

# **The Local Economic Impact of Changes in National Grasslands Management in North Dakota**

A Report Prepared for the

Sierra Club  
National Wildlife Federation  
Wilderness Society

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## NOTE

The author's affiliation with the University of Montana is provided for identification purposes only. This is not an official publication of the University of Montana. This Report was prepared at the request of several national environmental organizations who are concerned about protecting the environmental integrity of public lands, including the National Grasslands. It represents an independent analysis of the proposed changes in the management of those public lands. The opinions expressed are those of the author, alone, and not those of the Department, the University, or the groups who requested the study.

# The Local Economic Impact of Changes in National Grasslands Management in North Dakota

## 1. Introduction and Conclusions

The National Grasslands on the Northern Great Plains are in the process of revising their management plans. These National Grasslands (NG), which are administered by the United States Forest Service, contain important remnants of the natural prairie systems that once dominated the Northern Great Plains. In addition, they provide important resources to the communities and states in which they are located. Many of those resources are non-commercial in character but very important to people's well-being: wildlife habitat, unique ecosystems, recreational opportunities, scenic beauty, water and air quality, etc. Other NG resources are commercial in character, including livestock forage, oil, natural gas, and other minerals. Local residents and communities, the states, as well the nation as a whole have an interest in the full set of values supported by these important public lands. This report, however, will primarily focus upon the local impacts because that is where the greatest controversy has emerged.

Changes in the management of these National Grasslands can affect the well-being of residents by enhancing or restricting the flow of these valuable resources. This is true of both the commercial and noncommercial resources. There is also the potential for conflicts between the management policies that would enhance different resource flows. Measures to enhance the volume of forage available to private livestock operations may conflict with measures that seek to protect wildlife habitat and recreation based on wildlife. Similarly, measures aimed at enhancing oil and gas production may compromise the natural area values including scenic beauty, opportunities for solitude amidst pristine nature, and biodiversity. Because pursuit of one important objective often involves forgoing the pursuit of other important objectives, management decisions have to make choices or tradeoffs. This is a familiar problem in economics; in fact, it is often described as *the* economic problem: choice in the face of scarcity. This is often summarized by the statement that "there is no such thing as a free lunch." Most choices, even very good choices, have costs associated with them. The existence of such costs is not a sign that a decision is wrong.

In North Dakota, the economic dialogue about the choices that the National Grasslands are considering has largely focused on the potential loss of access to commercially valuable resources: livestock forage, petroleum, and natural gas. This is not surprising. North Dakota and, especially, its rural areas, are often described as being natural resource economies. Agriculture and mineral production are seen as dominating those economies, making up most of their "economic base." From that perspective, any reduction in the amount of grazing or the amount of oil and gas development allowed, cuts directly into the assumed economic base, reducing the opportunity for economic activity and forcing reductions in income, employment, and population. For small rural communities this may appear to be a serious threat to community survival.

Several recent reports sponsored by grazing and mineral interests in North Dakota have phrased the impact of proposed changes in NG management policies in exactly these terms.<sup>1</sup> The Heritage Alliance of North Dakota (HAND) has sponsored a series of reports that claim to measure the “Regional Economic Effects” of the Forest Service’s “preferred alternative” for managing the NGs. HAND has concluded that these changes in management that the Forest Service is considering would cost the state economy as much as a billion dollars over the next ten years. At the local level, ranