric of history, therefore increasing our knowledge of the known world.

With the context remaining the same as the data is analyzed and reanalyzed there is but one component of this research project that retains a high probability of variation. That component is the researcher himself. In most fields in which scientific research is conducted experiments are designed in a way that maximizes objectivity. That is they remove the possibility that the biases and judgment of the person conducting the experiment will have an impact on the results that are produced. By doing this human interpretation is limited. In this study human interpretation of data plays an integral role. The reasoning and the justification for this are based in the logic and philosophical assumptions of hermeneutics.

Wachterhauser (1986) describes hermeneutics as representing “not so much a highly honed, well established theory of understanding or a long-standing, well-defined tradition of philosophy as it does a family of concerns and critical perspectives that is just beginning to emerge as a program of thought and research” (p. 5). Instead of avoiding interpretation based on subjectivity or prejudice, or even accepting it as a necessary evil, hermeneutics embraces it. Referred to as preunderstanding, it is seen as a way to achieve true expansion of human knowledge. Or as described by Wachterhauser (1986) “what is generated...are not ahistorical

truths, but an insight into the subject matter that is relative to both a certain way of speaking and a way of being concerned about the phenomenon” (p. 35).

Scholars of hermeneutics have come to the conclusion that there is actually no truly objective reality of human understanding that can be understood. Packer (1989) tells us that the classic way of looking for a factual base or concrete theory to base our understanding on has no place in hermeneutics: “practical understanding is not an origin for knowledge in the sense of a foundation; it is, instead, a starting place for interpretation. Interpretive inquiry begins not from an absolute origin of unquestionable data or totally consistent logic, but at a place delineated by our everyday participatory understanding of people and events.” True hermeneutic understanding occurs when “the interpretation has such a profound effect on the reader that the world is seen in an entirely new way. That is, the reader’s previous worldview is replaced by a new organizational scheme” (Thompson, 1990). The researcher need not avoid preunderstanding but must allow it to be altered by the experience of research and interpretation by being open to change and new ideas. Thus understanding should not be viewed as a competition but rather as a dialogue. As Wachterhauser (1986) describes it, “the way disputes are settled is never by applying a set of ahistorical criteria but by sustained dialogue about which perspectives in a dispute really reflect both the theoretical and practical responses to the questions inherited from a tradition and the best response to our needs of self-understanding and self-development at the present time” (p. 40). Hermeneutics therefore tells us that interpretation need not take place in a vacuum but rather in the

presence of a “dialogic community.” For this research every effort was made to do just that.

For those that may still be apprehensive about the role that interpretation will play in establishing grounded theory, this study will also strive to maintain a level of transparency allowing readers to form their own conclusions from the data and judge the theory derived in light of their own understanding. The format for the presentation of this research is rich with quotes from the informants. Grouping and comparing of informants is done in the light of day so that readers can judge for themselves the way the data was interpreted. Also when it is appropriate, the researcher’s own preunderstanding is acknowledged in the discussion of the data set. All this is done by the researcher so as to “lay down arms” and avoid combative or argumentative responses to this methodology and this study as a whole and to encourage that this work be evaluated and critiqued by a more dialogic community and not a combative one.

The researcher’s own interpretation of the data is inevitable in this study and is embraced because of what it contributes to the research. However, the involvement of the researcher in the process of collecting the data presents another variable that must be considered when reading this thesis. In the type of research presented here it is impossible for the researcher to put on his lab coat and use experimental design to eliminate the impact that the researcher’s presence may have on the data that is collected. The responses obtained by the informants, through the methods that are explained in the next section of this thesis, must be understood as the responses that a rancher would give to a perceived outsider who is a member of the academic

community from a University in another state. It is impossible to completely eliminate or even fully understand the impact that this may have on the data collected but should be at least acknowledged and considered when reading the findings that exist herein. The statements of the informants are taken at face value. They are evaluated and explained as the sentiments expressed by the sample, not as irrefutable truths about this sample of the ranching community. Therefore this thesis explores the beliefs and values of this population by analyzing the beliefs and values that the informants themselves identify through discourse with a University of Montana graduate student.

The use of a grounded theory approach informed by hermeneutic philosophy is enlisted in this research in an effort to better understand the viewpoints of this population by understanding how they attach meaning to CBM and to ranching in general. This meaning based approach is an alternative to a heavier reliance on attitude theory which assumes that “variation among individuals can be “captured” using answers to a standard set and limited number of concise “statements” paired with an appropriate numerical response scale” (M. Patterson, personal communication, 2008). Instead, a meaning based approach assumes that “different social constructions are not easily characterized in terms of a small number of statements of the type used in attitudinal surveys because they represent complex, context dependent, and holistic belief systems” (M. Patterson, personal communication, 2008) that are not easily standardized.

The context of many natural resource conflicts is quite complex and the issue of CBM development is no exception. Therefore the research needed to understand

various aspects of these conflicts must be able to handle such complexity instead of trying to reduce it to easily quantified variables. A meaning based approach is one method of doing this that has become more and more common in recent decades. A number of notable studies have made an effort to use such an approach to aid in the management of natural resources by understanding the viewpoints of stakeholders in a more holistic socially constructivist way. Such work has provided a great deal of insight into the way our society relates to and manages the resources upon which it depends.

Felt (1994) employs a methodology similar to the one used here, in describing how the local knowledge of fisheries possessed by indigenous populations of Canadian salmon fishers is only adequately understood in terms of the social construction of such knowledge. Felt (1994) offers insight into how the conflict surrounding the management of certain fisheries is heavily impacted by the membership of the fishers in one of two local fisher unions. The assertion made by this research is that conflicting conclusions about the populations of fish in these fisheries, resulting from different forms of knowledge, can not be simply resolved by further scientific research into the biological systems of which the salmon populations are a part of. But instead the conflict surrounding the management of this resource must be understood by realizing that the knowledge possessed by opposing sides is actually more reflective of the social context from which these opponents arise than of the biological systems that affect these fish populations.

Peterson and Horton (1995) also enlisted a meaning based approach in their effort to understand how ranchers in Texas view the conflict surrounding the

protection of the golden-cheeked warbler, a bird that was listed as endangered under the ESA because of the degradation of its habitat through the reduction and fragmentation of cedar stands on which it depends. They attempted to “illuminate the particularities of the community’s meaning system by unraveling intertwined values and drawing them apart for closer examination” (p. 148). They were successful in that they came up with a description of their sample’s views on stewardship and the connections between humans and the landscape. From this they were able to state that, although the rancher’s studied share a conservation ethic with the USFWS, which regulated the protection of the golden-cheeked warbler, the rancher’s conservation ethic arises out of a meaning system that impedes their responses to USFWS methods. Their motivation for better understanding this population arose out of their belief that “without a vital and inclusive public sphere, democratic processes wither and die. Although property-owners’ voices sometimes clash with those from conservation agencies and environmental groups, without them the discourse of environmental policy lacks vigor and depth.” This conclusion supports the move towards more collaborative methods of conflict resolution currently occurring in the field of natural resource management.

The contribution of these studies to the understanding of natural resource management is appreciated by and informs the research employed here. This sort of understanding of social conditions is necessary if we are to work towards solving some of the highly contested debates surrounding the use of our natural resources. In order to best understand the complex social conditions of CBM development, a grounded theory approach, to understanding meaning attachment, that is informed by

hermeneutic philosophy, is deemed the most appropriate methodology for this research.

Collaboration

For much of the last century the dominant model of management adhered to by the government agencies that regulate the nation's natural resources (USFS, BLM, NPS, etc.), has been one of progressivism and professionalism. This management style can be traced back to Gifford Pinchot, the first chief of the U.S. Forest Service, and his mandate that it was each resource agency's job to govern the natural resources for the greatest good, for the greatest number of people. This was to be done by professionals, who used their training to make decisions based on the sciences of silviculture, range management, hydrology, etc. These professionals knew what needed to be done on the land so it would continue to produce for the benefit of the American people. Essentially, this model was government not by the people but for the people, and it was the way this management was conducted for the bulk of the twentieth century.

In the past few decades, however, what is best for the people has become less and less clear. As society has begun to value our forests and landscapes for a growing variety of resources and reasons, the ability for a trained forester to make the appropriate decision on the people's behalf has become limited. Our laws and policies have struggled to keep up with this changing context as well. Despite laws like NEPA and NFMA requiring public comment and scoping to be conducted when an agency takes an action, the decisions that are made about resource use are rarely if

ever unopposed by one side or another. As a larger variety of interests has arose, so too has a larger variety of conflicts over resources. It seems that the perpetual state of the resource decision-making process is one of gridlock and incommensurability as different interests challenge every agency action based on their own positions and platforms. Often agencies struggle with the possibility that they will get sued by one interest if they take a certain action, or sued by another if they don't, or as Wondolleck and Yaffee (2000) tell us "they need to make credible and legitimate decisions but do not understand how to balance the range of values the public assigns to natural resources, particularly in a time of constrained resources" (p. 24). A growing consensus believes that this is not an appropriate way to manage our natural resources and that something must change. Thus, the people responsible and interested in managing these difficult situations have begun to recognize that the solution to these problems may be a more inclusive, deliberate, and possibly localized decision-making processes. From this recognition, collaboration has arisen.

Although "collaboration" is the buzzword that is often thrown around, such efforts often go by the title of working groups, watershed groups, or are even just collaborative conservation. Brick et al (2001) provide perhaps the best definition of this emergent phenomenon

In short, collaborative conservation reaches across the great divide connecting preservation advocates and developers, commodity producers and conservation biologists, local residents, and national interest groups to find working solutions to intractable problems that will surely languish unresolved for decades in the existing policy system.

Not only is collaboration looked at as a way of resolving “intractable problems” but it can also “lead to better decisions that are more likely to be implemented and, at the same time, better prepare agencies and communities for future challenges.” By “...building understanding, building support, and building capacity” (Wondolleck and Yaffee, 2000, p. 23). In collaboration efforts are made to bring a variety of stakeholders to the table to enter into a discourse about how a given resource or piece of land should be managed. This is supplemented by methods and procedures that have come out of the field of alternative dispute resolution, in which deliberate and civil conversation is enlisted to reach mutually agreed upon conclusions.

The justifications for such an approach are largely pragmatic, as it is a much needed solution to a failed system, and that something must be done so as to enable our culture to engage in mutually beneficial management of it’s resources. There is a more idealistic, perhaps ideological, reason for pursuing such efforts as well though. This belief is that this type of democracy is actually more like the type of democracy envisioned by Thomas Jefferson as he penned his diatribe against King George III thereby declaring freedom for this continent from the tyranny of being ruled by a tiny island over 3,000 miles away. Whereas Pinchot’s mandate was government by professionals on behalf of the people, Jefferson’s was government by the people, for the people, without which it is hard to differentiate our own government from that of a benevolent dictatorship by committee. The beauty of democracy is the belief that people can indeed govern themselves, and that from the cacophony of different voices the right answers will emerge that will lead us to prosperity and good fortune.

It is the shift away from the twentieth century model of resource management towards a more collaborative and inclusive model that necessitates research such as that which lies herein. Issues and conflicts often become intractable when only attitudes and positions are explored, but by wading through the complicated and rich pool of values, beliefs and the attachment of meaning one is able to facilitate communication and dialogue. Not every situation is in need of collaboration or is compatible with collaboration. In some cases values and goals are so disparate that the potential for a mutually agreed upon solution is non-existent. This is the nature of conflict and reality, however, it is impossible to fully come to such a conclusion if we don't take the time to better understand and discuss the full variety of viewpoints. With regard to the situation surrounding CBM development in Campbell County this research indeed shows that more collaborative efforts should be pursued. That conclusion however, is reserved for a later section. What should be understood at this point is that this research is guided by the words of Peterson and Horton (1995) advising us that "although each new voice adds to the discordance of an already boisterous debate, U.S. environmentalism rings hollow if it silences the rancher who is rooted in the land" (p. 163)

METHODS

As previously mentioned, a grounded theory (Corbin and Strauss 2008) approach was employed for this study, in which theory about opinions, attitudes, meaning attachment, and values that characterize this population and their relationship to CBM, was drawn directly from data. The method that was used to gather data consisted primarily of semi-structured, face-to-face, in-depth interviews conducted throughout the months of June, July and August 2008. Additional observations made by the interviewer were also included in the data set. The interviews usually took place in the home of the informant although other venues that were more convenient for the informant were also used including an Applebee's restaurant and the cab of a John Deere tractor. The semi-structured format allowed the interviewer to direct the conversation towards topics that relate to the informant's relationship to the land and its resources while not being restricted by the rigid nature of a set questionnaire. There was a protocol (Appendix B) that was employed in guiding the interviews and although every effort was made to ask all the questions in the protocol, often interviews strayed into other topics as a result of responses offered by informants. The interviewer made sure to grant the informant leeway in this respect in order to explore new topics or elaborate on others that the informant may have felt were important. This is important for any study of ranchers because as Starrs (1998) explains, "modern ranchers are profoundly self-aware people, sophisticated in their knowledge of ranch history and traditions, and ranchers know

their own literature. They are perhaps as far from ‘naïve’ sources as anyone can imagine.”

Since the intent of this research was to explore meaning and values through grounded theory, rather than to test hypotheses, random sampling of interviewees was not deemed appropriate. Rather a purposive sampling method was used that enlisted the help of key informants and the sample population themselves in obtaining names of ranchers who fit the needs of the interviewer.

A number of criteria were established upon which the sample was selected. The sample that was interviewed consisted of 25 informants who owned or operated a significant amount of land and for the most part could be classified as occupational ranchers. Many of these informants actually had careers outside their ranch operations including truck drivers, bankers, and lawyers. Some informants were not as involved in the day-to-day cattle operations as they once had been, but all of them had significant ties to ranches that were real working ranches as opposed to hobby ranches or recreational farms. In Campbell County and in any area that is largely populated by ranchers the ownership patterns can be quite complicated. In some cases, the informants that were interviewed did not own the ranch but stood to inherit the land as the previous generation passed on, some shared ownership with a sibling, and some were in the process of selling or had already leased their ranch to a next generation. Regardless of these idiosyncrasies, each informant had intimate ties to a working ranch.

The characteristics of the ranch varied significantly. In terms of acreage the ranches ranged from somewhere around 4,000 to over 40,000 acres. All ranches were

cattle ranches except for one sheep ranch and one bison ranch. Their locations were spread across Campbell County in an attempt to capture any possible impact that locale could have on the opinions formed. As described in the Background section of this report, there is a general pattern of mineral ownership in Campbell County in which many of the landowners east of Gillette retained their mineral rights while those west of Gillette did not. As true as this is, it is not safe to say that the mineral estates of each rancher are that simply understood. No single informant had either all their mineral rights or none of their mineral rights. Every ranch had a mixture of split estate and whole estate and in most cases the ratio between the two was relatively even. This was the result of the complicated history of ownership that much of this land had gone through. While 19 of the 25 informants had ancestors who had homesteaded the area it was very common for a family to have bought and sold different parts of their ranch or in a few cases moved ranches completely. The more times land has changed hands the more complicated the ownership of the mineral estate seemed to get until the entire county was a patchwork of different types of estates.

It was important that included in the interview data were the voices of ranchers who operated in Campbell County but did not have any CBM development on their land. Therefore four informants who did not have any CBM on their land were included in the interviews.

A successful attempt was made to capture a full range of opinions of CBM. To do this the interviewer spoke with staff at the Coalbed Methane Coordination Coalition and the Campbell County Conservation District and asked them to

recommend ranchers that they knew of who had varying opinions of the development. Other informants were sometimes asked for recommendations of people to talk to that both agreed and disagreed with their own views and opinions. Figure 1 and Appendix A provide an overview of the opinions held by this population towards CBM showing that the desired range of opinions was achieved.

Informants were initially contacted by the interviewer via phone and were asked if they would be willing to be interviewed about changing land use issues in Campbell County. The vast majority of the ranchers that were contacted agreed to be interviewed. Interviews were scheduled at the convenience of the informant within a day or two of the initial phone call.

Interviews were recorded using a Sony digital MP3 recorder. All 25 interviews were then transcribed by the interviewer using Express Scribe 4.05 software. The interviewer was the same person who conducted analysis and penned this thesis as well. The interviews were analyzed using QSR Nvivo 1.2.142 software. The researcher alternated between transcribing and analyzing so as to keep the interviews that had just been transcribed fresh in the mind and in effect commencing the first stage of analysis at the same time transcription of an interview began.

Grounded theory analysis of interview data, as mentioned in the background section, involves a significant amount of interpretation. Each interview was read and reread. A number of the interviews were also read and discussed by colleagues both in large groups and sometimes between just the researcher and one other colleague. This was in keeping with the “dialogic community” prescribed by hermeneutic theory. QSR Nvivo 1.2.142 was used to conduct open coding of the data. While

coding, a consistent effort was made to code for both broad and more specific themes. As certain codes would begin to emerge into ubiquitous and broad themes, more specific codes would come under the umbrella of their subject matter. An example of this would be the concepts of “being a neighbor” and “way of life.” It was apparent early on that both these concepts figured into the thought process of the informants. When they were discussed each were coded for. As the concept of “way of life” began to take shape it became apparent that this constituted a broad and significant theme. On the other hand as the concept of being a neighbor began to develop it became apparent that it described a particular phenomenon that had a common description. Further analysis made it apparent that the concept of “being a neighbor” was actually being referred to as a component of the “way of life” theme. Thus sections that were coded as “being a neighbor” were included in a set with other concepts under the larger theme of “way of life.” However many of the codes are less obvious in the final thesis and were used more as an organizing system for the researcher, allowing him to access quotes regarding the different issues discussed in this thesis.

Along with coding, memos were written as analysis progressed. After particularly notable, insightful, or relevant statement or sections of the interviews were analyzed, these memos were written relating what was being said to what was said in other parts of that interview, in other interviews, and in the entire body of interviews. These memos led to connections being established between codes, between informants, and between the larger themes that were established.

The quotes in this thesis are designed to be both illustrative, in that they help to describe and foster understanding about the concepts being presented, and justificatory, in that they provide evidence for the grounded theory derived from the data. Interview excerpts were chosen for this thesis most often on the grounds that they clearly represented a sentiment or belief that was commonly expressed by other informants thereby being representative of the overall data set. In some cases however the statements that are shown only represent the feelings of a few or even one informant. When those statements are included it is done so in an effort to capture the entire range of opinions while acknowledging that such opinions may only be held by a limited number of informants

In many cases the codes that arose from the data contained recognizable concepts that related directly to already established social theory and other concepts that are discussed in relevant literature. When this occurred, the commonalities between this grounded theory and the already established theories were explored and presented in the discussion sections of this thesis.

RESULTS

The issues surrounding CBM development are frequently contentious and political. Large amounts of money are being made and the lifestyle and the landscape that are known and loved by so many of the ranchers in Campbell County may be severely affected. With so much at stake it is easy to see how conflict could arise and disagreement could abound. The results of this study make this readily apparent. Much of the discussion was about conflict and opposition. One landowner told a story about trying to start a fight with a fellow rancher who he believed had called him a liar and quite a few ranchers joked about “shooting the tires out” or “chasing them off with my Winchester” when discussing altercations with CBM or agency employees. It should be stressed that these were indeed jokes and at no time did the interviewer feel that anyone was in danger of being seriously hurt. The violent nature of these jokes however, is indicative of the nature of this population to be forthright and strong in the face of conflict like that which surrounds CBM development. Even with the contentious nature of these issues, this research was able to find a wealth of common ground that these ranchers shared. Despite being on different sides of an issue, an incredible amount of their beliefs, values and ideologies were consistent across the population. They may disagree over issues but they share a common history, struggle, and character that make them much more alike than they are different. Figure 1 shows the distribution of opinions of CBM development held by the ranchers that were interviewed. Each line of numbers represents an individual informant.

080625-000				
080627-000	080721-002			
080719-000	080722-000			
080719-001	080731-000	080731-001	080721-000	080716-000
080719-003	080730-000	080730-001	080717-000	080624-000
080721-001	080720-000	080718-000	080728-000	080626-000
080729-000	080716-003	080729-001	080716-004	080626-001
Favorable	Somewhat Favorable	Neutral	Somewhat Unfavorable	Unfavorable

Figure 1: Range of Opinions Toward CBM Held by Ranchers in Campbell County Wyoming

Informants were assigned to categories based on comments that were made throughout the course of the interview. Appendix A shows typical comments made by members of each category. The comments included in Appendix A are direct quotes from informants in each category and although quotes are not included for each informant, every informant in a given category made some comment that was similar or expressed the same sentiment as those provided. On the favorable end of the continuum the informants had almost nothing but good things to say about the development. Quite a few of these informants were active in supporting CBM by advocating for and speaking publicly in favor of the development. Those that held a somewhat favorable opinion discussed both positive and negative aspects of CBM but tended to view the development as having a net positive impact on their ranch and the community as a whole. The informants categorized as neutral generally acknowledge both good and bad affects of the development but did not make it clear that they leaned toward a particular side of the issue. The informants with a somewhat unfavorable opinion of the development acknowledged both positive and negative

aspects of the development as well but viewed CBM as having a net negative effect on their ranch and the community as a whole. Those with an unfavorable opinion of the development struggled to acknowledge any positive aspects of CBM and made it clear that they would be perfectly happy if it was gone from the land altogether. Many of these landowners were currently or had in the past been involved in litigation against CBM companies. The range of opinions shown in Figure 1 should be understood as a result of purposive sampling for a range of opinions and not as a representative of the distribution of opinion among the population of Campbell County ranchers. Appendix A shows that the goal to interview ranchers with a wide range of opinions was achieved.

As already mentioned, even with the range of opinions held towards CBM by this population there was an abundance of common ground. Much of this common ground took the form of values, beliefs, and ideologies that were subsequently grouped into a commonly accepted view of what is referred to in this research as *the ranching way of life*. This population described their way of life in similar ways and they all expressed a very strong desire that it be protected and that its existence should be ensured well into the future.

The ranching way of life introduced here, and further developed in the first section of this results chapter, is not merely an accepted description of the day-to-day activities that accompany being a rancher. Instead *the ranching way of life* should be understood as an alternative to a traditional financial cost benefit analysis, this analogy will be explored further in a later section of this thesis. Included in *the ranching way of life* are the aspects of being a rancher to which value was attached by

the sample. These ranchers expressed shared beliefs about independence, being a neighbor, honesty, family heritage, stewardship, and making a living, that are all characteristics of being a rancher that these ranchers identified with. If the development was viewed favorably it was because the informants felt that CBM had benefited these components of *the ranching way of life* or guaranteed that *the ranching way of life* would continue to exist. If the development was viewed unfavorably it was because the informant felt that the components of *the ranching way of life* were negatively impacted or threatened by the development. Although making a living is a very important component of the ranching way of life, this population did not appear to form their opinions of CBM in terms of simple economics. Rather they considered all the components of *the ranching way of life* when forming attitudes. In Campbell County the major issues that have arisen concerning CBM development involve the discharge of the CBM byproduct water and the negotiations involved in operating in a split estate situation. In forming attitudes about each of these issues and about CBM in general, this population referred to different aspects of *the ranching way of life* and evaluated how these issues impacted and were impacted by *the ranching way of life* that they so greatly value.

Issues surrounding Sage-Grouse protection are treated in a separate section of these results. This is done because the way the ranchers discussed the issue of Sage-Grouse protection must be understood in terms of “ways of knowing” instead of a “way of life.” The form of knowledge, or *the ranching way of knowing* was commonly described across the population and characterized the discussions of Sage-

Grouse protection. The sample expressed a belief in the validity of knowledge of the land derived from firsthand observation that occurred over long periods of time. Often this knowledge was transmitted from one generation to another through stories and practices. Issues concerning endangered species protection are often understood in the context of private property issues and government regulation and although this did occur with these ranchers, it was much more common for talk of Sage-Grouse protection to actually be talk of the scientific evidence that was behind the proposal to list the Sage-Grouse as endangered under the ESA. This discussion was distinct from that of *the ranching way of life*, therefore it is treated separately in this report.

Description of The Ranching Way of Life

When you ask a rancher what it is he/she likes about ranching or why he/she likes to ranch included in their response is almost always a variation of one statement; “it’s a way of life.” So what is the ranching way of life? When ranchers so frequently referred to the “way of life” as their reason for continuing to ranch, what were they referring to? There are a number of common themes that arose from the informants when they discussed this topic and each of these themes was somehow impacted or influenced by the CBM development that had come to Campbell County.

Independence

Perhaps most common was the idea of independence. In the words of one informant “we’re all old independent redneck cowboys.” This independence is quite often equated with solitude.

You don't have anyone bothering you. On the ranch, your neighbor or maybe your best friend is 100 miles away. (Q1: 080729-001)

Well I just wanted to live down here and be left alone. (Q2: 080716-000)

To others the idea of independence meant that they were beholden to no one. In some cases this came through as an appreciation of being self-employed.

It's an independent way of life where you're working for yourself and not working for anybody else and whatever you put into it is what you can expect out of it and you don't have to answer to anybody but yourself. That's what they call self-employment. (Q3: 080719-001)

With many other informants it was an appreciation of not being beholden to the federal or state government, and avoiding regulation.

Free of government interference and interference from the people that say "I'm from the government and I'm here to help you." They're the ones that make the laws that say what we can and cannot do. And there's more rules and reg's every year, you know CDL's and pesticide licenses and everything else. Every time you turn around they come up with something new, animal id, premise registration and all that neat stuff. (Q4: 080718-000)

Being a Neighbor

The desire for independence however, does not imply that there is a disregard for other people or a lack of concern for your neighbor. On the contrary, this population feels very strongly about what it means to "be a neighbor." This is indeed

another important aspect of the ranching way of life that this population felt very strongly about. Part of being a neighbor was respecting the independence of your neighbor in the same way that you would like yours to be respected.

Say you've got a ranch over here, right next to me, I don't think I ought to be able to tell you what to do on your ranch unless you're hurting me, and vice versa. To have a neighbor, be a neighbor. (Q5: 080626-000)

Being a neighbor does not only restrict the sort of actions one can take however. There are also certain behaviors that are expected as part of being a neighbor. Many of the informants described the importance of working together to keep fences in good condition so cattle would not cause problems in other people's property. Being a neighbor also includes helping your neighbor when they are in need of help.

If there's a fire at your neighbor's you go help them. There's a sense of freedom out here but when somebody is in need people in the country really work hard together to keep the country going. (Q6: 080729-000)

I had a friend in high school who lived south of Gillette and we would visit back and forth. I would need some help and he'd say "well, I ain't doin' nothin' I'll go out and help you." (Q7: 080729-001)

This willingness to help a neighbor or a friend was often expanded into a larger ethic that concerned the whole community of ranchers or landowners in the area.

It's a nice little community out here; we all get together and have little parties here and there. It's just nice. (Q8: 080717-000)

I lived in town, I lived in Seattle. You have a better community out here, I guess it's a camaraderie, you have a better rapport with your community. (Q9: 080729-000)

Honesty

These ranchers made it very clear that honesty was also something that they valued and that was a part of the values and norms that they hold dear.

I pride myself on being as good a person as I possibly can, my word means something. I'm not going to sit here and lie to you or lie to anyone else. By god, if my handshake isn't any good, all the paper you can sign in the world isn't any good. (Q10: 080626-000)

My granddad, he was honest and that's the only way to be, and he told everybody anything that he felt was important. (Q11: 080729-000)

This population valued honesty and they often mentioned being offended or insulted if their own honesty was called into question. This population prides themselves in "telling it like it is".

Family Heritage

Another aspect of the way of life that was often mentioned and appeared to be very important to the population is the involvement of family. This came through both as an appreciation of the family's heritage on the land as well as an appreciation

of the way the ranching lifestyle is conducive to raising a family. Both of these were often spoken in the same breath as the phrase “way of life” or when an informant was asked to describe their reasons for ranching. Here is an example of a typical description of a landowner’s family heritage.

Well this ranch goes back to the homestead days. My father homesteaded up the valley about two miles. Our daughter and her husband live there, that’s where I grew up. Then in the late 50’s this ranch here came up for lease so we leased it with an option to buy and about 10 years later my dad and I bought it about 50/50. I bought him out in later years but we still ran it as one unit, the two ranches. Then when he passed away our oldest daughter and her husband bought the majority of his ranch and another daughter bought some farther up on horse creek, and two of our grandkids are here on this ranch, and then there’s great grandkids so that’d be fifth and sixth generation, so we’ve had six generations on the ranch. (Q12: 080716-003)

Nineteen of the twenty-five informants in the sample referred to their families as homesteaders, which was usually said with a noticeable amount of pride. It was obvious that the generations of their family members before them that had lived on the land were central to the ranch’s identity. The fact that these were family ranches and that they were part of ranching families was important to them.

We’re third generation ranchers here, part of the Homestead Act. We’re very proud of our heritage, farm and ranch heritage. (Q13: 080717-000)

The family's history on the land was important to the informants, as was the family's future on the land. This landowner had just recently found out that his daughter was interested in taking over the family ranch.

[My daughter] is 27 years old and she decided that she wanted to give it a go. She was away at college and then she went off and was working and starting her own career, then just last year I lost a long time employee and that got her to thinking because there was an opening here. So she got to thinking about it and talked to me and my dad both and said she would like to come and give it a whirl. We are totally excited. I'm very hopeful that it will work out. Especially for my dad, his generation...we really weren't looking at any next generation beyond me that was interested in picking up the ranch and going with it. So he's very excited to see that the next generation is stepping up and looking like they're wanting to look to the future here. (Q14: 080731-000)

There were a handful of ranchers who had similar arrangements and who were always quite happy with the idea that the ranch would remain in the family, but for many informants the prospect of the next generation taking over after them did not seem as likely.

My grandfather would like [my son] to take over after me but we'll see what happens because agriculture is not too profitable anymore and I don't know if it will be an option, if he'll be able to afford it. (Q15: 080719-000)

Many felt that it was important that their children grew up on a ranch because of the lessons that this way of life taught.

I wanted to come back home to the ranch, but I wanted to get out of the city for my kids. I wanted my children to learn the ethics of hard work, right and wrong, see life and death other than on TV, and have to work, not come home and have nothing to do but stay in the house and watch TV. I didn't like the city life for them. (Q16: 080627-000)

I was on the school board and hell I asked the superintendent to tell me how many of the tractor people's kids was in the top of the class, hell 13 of the 15 was in the top of the class. They were getting a better education out here than they were in the city. (Q17: 080729-001)

For many informants the next generation had an impact on the decisions that they made including things like practicing good stewardship and managing the land.

We don't want to rape and loot because we plan on living here and our kids living here but we just think some of the rules are a little restrictive. (Q18: 080720-000)

Stewardship

This notion of stewardship reflected in the above statement as being linked to family heritage, is another aspect of the ranching way of life that was very common throughout the interviews.

We consider ourselves stewards of the land in that our goal during our lifetime of use of the land is to leave it better than we found it. (Q19: 080717-000)

Although as seen in this quote, stewardship often went deeper than merely a desire to pass the land on to the next generation. A majority of the ranchers at some

point made reference to their love of being out doors or some sort of appreciation of nature as being part of the ranching way of life. Sometimes this was as a reference to broad concepts like the land and the difference between natural and man made.

I guess I'm one that likes the land. They can manufacture cars, they can build houses or whatever but you just don't manufacture land and I'm attached to the land. So I'm through and through with the land. (Q20: 080721-001)

Many ranchers referred to wildlife in particular as something that they really enjoyed about the ranching way of life.

I just like the work and I like to be outside. I like livestock and wildlife. I see elk everyday and it stills makes the hair stand up on the back of my neck when I get up close to a bunch of them. It's nothing new, we see them all the time but it's still a good feeling to go out early in the morning, it's fresh and the wildlife is moving around, the cattle is moving around. It's just a nice way of life. (Q21: 080731-001)

In the previous quote the mere aesthetic enjoyment of having wildlife on the land was a compelling aspect of the way of life. Quite often though, hunting was a major part of the way of life that these ranchers enjoyed.

We really enjoy hunting on the land. That's one of the big things that goes with ranching, all of that wildlife. (Q22: 080716-000)

Making a Living

A major aspect of the ranching way of life is that it is also an occupation and a source of income. In most cases ranching is a continual struggle to make a living.

This landowner describes this struggle in terms of selling cattle at market.

We have about 450 head of calves and sell about 400 of them. We'll put them on trucks, take them down into the hills and we've got the expense of getting them down there. We have to get a brand inspection which is about \$1.50 a head. They have to have shots. It costs us about \$8,000 to get our cows to market and then they just bring them in bunches. They sort them off, they take all the bigger steer calves here and all the bigger heifer calves here and then there'll be 2 or 3 smaller and they cut them by size, color, and quality basically. We don't have anything to do with that. The guys in the back decide how they're going to be cut up. Then they bring them in and out of our 450 head there'll probably be 100 head of steers and 100 head of heifers that they'll bring in, that's a truck load basically, 550 lbs. Then the feedlot or buyers that buy for the feedlots will bid on them. And you're sitting there and you have a split second to say you'll take it or not. But if you don't take it you still have to pay a commission on them which ends up about \$15-\$20 per head and then you have to pay a trucker to get them back home and then what do you do? You don't have hay, you don't have grass. We're the only industry in the United States that doesn't have a clue when we start raising cattle, what we're going to get. And we virtually take what they will give us. And we do it because we like the way of life and we are independent. (Q23: 080719-003)

Nearly every rancher that was interviewed in this study mentioned at some point having to work jobs away from the ranch just to afford to be able to continue ranching and to have opportunities others had.

Down here, my son in law that is on the ranch works full time in the coal mine. And our grandson pumps for a big mineral company on methane wells. And they work five days a week but a lot of times he'll get home at four o'clock in the afternoon and he'll be baling until dark. But what it does is it gives you enough cash flow so that you can ranch and stay on the ranch and pay for it. There's a lot of these ranchers that don't have anything like this, and they're in financial trouble practically all the time because there's not enough other jobs out there that their wives and them can work part time or whatever. (Q24: 080716-003)

[My husband] and I went to town to support the ranch. He was the manager of the co-op. I sold real estate, and so we supported the ranch plus our two girls with advanced degrees with outside money. The ranch would not have done that. (Q25: 080627-000)

For many ranchers, hunting was another source of much needed income either from charging a fee to allow hunters access to the land or even full guiding and outfitting operations. This rancher describes the integral role it played in many ranch operations.

The hunt for pay when you talk about your day job or other source of income...ranching was pretty rough in the 50's and 60's. The hunt for pay was the biggest source of income if you have a big enough place. A lot of these guys didn't have big enough places so they would lease some of the surrounding ranches. But we had our own self contained ecosystem so we

could control it well. But yeah the hunt for pay is pretty good. When I was a young cowboy my cows paid for the feed and paid the taxes and just the bare basics but if you wanted anything else you had to have another source of income. You could break horses, which was dangerous but I enjoyed it. I did a lot of it, not as much as I should have but more than I should have. But the hunt for pay was the best because all you had to do was get your little clutch of hunters, take them out, show them the game, you didn't care if they shot anything all you had to do was say "there's a nice one. Do you want him?" As long as you give them the opportunity to take the shot. We didn't guarantee them anything, we didn't know if they could shoot. But it was easy money. (Q26: 080728-000)

Summary

The Ranching Way of Life is something that had a common description and was frequently referred to across the sample. These ranchers placed a great deal of value on independence, being a neighbor, honesty, family heritage, stewardship, and the ability to make a living from the land. Each of these aspects of the way of life has the potential to be impacted, both positively and negatively by CBM. When a rancher attaches meaning to CBM development they evaluate it in terms of how the different aspects of the CBM development affect these different aspects of *the ranching way of life*. This is discussed further in *The Ranching Way of Life and CBM* section of the discussion chapter of this paper. Before these two ideas can be further integrated however, it is important to understand the informant's opinions of some of the other aspects of the CBM development that can impact these different characteristics of the ranching way of life, namely the issues surrounding beneficial use of CBM discharge water and split estate negotiations.

Beneficial Use of CBM Discharge Water

Issues surrounding the discharge water from the CBM production are some of the most contentious and crucially debated. It also was the factor that corresponded most strongly with opinions of the development. Of the twenty-one informants who participated in this study and had experienced some level of impact from the CBM development on their land, sixteen described some way that they were able to put the discharge water to beneficial use. Four of the five that did not, were the four informants on the unfavorable end of fig. 1. One informant who did not have any CBM development on his land and was placed in the “neutral” group in fig.1 described this phenomenon quite succinctly when he said “when there’s water running on a rancher’s meadow, if it’s doing good it’s doing good, if it’s doing harm then it needs to be stopped.”

In an area where dry land ranching is the predominant method of raising livestock, water is a scarce and valued resource. This is further compounded by the fact that Campbell County and the surrounding area have suffered from considerable drought conditions for much of the last decade.

Right about two years before that methane come is when that drought started and pretty much all the stock wells dried up, and the reservoirs was getting so low that they were getting stagnant and we were losing cows so we was having to haul water. (Q27: 080719-000)

As Campbell County suffered from these drought conditions, the CBM boom, with its copious amounts of discharge water, began.

When [one company] came in and started doing the methane wells they put in stock tanks for us and we really appreciated that because in the one pasture we had we only had a wind mill and a big reservoir that dried up in the drought years, but then we was able to have lots of water in there and our calves are still heavy. They probably are maybe 120 or 150 lbs. heavier than they normally would have been. So the water is a godsend to us and the companies have been really good to work with. (Q28: 080721-001)

Stock tanks and livestock water were the most common use of the discharge water.

It helped the livestock immensely. With all these tanks we had in the corners of the pastures where we never had electricity or windmills, now we had water because we had them pipe it to there and discharge in the corner so our calves weighed more than when we didn't have the water. (Q29: 080627-000)

Along with providing water for cows it also provided water for domestic uses.

It's in my house. It's our tap water. We don't irrigate in the pasture with it but we do have stock tanks out there for the cows. The cows drink it or I drink it, we've been doing it since '98. (Q30: 080721-001)

Many of the ranchers found that the companies were willing to make sufficient efforts to ensure that the rancher was able to put the discharge water to beneficial use.

I was very fortunate that my ex-father-in-law had put in a lot of reservoirs on this place years ago but it had been so dry that lots of them were dry for the last 10-12 years. [The company] came in and overhauled those and ran water lines to them. Their guy designed a water system that allows me to put water

from that side of my place to that side of my place wherever I need it. (Q31: 080719-003)

A very small number of the ranchers were able to use the methane water for irrigation. However this is where issues regarding the quality of the discharge water began to arise.

We have a side role irrigation and this is coalbed methane water that we're using. We monitor the water on a real frequent basis our self and do some soil testing and water quality is really quite good on that particular area of the place. (Q32: 080625-000)

From one area of Campbell County to another the quality of the water that is produced varies quite significantly. Most informants recognized this variability.

I guess if you have to have the water that makes sense but in other places it won't work because of the water quality. So you know there is a billion scenarios on what they do or who's unhappy and who's not. And this water will kill cottonwoods and alfalfa in certain place and then south of Gillette they irrigate with it, raise tremendous crops. But you get over in the Powder River and west of here and some of that water has a sodium ratio of 33 or something, neutral soil is like 7, so it's pretty salty. So they have a sodium absorption ratio and I know there was one over there that was 33, which was way off the scale. It'll kill any [plant] that wants to take a drink of it. The cows like it, it won't hurt you, you won't have to salt your potatoes if you use it. (Q33: 080716-004)

In most areas the methane water is not suitable for irrigating. The reason for this is a point of quite a bit of inconsistency in the beliefs of the population. Many blame the quality of the water for the inability to irrigate with it.

[The DEQ] didn't test the water quality they just took the word of these methane companies "well this is good water look you can drink it." Well my answer to that is you drink whiskey too but you don't put it on your house plants. It's just too salty. I've been testing the water in fact I was looking at a fair little stream this morning and I was thinking I haven't tested that water in about a week, I need to go test it. (Q34: 080626-000)

Well they all want to pass so much water that they put it in the reservoirs and the reservoirs run over and it goes down through the coulees and it floods everything and of course everything the water touches it kills it. Lots of salt in it. It killed several hundred trees over there in the meadow. (Q35: 080626-001)

Many other ranchers blamed it on the quality and characteristics of the soil that the water was put on.

It's not the salt in the water; it's the salt in the soil. When water sits on soil it will bring up those natural salts that are in the soil. When my creek dried up during the drought years before we had coalbed methane water flowing down it, when the creek dried up I would have the salt on the side of the creek, those white patches that are salts from the soil. Coalbed methane water is going to do the same thing, it's water, if water sits very long it is going to draw the salts out of the soil. (Q36: 080721-001)

Water quality was wonderful, we were good. We participated in the study out of the University of Wyoming and they declared our stuff, I mean you could bottle it and sell it. It was charcoal filtered because of the coal and we thought wow this is fun. Then they tested all our soils and said, “don’t you dare put any of it on your soil. You are going to percolate salts and alkali and all sorts of things if you do that. You’re water is fine but your soil is not compatible.” (Q37: 080717-000)

This inconsistency in the knowledge of the informants seems to be driven by the actual inconsistent nature of the water quality and soil characteristics throughout the county. However it was common for some informants to make generalized statements about whether the quality of the water or the characteristics of the soil were to blame for the inability to irrigate with it, based on what was the case on their land and what they had first hand knowledge of.

Although 17 of the 21 ranchers whose land had been impacted by CBM production said that they had found some beneficial use for the water, many still mentioned some significant drawbacks of the water production, as did the 4 who did not consider the water as being put to beneficial use. Managing the sheer amount of water was a cause for great concern.

The reservoirs are kind of a blessing and a curse. A few of them are nice but you don’t need them all. And with this methane there’s a ton of water that has to come out of the ground. It’s unbelievable how much water has to come out. (Q38: 080730-001)

For others the water that was produced was manageable so the concern about what to do with it was not as great.

We never had a horrible excess of water. I'm not an engineer but we're about 16-18 miles from the Cordero Coalmines and what I've kind of been told is that the coalmines have already dewatered those formations. So when they came over here, yes we did have water, and yes we did have excess water. We did have water running down the Caballo Creek. I don't believe it ever went under the bridge over at 59; it might've right at first. We had reservoirs that filled and ran over. But, I would say that it didn't last much more than 3 or 4 months because they had already been dewatered. (Q39: 080627-000)

A very big concern for many of the ranchers was the effect that the dewatering of the aquifers would have on their existing water wells.

Well methane of course discharges water. For the flowing wells around here the water pressure is created from methane so when they dry up the methane they dry up all the wells. And all of the old flowing wells were just a two inch pipe stabbed in the ground so there's no way to salvage those wells once they quit flowing. So we lost a number of wells. (Q40: 080716-004)

Some observed that the drilling of the methane had an impact on their existing wells because it caused the mixing of different aquifers.

What happened when they started sucking all that methane and water out of there? Everything started mixing because our quality of water went to pot in our well. It wasn't the quantity. We still had plenty of water. But we started getting a lot more gas in it. We always had gas in it but it got worse. In fact my daughter on the hill up here, she got in the bathtub one night to take a shower and the faucet lit up, caught on fire. It's scary. (Q41: 080716-003)

In order to avoid this problem some ranchers had recently dug new wells that were below the methane activity. This had the potential for causing other problems.

Now instead of having water wells that's 200 and 300 feet deep, we've got wells that's 800 feet deep because they went below all the methane activity. It just costs more to maintain and repair wells that deep. (Q42: 080716-003)

This sample's livelihood is often directly connected to the ability for them to be able to use water resources to grow grass and feed livestock. In recent years this ability has been at risk because of severe drought conditions. Therefore it is not surprising that issues concerning beneficial use of water were some of the issues that these ranchers were the most concerned about. The quality of the discharge water and the characteristics of the soil vary greatly in Campbell County. The impact that these two variables had on the ability to use the water was something that was poorly understood. In some cases it can be used for irrigation. Many are able to use it to water livestock, wildlife and themselves.

Split Estate Negotiations

As previously described, in split estate situations the mineral estate exerts dominance over the surface estate because of the perceived benefit to the greater public that results from the development of the mineral resource. The laws are written and interpreted in such a way that encourages negotiation between mineral and surface owners but does not necessitate it. What seemed to be a common feeling

amongst many of the informants was a sort of begrudging acceptance of the need to cooperate with the companies.

We've just learned to live with it. It's just like weather, you can't fight it you've just got to handle it the best way you can. Try to do the best you can to deal with these people and anymore most of them will deal with you, they try. (Q43: 080716-003)

We have a neighbor that has fought [the companies] tooth and nail, went through lots of court battles and stuff and basically when it was all said and done he lost. He paid attorneys a lot of money and they still get to come on his land. We feel like we're better off working with them and getting as much compensation as we can get out of them because if we work with them we can have some say on where some roads go and where reservoirs go. (Q44: 080730-001)

There were different opinions about how ranchers should position themselves in this cooperation and what a rancher needed to do to make sure the development was going to happen in an acceptable fashion.

I think the private landowner has to be rigorous in defending his property and rigorous in his control of the oil company coming on his property. I think that the unbridled expansion of the oil company is poor. I think that you have to be active in the management of your property. I think some landowners have failed miserably to do that. (Q45: 080722-000)

You can't be selfish and you have to be reasonable and those companies will go the extra mile to get along with the landowner but on the other hand they've got their limits too, so if you're cooperative with them and especially

if you're going to get part of the income you should be friendly towards them.
(Q46: 080719-001)

Of course these two strategies are not necessarily mutually exclusive. But they do illustrate the sort of considerations that the ranchers have to include in their decision making process.

What was most common was a certain feeling of inevitability or inexorability. Due to the primacy of mineral rights in a split estate situation and the perceived willingness of the state to use eminent domain to put in infrastructure, there was little feeling amongst the ranchers that they could actually stop the development if they wanted to.

Energy companies will use the system... they get it all their way and they make all the money and I have to sit there and look at a power line for the rest of my life. Could I fight them? Yes. Could I delay them? Yes. Will I win? No I will lose, the judge will rule in favor of eminent domain and babies in California need their milk pasteurized so who am I to stand in their way. I just don't feel like the landowners are being dually compensated for the rights they are having to give up. It's an uphill battle. (Q47: 080728-000)

This is just my limited opinion and humble perspective but they will run over the top of you if you let them. I guess our stance has been that we try to negotiate the best we can with them and do what's best for the land that we are in charge of being stewards of and then we make the best deal we can with them. (Q48: 080730-001)

A few landowners felt that they were able to have leverage in negotiating with companies if they owned enough of the mineral rights on the land.

There were a couple of companies that said “well we can’t do that” or “we won’t do that.” But our advantage, I believe, was that we had enough of our own minerals. We had enough clout, we said “you will, or you won’t do this at all.” Because the small parts of the federal minerals could not be produced unless they could get across private. (Q49: 080627-000)

This belief was echoed in another landowner who did not feel like they had sufficient “clout.”

So unless you have something that the company really, really wants they say “hmm, we like it just the way it is, we don’t want to negotiate.” And that is exactly what they do. (Q50: 080626-001)

A number of landowners talked about how important it was to have adequate knowledge about a number of different topics concerning the development of the mineral resources.

We try to know more or retain the expertise of people that know more than the people we are dealing with. So when a mineral company comes to the table and they kind of give us their spiel, we’ll say oh that’s interesting let us think about it, and then I’ll go find every piece of information I can about the regulatory process, the legal process etc., etc., and that’s the only strength I have, having as much or more information as they do. (Q51: 080624-000)

Before I signed any contracts and before I did any dealings I looked into what I needed to do to protect my property. A lot of people have not done that, a lot of people just signed their name and they went to a lawyer. Well a lawyer

can tell you legally what you need to do to make the most money and in terms of legality but they have no idea about reality. (Q52: 080719-003)

I believe that if you want to do something right you learn. You go to every seminar you can find. You call every engineer that you can talk to. You call the state people and when we began there weren't a lot of seminars because they didn't know what they were doing either. But conservation districts would have little seminars, we would talk amongst each other, we were proactive. Some of these ranchers say "I'm not going to do anything. It's not my problem. I didn't ask for it to be here." Well, that's all well and good but it's your land they're coming on. If you're running a bank you know all about it and if somebody's coming in to merge, you better learn about that new guy. Same difference. (Q53: 080627-000)

Given the history of mineral development in Campbell County, many ranchers had dealt with these types of issues before during the oil boom that occurred in the 1970's and '80's, and felt that that helped them in their negotiations with the companies when the CBM boom arrived.

If you had been through the battle, the exercise of permitting oil wells and doing surface damage agreements and that sort of thing, then it wasn't so bad. So I had that experience. So I told my wife that the people that were virgins to that development, it's very hard on them and it was to me in 1979 and 1980. You don't want people zooming around on your land. You don't want the activity because most of us in this country don't own the minerals and we don't own our minerals. (Q54: 080721-002)

The oil boom educated the ranchers. They're more cautious about the leases that they sign. (Q55: 080719-000)

With the primacy of the mineral estate and the possibility of eminent domain it appears that the companies, in dealing with ranchers, may sometimes resort to threatening the landowner with their plans. This did not go over well with the ranchers who experienced these tactics

We met one of their land men in our fields and he said to me “I know all about you, and I want you to know from the start that we have more and better attorneys than you do.” So I said “you son of a bitch, you get in your car and you get your ass off my place.” Just like that he had a personality change; he didn’t start out right see. Like “how are we going to work through this thing together,” might have been a better approach. And the first company which had most the leases, the first thing we heard from them was a letter we got from Casper telling us what the state laws were and how they would use them if they needed to. So I called the president of the company and said “if I get one more letter from that son of a bitch we will not cooperate at all,” and low and behold, that guy was off the pay roll. (Q56: 080716-004)

You say the word condemn and we’re done talking, you threaten us and we’re done, I don’t pull a gun and point it at someone and not shoot them, I’ve never had to do it so I’ve never shot anybody, but I’m just saying you don’t threaten us, we’re going to have a principled approach, if you threaten us we’re going to war, we’re not going to vacillate or give in or say oh I just don’t want to go to court, that ain’t gonna happen, we’re gonna hire the ugliest meanest sons of a bitches that you can find, and we can only hire one or two and they can hire an entire town of them but we’re going to stand on what we can. (Q57: 080624-000)

The two previous quotes came from one informant who was essentially neutral (Q56) and one that had an unfavorable opinion of CBM (Q57). However even those who

had favorable opinions of the development expressed this sort of sentiment, such as this landowner.

Well they think they can just railroad the ranchers and threaten us with lawsuits and eminent domain. If we don't agree with them they lay the law down to us, so to speak, and say "well this is what we're going to do and this is what we are going to pay." See that was our big problem, they came in and just tried to run over the top of us, and they've totally changed in that. They've realized that they get the ranchers so mad, and we did once, that we'll file a class action lawsuit against the companies. The one company we really went after filed for bankruptcy so we didn't get anything out of that. Most of them straightened up and settled in. (Q58: 080716-003)

There were plenty of complaints about the negotiations that occurred between these landowners and the CBM companies. There was also, however, a recognition that the way the companies operated and the development that they were doing had evolved since the beginning of the project and that they had begun to address some of their shortcomings.

We've had to work through some issues with the companies and you know from when it started out the industry has changed a lot and how they developed and how they produced the wells and how they set them up. So it's kind of evolved from there. (Q59: 080720-000)

We only had one company that was not really good but they were straight out of Texas and didn't know how things operated up here. That was early on, but the coalbed methane companies are really, really good to work with now. (Q60: 080721-001)

Different ranchers attribute the changes to different actions the companies have taken. Some felt that it was the company's concern for their reputation that forces them to act in a way that the public accepts.

They want to do it right because their name is mud when it isn't. Their stock goes down. Their company has a bad name. (Q61: 080627-000)

Some ranchers mentioned that the companies had begun hiring more local people and that this made cooperation much easier.

One of the things that the mineral companies are doing that is really a benefit here; they are hiring local people, particularly ranch oriented people. [One Company] is one of the biggest here, their land man worked at the P.K Ranch up there in Sheridan for years. He's an old cowboy and he knows how ranchers think and how to deal with them. More and more of them are starting to do that. When they first started this mineral development in here back in the sixties they brought them land men in here from the cities. There were several times that the companies were threatened; if they send that guy back again he wasn't going to make it back to town. (Q62: 080716-003)

There was also a common belief that the behavior of the companies had improved because many of the companies that were hard to cooperate with had been weeded out over the years of the development.

We had a lot of "fly by nights" that didn't control the weeds, the reclamation was nonexistent, but for the most part those people are gone. (Q63: 080716-004)

This comment echoes another sentiment expressed by a few of the ranchers, that it is the smaller companies that are hard to deal with.

I don't like the little companies because they can't handle the pressure of the liability. It's just too many millions of dollars to do it. Some of them, now we've not had it, but some of them can't abandon, plug, and reseed, because they're out of money so they just walk off. (Q64: 080627-000)

There was a surprisingly small amount of agreement on which companies were actually "good companies" and which companies were "bad companies." Two ranchers, who both had a favorable opinion of CBM, described one of the biggest companies operating in the area in quite different terms. One of them described this company as "probably the biggest jerks that I've dealt with...they're out and out jerks, they're just morons." While the other described them as "number one...great to work with." This sort of disagreement was common in the different rancher's descriptions of other companies as well.

Most of the ranchers viewed the CBM development as inevitable and therefore they had to cooperate so as to make the situation as beneficial for themselves as it could be. Not only was the development viewed as inevitable it was also viewed by many as unstoppable because the current system works in favor of the companies. If a rancher owned the mineral rights to the land that rancher would have control over how the development occurred or even if it did occur; if their land was mostly split estate however, they often had little to no leverage in the negotiations. There was a general feeling that the companies had improved their ability to cooperate with ranchers due at least in part to the hiring of local people, the weeding

out of bad companies, and the company's public relations concerns. There was little agreement in this sample about which companies were easy to cooperate and which ones were not.

The Ranching Way of Life and CBM

This sample evaluated CBM and its various issues in light of how they impact or are impacted by *the ranching way of life*. The variety of different contexts in which this development could be occurring are too numerous to completely understand. However each of the components of the ranching way of life identified here (independence, being a neighbor, honesty, family heritage, stewardship, and making a living) were mentioned by the informants as being impacted in one way or another by the CBM development. Some of these impacts are quite clear and direct while others are a little more complex. When these informants discussed CBM or the issues of discharge water and split estate negotiations, they usually did so in terms of how these different components of the way of life were affected. This section will attempt to describe some of the more common relationships described by the informants.

Independence

Many of the informants referred to their appreciation of solitude in the context of the negative impacts the CBM development has had on the land and the subsequent increase in the number of people on the countryside.

But I guess probably the biggest harassment [that results from the CBM development] is that we don't live out here hoping that we have 150 or 200 people coming on and doing their thing, which they can do. (Q65: 080716-004)

The disruption from [the CBM development] is just incredible. It is unbelievable, especially that first year. We'd have 50 or 60 pick-ups a day through here 24/7 because they put in compressors and they go to those compressors around the clock. So it's just caused a whole new way of life really. We used to go here for months never seeing anybody except a neighbor. You never saw a vehicle drive through and now you'll see 10 a day. You don't have no idea who they are. (Q66: 080721-000)

Another informant greatly valued the independence of his operation, which led him to reject the use of discharge water as beneficial use because he did not want to become dependent on it for his operation to remain viable.

Quite honestly, my family invested for a hell of a long time in water development, and I'm not saying we're perfectly watered, and if I had a fresh piece of paper I might do it differently. I might place things differently, but I'm not dependent on anything, we fully have everything we want, we're not short of water. Now that doesn't mean that with methane development drawing down the aquifers, and affecting other things, that in two years or three years we may not have water issues. But it's certainly not an issue now and while they would like me to think I could use more and want me to use some I say, you know what, I don't have a need for it, if I need it I will get it myself. I don't need to be dependent and or obligated to you for what I want to do. (Q67: 080624-000)

As mentioned previously the debate over listing the Sage-Grouse as an endangered species was an issue that this population had very strong feelings about. Most of the population objected very strongly to the proposed listing of the Sage-Grouse as an endangered species. One of the reasons for this is that it threatened the independence of their operation by expanding the control government would have on their land. Although indirect and not explicitly stated by the informants, this was another case where the existence of CBM on the landscape had the potential to have a large impact on their way of life.

If they declare the sage grouse endangered it will limit what we can do on the land. We've had a lot of meetings over sage grouse and what we could do but I don't know. (Q68: 080716-000)

Anything with the endangered species act, they can come onto private land or do whatever they want to do. We're surrounded by a bunch of wackos but most of them go to school. (Q69: 080716-004)

As can be seen in these quotes the threats to independence could come from both the government or the methane industry. Independence was an aspect of the ranching way of life that was viewed as being heavily impacted by the presence of methane development.

Being a Neighbor

The desire to continue being a neighbor had its own implications that caused ranchers to be concerned about the CBM development. Where the CBM discharge water was being put was one subject in which this concern was often raised.

[The water] is contained, we made them contain it. We've got pits and reservoirs. We didn't want it to go onto our neighbors if they didn't want it. (Q70: 080721-000)

None of my water runs down the draw, it stays in my reservoirs and is irrigated and I don't let it go to the neighbor's place. (Q71: 080625-000)

One rancher described the importance of being a neighbor when it came to disagreements over the CBM development. Specifically she felt that it wasn't neighborly to oppose CBM in a way that affected a neighbor's ability to make a living.

One thing about country people that is sort of unique is that most of us feel that everybody is entitled to their opinion and you're welcome to tell me what your opinion is and I'm free to tell you my opinion but it should have nothing to do with our personal relationship as long as your opinion doesn't hurt me and my opinion doesn't hurt you. Now if you get into my pocket book with your opinion...and that's where those guy have got with some people. And they have had some conflict because they've shut down some wells and some stuff on other people's property. There is a lot of conflict over that when someone gets into their neighbor's pocket book. (Q72: 080719-003)

A good deal of the comments on this topic concerned the ways in which communication occurred between the ranchers and the companies. In many ways this communication was inadequate and did not follow many of the "being a neighbor" norms that this community of ranchers observed in their interactions with each other. Across the board this population seemed to view a lot of the problems with

communication as issues regarding personal relationships. It is not that there was a desire to start a friendship or invite company employees over for dinner as they did with other ranchers, but the informants had many problems that seemed to result from the inability to develop a working relationship with one person or contact as opposed to a whole company. One rancher described the “camaraderie” that occurred amongst the community of ranchers. It appeared that this was not felt between the ranchers and the CBM company employees. One landowner believed this was an issue concerning turnover of personnel.

And the turnover in their personnel is just incredible. Believe it or not, but we have 3 companies working on us here and even on our private minerals, we have a well right outside here, I don't know who their pumpers are. They are the guys that go to that well every day and they have changed them so many times you can not keep up with it. I have a stack of business cards this high and you cannot keep track. A lot of those guys only last a week; six months is a long time. (Q73: 080721-000)

This rancher goes on to say that this has caused some significant problems in the process of negotiating a surface use agreement as well.

It gets pretty trying to deal with them. He comes and says “this is what we want to do.” And you go through all of it, page after page of these contracts, and then we say we want to change this and this and this and this to this and this and this. He'll say “well I'll have to check with the office on that.” So maybe the next day, maybe the next week, maybe the next month he'll come back or it'll be a new guy and we'll have to start over. We've had this happen. We had a guy come here and we were right on the brink of signing the agreement, we've been working on it for months. The new guy comes, he

says “I’ve got your folder here.” He opens it up and there’s one page of it. He’d never even seen the agreement and we had to start all the way over again from scratch. Because they go through them, it’s not uncommon to negotiate an agreement with them and go through as many as 5 land men. The turnover is just incredible. (Q74: 080721-000)

Another rancher had problems with his personal interactions with company employees due to the drastic difference that he saw between the way a ranch operates and how a corporation operates.

When you sit down with us you’re talking to the whole company, you’re talking to the CEO and the grunt. When we talk to these guys, they’ve got an office in Gillette, one in Denver, one in Houston, one in DC and their lawyers in Amarillo. So what I’m saying is, there is lots of opportunities for different agendas for miscommunications for different interests, I mean they could be selling the damn thing the same day they’re trying to get you to sign on to some great deal and they’re going to be here for the next ten years. (Q75: 080624-000)

The informants felt very strongly about what it meant to be a neighbor. As can be seen from the previous quotes, this value was applied differently in evaluating CBM. Not only did it directly affect their relationships with their own neighbors, but it also caused them to observe certain differences in the norms that are a part of being a part of a ranching community. One commonly mentioned and apparently quite compelling norm is the importance of honesty in communications.

Honesty

This population expressed the belief that a person's word means a great deal. Those with unfavorable, mixed and even favorable opinions often found that company employees were less than honest during negotiations.

You know with the farmer and the rancher (makes motion of looking in eyes and shaking hands) this is pretty good, this is pretty true, this is pretty straight. To these guys, when it comes to their property acquisition, this is a bald faced lie. That's bullshit. (Q76: 080717-000)

Communication is what it's all about and the communication sucks because you've got a guy that works for these companies that's called the land man and those guys will lie to you. They lied to us to get things done. "If you let us come in here and drill this hole we promise you that we'll be out by September 30th because we know that you guys are going to start hunting back there on October 1st. Not only do we promise you that but my god you have my word buddy and my handshake that if we're in there an extra day we'll pay you \$1,000 for every day we're in there after October 1st because we know we're screwing up your hunting." Well October 15th I watched them drag that rig out of there. That \$15,000, we ain't ever seen it and that land man don't work for them and nobody else at that company remembers that deal. So I think communication and truth telling, and shame on us for doing a hand shake deal in this day in age. That ain't the world anymore. (Q77: 080730-001)

Across the sample, the informants often complained of dishonest methane company employees that they had negotiated and interacted with. Those that had less than favorable opinions of CBM tended to put more emphasis on these claims.

Family Heritage

The drawdown of aquifers where water is scarce was a very frightening proposition for landowners who place a lot of value in the ability for subsequent generations to make a living off of the family ranch.

The groundwater is our livelihood and they're pumping it out just to get the gas. I don't think that is a good trade off. It's too short term of use for all the damage it does. (Q78: 080716-000)

The big thing to me is that they are drying up the aquifers with the methane. Someday they may need that water. You don't throw all the water away out of the Sierra Desert. That's what they're doing. In these old bare hills they build a well-pad some place and then replant them and two hundred years from now except for being flat and growing some grass, you won't be able to tell the difference. The old earth revegetates but there's a lot of this prehistoric water they're pumping that they don't know if it ever will recharge. (Q79: 080716-004)

Among the 4 informants who were not able to put the water to beneficial use it was common for them to think that even if the water could be used, the long term implications for the future of the water supply meant that it was impossible to consider any use of the water as a beneficial use.

I don't think just because you've got a square acre of ground the best use of water is to dump water on it to produce some low value product or something else, it may be today but in 5 or 10 years it may not be, it may need to be

producing something else there and the water may not be there. (Q80: 080624-000)

This desire for long-term access to water was often explicitly spoken of in terms of the ability for future generations to be able to make a living of the land and the ranch operation.

Well when you're losing your groundwater and you don't know if you'll have groundwater when this is left and then ruining our good well, I don't think that's a good tradeoff. My kids won't think so. (Q81: 080716-000)

From comments like this it became quite apparent that the primary driver behind these rancher's concern for the future was the concern for future generations to be able to make a living from the ranch and continue to keep the ranch in the family.

Stewardship

The importance of stewardship that accompanies the ranching way of life resulted in many ranchers being happy with the fact that the reservoirs that are built to hold the water provide a source of water for wildlife.

Actually the water has been a real benefit for the deer, the antelope, the ducks, we have a lot of wildlife, when we were haying we scared up a fox and those kind of animals are rarely seen and we're into preserving the wildlife and nature. On one of the reservoirs we had an island put out in the reservoir so that the ducks could go out there and lay their eggs so the coyotes or anything else couldn't come out and eat their eggs. (Q82: 080721-001)

However it was also common for the landowners to view CBM as having a negative impact on the aesthetics of the land and wildlife.

I just enjoy the wildlife, I like to sit out on the porch in the morning and watch the sun come up as I drink my coffee. It used to be totally silent but now you can hear generators in the background from the methane. (Q83: 080728-000)

Many ranchers also felt that they had a more long term view of the resources and the land, than the CBM companies.

These guys are short term guys as opposed to long term guys, which is crazy because they have to have a long term mine plan. They've got to be looking twenty years out. If they don't they are crazy. (Q84: 080717-000)

Making a Living

Even though this research proposes that these informants consulted more than just economic concerns when forming opinions, the ability to make a living from the operation was still very important to these ranchers if for no other reason than it continued to allow them to ranch. With the introduction of CBM development to many rancher's operations there is now another source of income that made it possible to make a living at ranching.

If it hadn't have been for the methane, I may have lost my place. I owed money against it; I was able to pay it off. Like I said, I bought a new tractor. Those are things that my grandfather would just be in awe of because that didn't happen. I know people in the northern part of Campbell County that don't have methane, they make their living the hard way, by the cow. It just

doesn't pay. The price of cars goes up, building your house, fueling your car, those things go up but the price of the cow stays the same. (Q85: 080719-003)

Discussion of The Ranching Way of Life

To the informants in this study livestock ranching is not merely an occupation and ranches are not merely businesses. Ranching is a way of life. A ranch is a home and a community. It is a shared heritage and a common future. It is self employment but it is also a connection to the land. All these things that ranching embodies have shaped and continue to shape the lives of the people in Campbell County. When you ask a rancher what it is that keeps him ranching you will inevitably hear one thing. "It's a way of life." It is hard to imagine another occupation that elicits the same sentiments amongst its practitioners. Throughout the course of the interviews these ranchers in Campbell County made it abundantly clear that the "way of life" was the key component in the way they attached meaning to land and resource issues. Interestingly this shared appreciation for the way of life did not always result in common opinions about the changes that were occurring in the county. Often the shared understanding of "the way of life" results in people viewing CBM differently or forming different opinions about CBM depending upon the situation or context they found themselves in. Nonetheless the appreciation for the way of life was ubiquitous across the sample and prominent in the minds of the informants.

Making a living is an integral part of being a rancher; after all ranching is a business. Therefore it might be expected that decisions concerning how or even whether to continue operating a ranch would be made in a way similar to the way such decisions are made in the business world. Systems of cost benefit analysis

(CBA) are employed by economists and businessmen to explain why certain decisions are made or trade offs accepted. Most any business that wishes to be successful will take actions in which the benefit exceeds the cost. This seems to be simple logic, if a business takes an action that results in it paying out more money than it takes in then the business would fail to turn a profit. On the other hand if the benefits realized were in excess of the cost of taking a certain action then that action would likely be a worth while endeavor. As simple as this concept appears, it is not the model for decision-making most often employed on the ranch.

What became quite apparent when talking with this population of ranchers is that many decisions are not made in the same way they are in a conventional business model. In Campbell County there are common and concrete examples of this. With the CBM boom that Gillette currently finds itself in, there is an ever-increasing population accompanied by an ever-increasing demand for housing. Couple this with the proliferation of hobby ranches and the desire of out of state non-ranching people to live in the wide open spaces of the west and what results is a situation where residential land values far exceed their agricultural value. The amount of money that could be made from choosing to subdivide one's land or to sell it to a residential developer surpasses what can be made by continuing to use the land to graze cattle. Regardless of this, using the land to graze cattle is exactly what these landowners continue to do. In economic terms the opportunity cost of not developing or subdividing a ranch in Campbell County is very high.

Consider as well, the personal histories of the ranchers who were interviewed. Nearly every informant in the population had at some point gone to Gillette to work a

job off the ranch. Often they would work forty hours a week driving a truck or waiting tables just to come home in the evenings and weekends and do the work that the ranch required. They did this so they would have sufficient income to make the ranch financially viable. In such cases the cost of continuing to ranch exceeded the amount of economic benefit the ranch provided to a point where outside work had to be done essentially subsidizing the ranch operation. These ranchers not only had the opportunity to make substantial money from selling their ranch for residential purposes but in many cases they had to work outside jobs just to continue to make a living doing what they were doing. A businessman employing a traditional cost benefit analysis would have trouble understanding this seemingly illogical or irrational behavior.

To these ranchers the reasoning behind the actions they take is simple and makes perfect sense. They forgo opportunities for greater economic benefit because they enjoy *the ranching way of life*. This is not an assumption or an interpretation. Quite frequently throughout the interviews the informants were asked what kept them ranching in light of other more economically beneficial opportunities, the answer was almost always the same, "it's a way of life." This does not appear to be an isolated occurrence amongst this population either. A number of studies (Smith & Martin, 1972, Pope, 1985) suggest that ranching is not simply a method of producing wealth but more easily understood as a consumptive endeavor in which those who participate are in effect paying for things that accompany ranching that they value. These other benefits of ranching are not so easily assigned a monetary value. This problem, often described as incommensurability, is a common critique of CBA (Frank 2000) and is

the argument for considering contingent valuation methods. Whether or not such methods could be used to understand the decisions made by this population are not the point of this discussion however. Rather what should be understood from this sample is that strict monetary considerations are not the basis for the decisions that are made and the actions that are taken with regard to their ranching operation. Instead the value of *the ranching way of life* enters into this population's consideration when they make choices that appear to be not in their economic interests.

From the data it appears that similar considerations occur when these ranchers attach meaning to CBM. When this study was initiated the expected result was to find a direct connection between the ability of a landowner to make money from CBM on their land and the opinion of CBM as either favorable or unfavorable. Monetary incentive for development did indeed impact the way this phenomenon was perceived by the population. It was not however, the only factor that had an impact on the way this population formed its opinions or on the meaning they attached to CBM. What became apparent from the discussion was that for many of the landowners their opinion of CBM was not just a matter of dollars and cents but instead it was a result of a more inclusive form of CBA that took into account what the rancher valued about *the ranching way of life*.

Furthermore, in Campbell County disagreements over CBM often manifest themselves in disagreements over the management of the water resource. Nearly all the litigation that has occurred has been over different aspects of the production of CBM discharge water. Water is a magnet for disagreement over CBM. It appears

that the potential for there to be problems with water quality and disposal were anticipated by the BLM when they required each CBM well to have a WMP. As can be seen from the above quotes some of these issues are still areas of concern for the population including the quality of the water produced and the effect that this may have on existing wells. It is indeed these issues that are often litigated, however what seemed to be a more general concern for this population, which likely goes beyond the reach of government regulation, is the concept of “beneficial use of the water”. Although methods of disposal and water quality were important issues, this population seemed to be more concerned with how the water could be put to use for ranching purposes both in the present and well into the future.

There was a strong relationship in the attitudes of this population between an unfavorable opinion of CBM, and the belief that water is not being put to beneficial use. If a rancher felt that the water was not being put to beneficial use it was very likely that the rancher did not have a favorable opinion of CBM. Initially, therefore, it appeared to the researcher that the ability to put water to beneficial use was what would primarily cause an informant to have a favorable or unfavorable opinion of CBM. However, it was later realized that this relationship could not be sufficiently understood in terms of a simple correlation.

Upon analysis of the data it became apparent that the desire to put water to beneficial use was shared by the sample. The ability to do so varied greatly but did not necessarily correlate with the opinion of CBM. Some places water could be used to irrigate and in nearly every situation the water was at least useable as stock water. Regardless of this, those ranchers who rejected the idea that this use of water was

“beneficial” did not do so on the grounds that the water could not be used at all in their particular situation. The differences of opinion were more strongly driven by the way this population viewed the water as benefiting or hurting *the ranching way of life*.

The split estate policies of Wyoming force the mineral developers and the surface owners to engage in “good faith negotiations” when there are different surface and mineral owners. It is in these negotiations that *the ranching way of life* is confronted with the way business is conducted by the CBM companies. It is important to note that none of the ranchers that were interviewed had exclusively good things to say about their negotiations with companies. Those that had favorable opinions were more inclined to say some good things but still mentioned struggles and differences between themselves and the companies. Those that had a more unfavorable opinion of the development had a litany of complaints about the process of dealing with and coexisting with the CBM companies. Once again there is a tremendous amount of common ground between these two portions of the sample regarding what they value when cooperating and communicating.

A common characteristic of this sample population was the begrudging acceptance that they had no choice but to enter into negotiations with company personnel in cases where the split estate status of the land necessitated it. As described in the background section of this paper the mineral estate takes primacy over that of the surface. In order to ensure this primacy a mineral developer is not required to reach an agreement with a surface owner, they are only required to make an effort to reach an agreement. Therefore, the landowner cannot outright deny

access to the minerals. This appeared to have a disempowering effect on much of the sample. Most informants mentioned that they tried to get the best deal that they could but knew that eventually the development of the minerals was inevitable and therefore any resistance would be fruitless. It should be noted that it is somewhat in the best interest of the developer to reach a surface use agreement with the landowner. If they cannot they must spend more time and effort submitting their plans to the Wyoming Oil and Gas Commission. They may also have an easier time negotiating for lower surface damage payments if they are negotiating with a landowner inexperienced in coming to these agreements, than if they had to conduct such negotiations with the WOGC. Therefore there is generally an effort made by the CBM developers to negotiate surface use agreements but they always have the upper hand in such agreements because of the primacy issue.

What also became clear from the interviews was that for these ranchers negotiations are based on relationships and established normative behaviors that the CBM companies often failed to recognize. The sense of community, that is grouped with “being a neighbor” in this paper, is built on personal relationships and shared customs and understandings. Being a neighbor involves negotiating with others in the community and it is impossible to separate this from the personal relationships that exist between neighbors and community members. These normative behaviors that are a part of *the ranching way of life* are included in the sample’s attitudes towards the companies with which they negotiate.

A large corporation can have anywhere from 100 to 100,000 employees. A ranch usually has one family with the occasional ranch hand or neighbor helping out.

When ranchers negotiate with other ranchers they are talking to the entire company whereas a large corporation may have a different department to deal with each different aspect of a negotiation. The companies generally have a point man in these negotiations called the “land man” who deals with the rancher, but as the informants point out, there is no guarantee that this person will stay with the company and see negotiations through to fruition. In the world of corporate business this is acceptable because when two businesses negotiate it is just that, two businesses. For this population of ranchers it became apparent that negotiations occur on a much more personal level. There are names and faces attached to either party instead of logos and mission statements. This belief in the importance of personal relationships seemed to lead to other problems as well.

Many ranchers mentioned that business used to be conducted, and agreements used to be made, with a firm handshake while looking into the eyes of their counterpart. The ability to do this was indeed derived from the personal nature of such negotiations in which both party’s word and character were at stake and the consequences to either of them, should an agreement be broken, could greatly affect one’s reputation. Honesty was something that was continually mentioned as having the utmost importance and value in this community.

The previous sections use the ranchers’ words to describe *the ranching way of life* and in doing so describes the range of ways that CBM and the issues that accompany it are believed to have an impact on this way of life. To better understand how these ranchers formed their opinions however it may be best to focus on the

stories of some individual informants whose cases make for good descriptions of this process but are also representative of sentiments expressed by other ranchers.

Informant 080624-000 is one of the ranchers who had an unfavorable opinion of CBM as shown in fig. 1. In the interview he described how his family had declined the development of their private minerals because the companies that he had negotiated with had failed to address his concerns over the beneficial use of the discharge water. He described his as a “principled approach” in that his beliefs about beneficial use were what drove his decision-making. What he rejected about this use of water being “beneficial” is made very clear in (Q67). His problem was partly that he did not want his water managed for short-term benefit but more importantly he took a great deal of pride in his operation’s independence. He made it clear that this was his reason for rejecting the industry’s plans for the discharge water. The issue for him was not simply whether or not some use could be found for the water but rather it was how that use of water was conducive to his long-term benefit and most importantly his independence. In describing *the ranching way of life* members of the sample placed a great deal of emphasis on the appreciation of their own independence. (Q67) shows that independence was so strongly valued by this informant that he rejected the benefits of the methane water because the independence included in *the ranching way of life* was at risk.

Informant 080716-000 is a third generation rancher in his mid 60’s. He is shown in figure 1 as having an unfavorable view of CBM development. He currently has development on his land of which most was development of minerals that he owned. Therefore he was getting royalties from them as well as damage payments

for the impact that the development was having on his surface. His son was employed by a CBM company as a pumper. For all intents and purposes the CBM development had been an economic benefit for him. He got income from it that was badly needed and his son was able to make a living working in the industry. It would easily be expected then for this rancher to have a favorable opinion of the development. This was not the case. After experiencing the CBM on his land this informant came to the conclusion that the short-term economic benefit was not worth the long-term impact that the development had on the ranches subsurface water supply. This informant made it quite clear that the issue of “beneficial use” was the primary cause for his unfavorable opinion of CBM. His was an argument based heavily on the short term versus the long-term use of his resources. Once again it could be assumed from the comments that his unfavorable opinion was simply a belief in the need to put water to beneficial use. This assumption fails to truly understand his reasoning however. More light is shed on this reasoning in (Q81) when he mentions his concern for the affect depletion of aquifers will have on future generations. Furthermore, in the course of interviewing this rancher and being taken around his property, the informant made it abundantly clear to the interviewer through his comments, that the ability for subsequent generations of his family to be able to make a living off his land was at the heart of his concerns. This informant, with pride and hopefulness, introduced the interviewer to children and grandchildren. Here we see another aspect of *the ranching way of life* at work. The pride and appreciation for his family’s heritage on the land was paramount to this informant. He did not think the water was being put to beneficial use, regardless of whether he

had been able to use it, because the depletion of the groundwater could have significant negative impacts on his family's legacy on the land.

Informant 080716-003 is shown on figure 1 as having a somewhat favorable opinion of CBM. His was another situation where his family's heritage on the land was a major factor in his attitude formation. (Q12) shows the sort of pride he had in the heritage of his family on the ranch. In his case the CBM insured economic viability of his operation thereby increasing the chance that his ranch would remain in the family. His favorable view of the methane however, was tempered by his frustrations in negotiating with the CBM companies as can be seen in (Q58). He had been involved in a class action lawsuit in which, along with other ranchers, he sued an energy company that was trying to use eminent domain to put in a pipeline. He felt that the company had been dishonest and threatened him with condemnation in the process of negotiating the pipeline and he was very angered by this. His operation also depended heavily on trophy hunting that he guided on his property. He was very concerned with the effects CBM was having on the mule deer populations. He cited his own first hand observations in describing these effects and expressed a great deal of concern over what the development was doing to wildlife populations.

Informant 080716-004 was 69 years old at the time of the interview and had recently moved to the ranch where he was interviewed. He had moved from the ranch that he had owned previously because he had been approached by a CBM company to develop the minerals underneath it. He had owned some of his mineral rights on that ranch and some he did not, meaning he could have potentially been pretty well compensated had he remained there. Although specifics were not

discussed, he believed that the amount he would have made by staying there would have been greater when combined with the value of the land than what he ended up selling the ranch for. For this informant the decision was simple however. It was important for him that he continue to be able to enjoy the solitude that came along with being a rancher as can be seen in (Q65). He sold his ranch and gave up a chance at making money from CBM to move to another ranch to continue to work but not have to be bothered by the changes to the ranch that occurred when it turned into an “industrial site” thus taking away the solitude that he so strongly valued as a part of *the ranching way of life*.

Informant 080721-001 was one of the ranchers that had a very favorable opinion of the development. For her it was much more of a matter of economic incentive but even in her case it would not be fair to simply characterize her opinion of the development as being unidimensionally driven by a desire for money. Throughout the interview what she expressed most forcefully was her happiness that her grown son and his family were now promised a future on the ranch. Up until the methane came her operation had barely stayed above water and by her accounts would not have stayed in her possession much longer due to its inability to remain profitable. For her the money that came in from the methane allowed her to keep her ranch and subsequently pass it along to the next generation, as can be seen in this quote.

My mom and dad where here, my grandparents where here. My son and his wife are having a baby in September so it's starting the fifth generation that

hopefully it will be handed down to, keeping it in tact, because the coalbed methane is helping us pay off our bills.

At first glance, yes, her decision was an economic one, but as she expanded on this idea it became clear that the money was nearly a means to an end. What mattered was that the ranch would remain in her family thus keeping that heritage in tact.

As shown in the quotes a number of different aspects of *the ranching way of life* came into play when this population described the meaning they attached to the development, beyond those described in the stories of these five ranchers. How CBM development affects a rancher's ability to make a living is important but also involved are the impact that the development had on the rest of *the ranching way of life*.

Furthermore, no two ranches are alike so the context will vary greatly from development to development. In one place the water produced may be minimal but the rancher may not own the mineral rights. In another place the rancher may own the mineral rights but the development could have major effects on the wildlife that the rancher enjoys. In any case there are a million different variables that could be at work. Each rancher evaluates for himself or herself how CBM will work within those context. Based on the context of the development and how each individual project impacts the way of life for that rancher, in terms of both making a living and other characteristics, the ranchers in this sample formed their own opinions of CBM that ranged from favorable to unfavorable.

Sage-Grouse and The Ranching Way of Knowing

As previously shown in *The Ranching Way of Life*, the issue of Sage-Grouse protection was something that was viewed by this sample as possibly having an impact on the “independence” described as part of *the ranching way of life*. As true as that is, it should still be discussed on its own because *the ranching way of life* was not the primary context within which issues of Sage-Grouse protection were most commonly discussed. Instead what the sample of informants did more frequently was discuss the scientific evidence that showed the CBM to be causing the decline in Sage-Grouse populations. This phenomenon was too common to be ignored and also shows another key aspect of the way this sample forms opinions and attaches meaning. What this sample expressed in discussions about Sage-Grouse was an appreciation for a distinct form of knowledge that was quite different from scientific knowledge both in the way it came to conclusions and the conclusions that it came to. It may be expected that protection of the Sage-Grouse under the ESA would cause many of these ranchers to raise objections about property rights and government regulations. Indeed that did occur, but what was much more common was for the ranchers to discuss their own form of knowledge and how it differed from that of scientists. The objections to the proposed listing were usually similar to the one expressed here.

I think that they're trying to list them without some good science behind them. Basically they are trying to blame it on the energy and they're trying to put a lot of restrictions on them and I don't know if that's necessarily a valid reason. One of the things that we've seen is a lot more predators, more coyotes, more eagles. Things like that that I don't know if they are

necessarily taking into account when they talk about the decline in numbers. I just think that they're rushing into that and they're kind of being pushed by some environmental groups. (Q97: 080720-000)

The theory that predation was causing the decline in Sage-Grouse should be emphasized here because of the fact that it was widely accepted by this population, and it was mentioned quite often. For the most part the increased predation was blamed on the lack of predator control allowed and implemented by the government. One common feeling was that predation had increased ever since 1080 (a popular poison used for predator control) was banned by President Nixon in 1972.

I haven't seen a pheasant on this creek in about 15 years. Sage-Grouse is the same way, you'd see bunches of 200, 300 Sage-Grouse. And I can tie it to two things, when the government took away 1080, and they protected the raptor. I've seen those bird populations steadily declining ever since. (Q98: 080716-003)

The informants presented a number of other theories explaining the loss of Sage-Grouse including changes relating subdivisions.

What about all these subdivisions that have grown up around the county that have misplaced Sage-Grouse? Now the coyotes and the fox have more places to hide, in the culverts or whatever with all these roads. The traffic has displaced them, so it's not just the industry and their drilling. (Q99: 080721-001)

The causation of the Sage-Grouse is related largely to the 40 acre subdivision thing, I think. That land use problem brings with it...in other words you can't

buy 40 acres unless you have 5 junk cars, you have 5 junk cars you can drag out there and you can buy a 40 acre tract (sarcasm). I guess that's what goes on but I've never bought a 40 acre tract. With those junk cars you bring habitat and you bring habitat for the predators that prey on the chicks and the eggs particularly; skunks, fox, feral cats, rats even, the rodents and small predators that prey on that part of the sage grouse. And that presents a far far bigger problem than any oil and gas development or any grazing or anything like that to it. (Q100: 080722-000)

Beyond alternative explanations for any apparent decline, estimates of declining Sage-Grouse populations were also often questioned on the grounds that the methods used to study them were inaccurate.

Well they don't know, and it's pretty easy to miscount. They aren't out there parading to be counted when they are in cover in sage brush. (Q101: 080716-004)

Other ranchers expressed the belief that these fluctuations in populations are indicative of a natural cycle.

It may be a natural cycle of the birds. You see fluctuations in all kinds of wildlife populations. It just depends on the weather, on the food source, there's just a lot of different issues. I just don't have a lot of faith in it when they rush in and try to get them listed. (Q102: 080720-000)

This cyclical fluctuation of Sage-Grouse populations is reminiscent of another common theme that many of the informants expressed when talking about these

subjects. Essentially the sentiment is that often nature does best when left to its own devices.

This country heals itself very well, and the reclamation works here. In fact I reclaimed quite a few old oil well locations, dry holes, and I didn't even reseed them. Within 10 years Mother Nature had reseeded them. The cossia weed would start on them. That would bring the deer and antelope in, and the deer and antelope browse on the seeds on the sagebrush and they browse on the seed on the grasses, and they reseeded. Within ten years they were back native. Now I can show you other oilfield location that were reclaimed and planted with introduced grasses, you know like crested wheatgrass, and they are scarred. Yet they've forced everybody now to go to that type of reclamation. You can't just leave it, you've got to seed it with something that's going to grow quick. That's one of the drawbacks I've seen, they won't listen to any of us old ranchers. (Q103: 080716-003)

Other landowners drew from their own experiences with Sage-Grouse and CBM development in coming to the conclusion that Sage-Grouse could survive the changes that were occurring on the landscape.

I know two or three years ago [a methane company] was building some gathering pipeline up there for their initial drilling program. They were using that particular area for a staging area. They had a stack of pipe there and they left their equipment there at night. And those guys told me, every morning they'd go out there in the spring and there'd be Sage-Grouse drumming right around their backhoes, road graders, and their stacks of pipe. It didn't seem to bother them any. (Q104: 080716-003)

One landowner believed that the changes that were occurring and that he had observed actually had the potential of having positive affects on the Sage-Grouse populations.

If you understand Sage-Grouse they like the mosaic and the transition between sage brush and grass. They hide in that transition line if you will, come out of hiding, go do their thing and come back. So because of the volume of sagebrush, some of that disturbance, I think, helps break up the mosaic pattern of the landscape. The one lek right over here where the pipeline went through had more birds on it after they got done than it did before. (Q105: 080717-000)

The different theories that were advanced by informants were almost always based on the observational knowledge described here as the *ranching way of knowing*.

The stupid guys that say the CBM is hurting them are full of shit up to their ears. I've seen nests and their little thumping grounds over there on the neighbor's place. I've seen nests, that you can ride by them and see ten, twelve eggs in them. Two days later you'll go by and they're all gone. You can see 'coon tracks or skunk tracks, coyotes. (Q106: 080729-001)

The informants, who had a less than favorable opinion of the CBM, tended to discuss the scientific evidence more favorably. One landowner whose land was actually one of the areas where Sage-Grouse numbers were counted seemed to praise the methods used and the validity of the study that was conducted.

We met a lot of them kids and we told them that they could just go anywhere they wanted and they did. They were out there at night with spotlights because that's how they catch them. They catch them out at night with spotlights, radio collar them and it was really an interesting deal. And the lead researcher was so careful about how they were doing it. (Q107: 080721-000)

This same landowner referred to their own observations on the land when coming to the conclusion that the CBM development had indeed caused a decline in Sage-Grouse in an area where they had been abundant in the past.

The perfect example is [another rancher], he has a place just south of here that's on chicken creek, which is named after the sage chickens, and there was thousands of sage chicken over there and in the spring I think he had four leks on that place. Everybody came out from town to watch the sage chickens in the spring, and now he has zero sage chickens. He has none, none at all. (Q108: 080721-000)

It was much more common for an informant to be more accepting of the scientific evidence if they had an unfavorable opinion of CBM, like this informant who was on the unfavorable extreme of fig. 1.

Well of course, yeah [CBM is] killing them off. They have to have their leks where they can strut and they have to have undisturbed resting areas and what not. (Q109: 080626-001)

Although the issue of Sage-Grouse protection elicited different reactions amongst those that had a favorable opinion and those that had an unfavorable opinion of the development what was common was that both of these opinions of this issue were expressed with regards to the science that was conducted and how it either

conflicted or corresponded with the knowledge of the land that they had acquired through their own way of knowing. However, this isn't to say that this sample of ranchers always rejected scientific findings or exclusively referred to their own way of knowing when drawing conclusions about the land. It was common for informants on either side of the debate to enlist scientific evidence in arguing for the beneficial role that livestock grazing plays on the landscape.

Grazing is beneficial to the land. There was a study done in the 60's or 70's in Yellowstone. There's a big river valley that runs out of the west end of Yellowstone Park. There's a fence that says this is Forest Service and this is the park. So they did a study because right across the fence, this had cattle grazing, this had nothing. In Yellowstone Park were all they had was wildlife, was in a lot worse shape, according to the land managers, than where the cattle and sheep were because it was managed.

There's been a lot of research done and it's been proven that that land deteriorates if it's not grazed. See, you go to messing with Mother Nature; Mother Nature put this grass out here in the west for a purpose, because they put buffalo here, the good lord did or whoever did it, put buffalo here to control it. Cows have taken the place of the buffalo.

Furthermore, a small amount of landowners used scientific evidence that made claims that were contrary to the dominant scientific conclusions that said CBM was causing Sage-Grouse decline.

I question [one professor's] theory about [the sage grouse being impacted by the increased instances of West Nile infection due to increased mosquito habitat that results from the discharge of the methane water] because we had

a professor from the department of the Ag. at the University of Wyoming, he was an entomologist doing the dipping for the mosquito larvae and all the fresh reservoirs that are on our place that was built by the coalbed methane companies. The banks are raw so there is no habitat there. But all my old reservoirs were just loaded with mosquitoes, the larvae, just totally loaded with them and so he himself tested for two years and he told me all the new reservoirs don't have any new larvae in them whatsoever because there is no habitat for them. He said the old reservoirs are just loaded with them. So the theory is that if there was no coalbed methane in this country there would be no new reservoirs, and during this drought period there would've been a limited area where these sage grouse could drink, out of these old reservoirs, and if that was the case there would be a higher mortality rate because they'd have been there where all the larvae was but they've been drinking water out of all these other reservoirs so it scattered them out. So as far as I'm concerned this theory goes against his theory, so I've got some question there. (Q: 080625-000)

This distinction is noteworthy and will be discussed further later. More often than not though, in regards to Sage-Grouse protection the ranchers that make up this population continually discussed their own traditional way of knowing that accompanies their way of life. The most common sentiment expressed by this population and the subject of knowledge was the need to be "on the land" to really have an appropriate understanding of what was going on with the management of the resources. Quite often this connection to the land was expressed as a difference between what the rancher knew and what the federal agency (most often the BLM) employee knew.

The BLM, try as they might and maybe they do, I think the left hand most of the time doesn't know what the right hand is doing, I think their biggest problem is they truly are not on the ground. Yes they see the ground but they don't live there. It's like putting you into a hospital and you telling everybody what that doctor did wrong. I go to these meetings with the BLM and I listen to that kind of stuff and I think "oh my god, where did you get that idea. Who taught you that, who said that?" (Q110: 080627-000)

Quite often this need to be on the land to be knowledgeable was further qualified by saying that it is important for a person to be making a living from the land as well. "The government knows how to take care of it, we don't (sarcasm). But we have to make a living off it." Their knowledge is based in observation; it is derived solely from experience not from "book learning."

The rancher is out here; he knows what's going on everyday. The college kid reads a book and they go by that book. We get these sort of people out here looking for these birds all the time. And they'll tell you that there should be a nest here, or they say this grass is good for sage chickens, or they say sage chickens won't cross methane roads. Well that's all a bunch of horse shit because what killed a lot of them sage chickens, about 4, 5, or 7 years ago, was the west Nile. It has nothing to do with the methane and them birds are going to nest wherever the forage and the shelter is the best. Like I said, we farmed this for thirty or forty years and all these fields that are grass now was all land that we put in CRP. Well them environmentalists see that and say "well all the land has to be like that or else the sage chicken or the grouse and all that can't survive." Well when you're out there summer fallowing, them chickens move to a different place. They move back and forth. So these guys don't really have any idea because they're only out here maybe once a week out of the whole year trying to study something and it don't happen that way.

They don't know, unless they live out here and see it everyday they have no idea. So I don't think they should even have any say. (Q111: 080719-000)

Not only did these ranchers express that they derived knowledge from observation, but also they did so over an extended period of time.

The people that's been here for 50 or 100 years know more about this land than anybody that came out of the University and has got a job in Cheyenne or Helena, either one. They know how to be stewards of the land, the old landowners. (Q112: 080719-001)

The benefit of an extended period of time over which knowledge has been acquired is not only reserved to ranchers who see themselves as older and wiser than agency employees. Knowledge can be acquired over a number of generations as well.

So what is the problem with the Sage-Grouse population? Only speaking as an old guy who grew up with his dad and uncle and philosophized, when you're in the saddle for a long time every day and you're punching cows you have a long time to philosophize and listen to the old-timers, the big thing on sage chickens are predators. (Q113: 080728-000)

This prioritization of intergenerational knowledge formed from direct experience is continually bolstered by the fact that the family is able to continue to survive on the land based on the knowledge that they have of it. This is illustrated by this husband and wife who are defending the sustainability of their range management practices.

Wife- You know if his grandfather was a crappy rancher, or his father was a bad rancher we wouldn't be having a bumper hay crop this year. There's no way. They improved on those hayfields. Those hayfields are how old?

Husband- Oh wow, it was horse drawn era when they were set up. Close to one hundred, 1909.

Wife- And they're still growing strong. Obviously we are not damaging anything. We're improving on it. It's a good thing. (Q114: 080717-000)

Many informants described the process of trial and error and making mistakes as a key component of gaining knowledge. This landowner is again referring to his knowledge of the land versus that of an agency employee.

They don't have any people that come from the land. Most of those guys are all book learned people but you just have to learn by trial and error and making mistakes. (Q115: 080722-000)

Trial and error isn't limited to personal experience either. The intergenerational knowledge mentioned previously can also be a result of trial and error. After a number of generations on the land mistakes had been made and theories about best and worst practices have been tried and tested.

When I was a kid, dad tried raising corn but antelope were a big problem. They'd come in when the ear was sitting on it and pull the silks out and of course that killed the ear. Rather than kill antelope they'd just quit raising corn. (Q116: 080716-003)

Others learned lessons from the mistakes of neighbors or others in the community. This particular landowner describes one such lesson her mother had learned when she was ranching the land.

There was a man that came from Ohio and he had a little place down here with a funny looking barn that he built by hand and he was very educated and he was eccentric but he was highly educated, we have some of his writings. Anyhow, he thought he would build dikes. He was down there in that creek bottom and he built dikes for the water and when it rained he could irrigate, like you do in Ohio, from that creek bottom. Well it didn't work of course. As soon as that rain water was held it brought that salt up out of the ground, just plain old water out of the sky. You have to manage water on this land.
(Q117: 080627-000)

It also became apparent that these landowners also felt that this traditional knowledge was strongly bounded and restricted to very specific geographical contexts. The most common limitation that was applied to the knowledge a landowner had acquired was that it could only be applied to his own land. This became apparent when informants would continually qualify their statements by saying "I know what works here, and what doesn't work here." One landowner made the point very clearly that his superior knowledge of the land only applies to his own land when he was asked if he has a more valid knowledge of the land than the land management agencies do.

Well on my own place I do, because I've been here thirty five years but if I was to go over on my neighbor's place, I've rode over helped 'em brand and gather cattle, but I haven't been on it like I been on my place and I wouldn't

make a judgment call on their place because they're more aware of what's going on over there than I am. But on my own I think I've got a pretty good handle on what's going on. (Q118: 080625-000)

Another landowner directly questioned the ability of a landowner to be able to make generalizations on the landscape scale that are derived from their observations on their own land.

Most of them didn't have a large enough place to really make a judgment. If you have 4, 5, or 6 sections of land you don't have a big enough view of the world to make a judgment on wildlife per say, I don't think. Maybe a jumping field mouse, I don't know what the range is on those. Elk are highly mobile and wolves are highly mobile and buck deer, if you see a buck deer that you want to kill you don't have to...maybe a mile radius is all you have to hunt. Antelope have a little bigger run. If you jump an elk he'll go 15 miles before he looks over his shoulder. And maybe some of these guys are well educated and smarter than I am, and I'm sure they are and maybe they know more than me but I don't know, everybody has kind of a little window on where they look and everybody is that way, it's what they know. (Q119: 080728-000)

The *Ranching Way of Knowing* was described by this sample as being based in observation that occurs over long periods of time and is often intergenerational. It is tested through trial and error and its reliability is verified by the ability of the population to continue to survive off the land. The described their own ways of knowing as causing them to draw conclusions that were contrary to those drawn by the scientific community. To them this meant that there was uncertainty and that these findings should be viewed with some skepticism. The perceived differences

between science and *the ranching way of knowing* is the context in which Sage-Grouse protection was most often discussed. Therefore the Sage-Grouse protection was described as, essentially, a question of knowledge instead of an issue of governance.

Discussion of Sage-Grouse Protection and The Ranching Way of Knowing

Ranchers in Campbell County Wyoming and possibly elsewhere value a distinct form of knowledge. This population's proximity and connection to the land enables them to observe and learn about natural processes from the early morning when they step out the door and take their first look at their hayfields to the late evening when they put up their last bale and call it a night. They see the same country every day for years and they keep track of its changes as a stockbroker would the Dow Jones. They try new techniques and strategies from which come both failure and success. Over generations of survival in less than hospitable conditions they have developed a pride in what they know and how they know it. This way of forming knowledge is inextricably linked to their ranch operations.

This *ranching way of knowing* was what this sample continually enlisted in order to support their own opinions of the issue of Sage-Grouse protection. The ranchers that had even a slightly more favorable opinion of the CBM than the four on the unfavorable end of the scale (see fig. 1) almost all objected to the research that had been conducted that claimed that the Sage-Grouse was being negatively affected by the CBM development. The common reaction to these claims was to express their

belief that the decline in Sage-Grouse population could be linked to increased predation on the Sage-Grouse. Increased predation was believed to be a result of higher predator populations on the land that are perceived to have been increasing since President Nixon banned the use of 1080, a popular predator control poison, in 1972. These landowners often described their own observed evidence that showed predators to be a significant force causing the decline of Sage-Grouse populations. As the quotes show, there were other theories about Sage-Grouse and CBM usually backed by some anecdotal evidence, which always pointed away from CBM as being the primary cause of Sage-Grouse decline, and towards something that was undesired by this population.

On the other side of the issue, it was common for those opposed to CBM development to agree with the scientific findings, which if enlisted in policymaking decisions, would likely restrict further energy development. These landowners would likewise enlist their own observational evidence differently by arguing against claims made by industry that the CBM discharge water had little affect on the soil or on the river systems in which it was discharged into.

It is readily apparent that often the science these informants rejected and replaced with their own theories, was science that argued against their own interests. Therefore it is quite possible that there is some other force at work here other than just simply two different ways of coming to conclusions, as the informants often argued. This seems even more probable when one considers that a number of the informants with varying viewpoints on CBM were quite willing to enlist scientific

evidence when it supported their own claims that grazing had a beneficial impact on the land.

As mentioned previously this sample population continually referred to the high value that they placed on honesty and a person's word. What is seen here may be viewed by some as a direct contradiction of this belief in honesty. It appears that this sample is willing to enlist science when it behooves them, while rejecting science when it works against their interests. Indeed, it seems that there is a certain level of dishonesty in their acceptance and rejection of certain types of evidence. What this conclusion may fail to consider, however, is whether this dishonesty is actually deliberate. It may not be fair to describe this in terms of these informants choosing one belief or another but rather it may be better understood as the result of an embedded cultural viewpoint from which these ranchers approach such discussions.

(Q114) shows a husband and wife discussing the validity of the knowledge held by past generations of their family. They argue that past family members couldn't have been "crappy ranchers" because their actions resulted in the land continuing to produce bumper hay crops even up until present time. This couple validates the knowledge of the land that they have because it succeeds in the operation producing hay, which is their goal as ranchers.

Now, consider if an advocate for prairie dog protection were to come on to the land and see that part of the reason that they were able to continue to have bumper hay crops was because they wiped out a number of prairie dog colonies in their best hay fields. This person may indeed call this family's ancestors "crappy ranchers"

because the knowledge of the land that they possess ultimately led them to take actions that resulted in the decimation of an entire population of prairie dogs.

It is hard to say that either of these points of view is dishonest. Rather they are reflections of deeper cultural bias that impact what variables and outcomes are observed. This population views the land through lenses that see ranching as a benefit to the landscape and in turn view predators and subdivisions as being negative presences on the land. Therefore they enlist the *ranching way of knowing* to better understand these sort of effects and variables. They are not dishonest but rather are impacted by an embedded cultural viewpoint.

This same understanding could be applied to the researchers who have found there to be negative impacts of CBM development on Sage-Grouse populations. These biologists are trained and taught to observe conditions in terms of their effects on native biodiversity. To these researchers the appropriateness of the presence of predators on the landscape is something that is not, therefore, questioned. The conclusions that they have reached regarding CBM and Sage-Grouse are not invalid but are still representative of a tendency to ask certain questions and possibly not others. Once again this is in no way dishonest but rather it is representative of an embedded cultural viewpoint in the same way that the conclusions drawn by the ranchers are.

What becomes apparent from this understanding, is the intractableness of this conflict should efforts to resolve it continue to rely on mere scientific evidence to argue for or against certain actions. In terms of policy decisions, science falls short of

considering all the variables that are at play. Rancher 080624-000 recognized the problems that occur when science is enlisted in such a way.

We now have policy drive science instead of science drive policy. I don't care what the science says. Just because the science says this doesn't mean the policy has to follow it, policies are made to reflect wants needs and desires not just science, but what we have now is wants needs and desires driving science...Like I said I don't care if the policy is completely reflective of the science but I want the science to be completely reflective of the science. But what we are doing now, the way we are making policy decisions and resource allocation decisions is just this plethora of crap; there is some good science maybe, occasionally. But really I think the scientific community and truly the public servants are left out, it's the advocacy groups, special interests. What's happening is we're not managing our information we're manipulating our information.

This informant makes the point that enlisting science to make complicated policy choices has both negative effects on the science that is done as well as the policy that is drawn from it. In the context of Sage-Grouse protection this seems to be readily applicable. It seems that no matter how much evidence is accrued that makes the case that CBM is hurting Sage-Grouse populations, there will still be a general rejection of this conclusion made on the grounds that it is not reached in the appropriate way.

This sample population does indeed have it's own distinct form of traditional knowledge. They value inferences made from being connected to the land and observing it over a long period of time. This is the knowledge that they value. It is common for these ranchers to be skeptical or to reject knowledge that they disagree

with on the grounds that it is not arrived at in the correct way. Landowners in favor of CBM rejected conclusions that have been drawn saying that Sage-Grouse are negatively affected by CBM development on the grounds that this conclusion conflicts with their own knowledge. Landowners opposed to CBM often would use their knowledge to confirm that the Sage-Grouse are affected by CBM. The common theme is that these rejections are both made on the same grounds. These ranchers have a firm belief in the idea that to know the land one must have some connection to the land. Furthermore, their knowledge of the land is impacted by their embedded cultural viewpoint that believes ranching is an appropriate land use and that the *ranching way of life* should be maintained. This population frames the issue of Sage-Grouse protection as one of uncertain knowledge because it is not arrived at in their accepted way. They make objections on the grounds that what they see is different from what the scientists have proposed. This is not evidence of dishonesty but instead evidence of how the different meanings attached to ranching and the landscape can impact what a person believes to be the appropriate relationship between human development and the landscape. There may be little opportunity for this conflict to be resolved by merely enlisting scientific research to argue for or against certain actions. The model of professional scientists deciding what should be done on the land fails to consider the value laden and culturally derived aspects of such issues.

CONCLUSIONS

What is represented in this thesis is an effort to understand the various viewpoints held by a given population, the ranchers of Campbell County, Wyoming. What these informants have shown is that although they are far from immune to economic pressures, they enlist a system of making decisions about resources that is an alternative to a traditional cost-benefit analysis. Their way of life is the most important thing to them, and they evaluate changing circumstances through the lens of supporting this lifestyle. Although this way of life does require that they make a living, it also has to be compatible with their own ideals of independence, being a neighbor, honesty, family heritage, and stewardship. When the way of life is supported by CBM, then CBM is supported by the rancher. When it is not, this population struggles to retain as many of the elements of this lifestyle as possible, regardless of cost, since they recognize they have little power to stop CBM developments in commonly occurring settings where sub-surface property use has long been severed from surface owner discretion.

The circumstances and context within which CBM development occurs will vary from project to project. This context will cause different effects and benefits to be felt by different landowners, so it remains difficult to generalize how any grouping of this ranching population might respond to new development proposals. When each ranching family considers the effects of the development in regards to its *ranching way of life*, each will form opinions dependent on how it impacts their own capabilities to sustain this lifestyle. The appropriateness of CBM is evaluated under

surprisingly variable conditions – since property interests, external growth pressures, cattle business economics, and stewardship imperatives – each express dynamic trends that affect the whole ranching operation. Any given project’s specific consequences can converge with other trends in this larger, uncertain social sphere, affecting the judgment of the project on a family’s way of life.

The importance of *the ranching way of life* to the decision-making process of the landowners in Campbell County is a characteristic of this population that may not be accepted by some or may be viewed as counterintuitive. Ranchers are often viewed as enemies of conservation and environmentalism in the West because of the strictly utilitarian land ethic that they are assumed to hold. While they may hold such values, this study shows that those values do not translate into a strictly economic view of the land and its resources. What is important to these ranchers is that their way of life is protected, not that they earn the most money possible. Included in this way of life is a long-term connection to the land and a belief in stewardship that may make them more likely allies of conservation efforts than some may assume.

The role of science in species protection is an important and valid concern. Understanding the biology of wildlife and what is needed to conserve a species should not be downplayed. However, political and social realities surrounding species management must also be considered as conservation efforts are advanced. It is no surprise that in attacking efforts to list the Sage-Grouse under the ESA, the parties that are against such listing take their aim at the science that shows this need. This is common for other conflicts surrounded endangered species management as well. The motivation for this is likely a desire to prevent the listing, which could

have an effect on the way this population manages its rangeland and its opportunity for economic gain from further energy development. The latter of these motivations is verified by the acceptance of the scientific evidence by those with relatively less favorable opinions of CBM. They recognize that protection of Sage-Grouse could have negative effects on the CBM development, which they do not welcome on the landscape. Conversely, those with a favorable opinion of CBM recognize the significant impact it will have and therefore take a position against the listing.

These motivations are not enough to prevent or ensure the listing of the Sage-Grouse, so the only recourse is to attack the science. The area of scientific discovery may not seem like an appropriate battleground for this conflict to occur on but nonetheless that is where it is occurring. What seems apparent however, is the missed opportunity to avoid this conflict. It may be impossible to get these ranchers to accept scientific findings that argue against their interests, but if efforts had been made earlier in the process of listing to better integrate both the scientific and local knowledge it may have been possible for these conflicting sides to better understand the embedded cultural viewpoint that informs the acceptance or rejection of certain findings.

This research shows that although the argument against listing of Sage-Grouse is framed by these ranchers as one of scientific uncertainty, it is actually better understood as a disagreement over the appropriate use of resources and the appropriate relationship between human populations and the landscape. There is little chance that debating scientific conclusions will ever result in a mutually agreed upon solution because this population will likely continue to attack science based on the

differences they perceive between it and their own way of knowing. Instead a more productive conversation may be one that addresses the underlying viewpoint that drives their acceptance or rejection of scientific findings. Wildlife scientists therefore may be well served by making an effort to understand this population's desire to preserve their *ranching way of life*.

Regardless of the different opinions that are driven by the different meaning attached to CBM what must be recognized is that each of these opinions and attitudes share a common ground. It is this common ground from which this researcher concludes that the ranchers of Campbell County could benefit greatly from a much more inclusive and collaborative method of decision-making concerning the CBM resources in their area. This suggestion is made for a variety of different reasons that are found within the results of this research.

The development of CBM in Campbell County is a perfect situation to establish a *coalition of the unlike*. For years natural resource management has been plagued by gridlock and divisiveness. It is often impossible for two sides of an issue to recognize anything but the antithesis of their own views embodied in the opposition. In Campbell County there appears to be potential to overcome such divisiveness. In the population studied in this research the common ground between even those that had quite different views of CBM was extensive. Both sides of the issue agreed that it was important to not waste water, to recognize the knowledge of the rancher, and to change the way negotiations occur. But this population is essentially a single group of stakeholders. Even though the energy industry, the rancher, the agency employee, and the environmentalist all have different goals, these

stakeholders share much common ground. All recognize the value of working families and their proud heritage of stewardship on this landscape. There is widespread recognition that energy will be harvested from domestic sources, and natural gas will be a component of future energy use. The only question remaining is how this energy will be extracted. A proper collaborative framework may help to establish answers to this question in a way that could be more palatable to all the stakeholders involved.

It is also important that a successful collaborative effort be *community based*. In this situation it could be. This effort would not be a national referendum on CBM but rather a localized effort that works on issues tied to the Powder River Basin CBM development. There is a strong regional identity and a sense of place that one finds amongst these landowners, and their community identity could play a large role in a successful collaborative effort. This community identity is not reserved to these ranchers either. Both agency personnel and industry personnel make their homes in Gillette and they are vital members of the community as they fill the roles of Little League coaches and volunteer firemen. All sides of this issue would be well served by recognizing that a community identity could make efforts at managing this resource much more successful and could likely overcome many of the impediments to better negotiations in split estate situations.

As the informants in this research mentioned, there is a strong need for the improvement of personal relationships between the ranchers and both agency and industry personnel. This is a population that values a person's word and their handshake. A collaborative model would encourage more *face to face interaction*

that would be appreciated by the ranchers and could give the industry and agencies a much better reputation in the community. The ranchers in Campbell County do not enjoy negotiating with nameless, faceless corporations. By putting the people responsible for implementing CBM projects in direct relationship with the surface landowners, communication and trust would greatly benefit.

Finally, collaborative processes would engender empowerment. The ranchers on both sides of the CBM issue recognize that the policies governing split estates were not in their control, and they operate in a weakened position in the negotiations over surface use. Even when public benefit was invoked by the government in defending the primacy of the mineral estate, the ranchers questioned how they, as members of the public, would stand to benefit. Ranchers understand that they cannot stop the industry, nor can they stop the government if Sage grouse are listed as an endangered species. However, collaborative processes would at a minimum foster the necessary learning for all parties to recognize the capabilities that are available to ranchers to expose their priority concerns and offer alternative operational considerations to mitigate the potential impacts on their way of life.

This is a population and a landscape with a long history of natural resource use and management. Economic activities will continue on both the surface and subsurface of these private estates. Opportunities to understand the concerns of local resident populations may not alter some of the fundamental dynamics of energy development, but they could affect their design, allowing for a valued way of life to be sustained, at least in part, for the benefit of future generations.

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Appendix A: Typical Comments Made by Categories of Informants

Favorable	<p>“[CBM] has been a beneficial use [of the land]” “pretty doggone well satisfied” “good trade off” “I think it is pretty compatible” “[CBM] benefited this county greatly.” “a godsend” “it has made life easier”</p>
Somewhat Favorable	<p>“It started out kind of rough but helped us a lot, especially through the drought years.” “I’d say the ranch operation would not have been sustainable without [CBM] but I think you create a lot of extra problems” “it’s gone pretty well but we’ve had to work through some issues with the companies.” “I think the positive benefits that we’ve seen out of it have outweighed the negatives, but it still bothers me to see roads, pipelines, and wells.” “It’s been good for our ranch. There are always some downsides.” “if they compensate you for it and it doesn’t really affect your ranching operation then maybe it’s not all that bad. Maybe that’s something as a society that we should do.”</p>
Neutral	<p>“some people get along fine, some don’t.” “you can live with it.” “Some of the things haven’t hurt us but some of them have.” “It’s like anything else, it’s good and bad.” “The reservoirs are kind of a blessing and a curse. A few of them are nice but you don’t need them all.” “When there’s water running on a rancher’s meadow, if it’s doing good it’s doing good, if it’s doing harm then it needs to be stopped.”</p>
Somewhat Unfavorable	<p>“Am I happy with it? Well I must be because I signed it. But am I really happy with it? No because I didn’t want the development coming in on what was basically a viable ecosystem in it’s own right.” “you’re just going to have to live with it and make the best deal you can.” “It’s an uphill battle.” “there was quite a lot of revenue from damage money from the development. But it’s a real headache if you don’t want to put up with that stuff.”</p>
Unfavorable	<p>“I don’t think [CBM] is a good trade off.” “it’s too short term of use for all the damage they do.” “Haven’t had a good [experience with CBM] yet.” “they’re just a bunch of lying son of a bitches.” “you can’t go around it, you can’t get rid of it, you can’t get them off the place.”</p>

Appendix B: Interview Protocol

Name:

Address:

Birth Date:

Date & Time:

Location of Interview:

Thank you for agreeing to participate in this interview. This is a research project being conducted by me as a student in the College of Forestry and Conservation at the University of Montana. It is about landowner's views on changing land use in Campbell County. Your participation in the interview is entirely voluntary. You can refuse to take part or stop the interview at any time. If you don't want to answer any question, you do not need to and we can simply move on. Your responses will be entirely confidential. You will not be identified anywhere in the report. Only I will keep a record of this interview, and upon the completion of my research, the interview transcripts will be destroyed. Would you like to proceed? (sign informed consent) Thank You.

1. I want to start by having you talk a little bit about the land this ranch sits on.

Probes:

- Where does the water come from on the land?
- What sort of groundcover is there?
- Do you have any weed problems?
- What about wildlife, is there much wildlife on this land?
- Do you or does anyone else hunt on the land?
- Is having wildlife on your land important to you?
- Do you own your mineral rights?*

2. Would you mind telling me a little about your operation here?

Probes:

- What is your relationship to this operation?
- What method of irrigation do you use?
- Do you raise anything beside cattle?
- Is this a cow/calf operation, are you raising replacement heifers, bulls, etc...?
- Has this ranch been in your family for a number of years?

Could you talk a little about the history of this ranch?

3. What is it that you like about this place?

Probes:

What keeps you on this land?

What motivates you to ranch here?

4. In the past 30 years have you noticed a change in the land use in this area? Have these changes affected your operation?

Clarification: “Well, Gillette is expanding and more and more land that was once used for grazing is being subdivided , in the eastern portion of the county coal mining remains prevalent as is Coalbed methane development in this area. Has your operation been affected by these changes?

Probes:

What do you think about that?

How do you feel about that?

5. Have you had any experience with CBM development?

Probes:

(If not) Are you familiar with any of the experiences others in the area have had?

Could you tell me a little bit about the experience you’ve had?

Is there a specific example that comes to mind?

What do you think about CBM?

What is your opinion of CBM?

Do you think that CBM is an appropriate use of the land and its resources?

You have talked a lot about the negatives/positives of CBM, in your mind what are some of the negatives/positives?

What are some of the reasons that cause you to have this opinion?

6. You’ve talked a little about CBM as well as your ranch operation. In what ways are the two compatible? How are they incompatible?

Probes:

Does CBM help or hinder your ability to operate your ranch the way you would like to?

Does the existence or lack of CBM have any foreseeable impact on the future of this ranch?

7. In the Campbell County land use plan the introduction states “Campbell County citizens believe strongly in the constitutional concept of private property rights. It has been the custom and culture of those citizens to keep their private rights free from interference by outside interest and government agencies.” In light of this statement do you think that in dealing with the issue of CBM development, the local and federal governments have struck an appropriate balance between government regulation and private property rights?

8. From your own experience, how do you think other Campbell County ranchers feel about CBM development?

Probes:

Do you feel that most share your opinions of CBM?

Does this affect how you feel about the issue?

Can you give any examples of occurrences where you have been confident that others share your opinion?

9. Would you like to expand more on any of the topics that we discussed or do you have any other topics that you would like to comment on?

Thank you, have a nice day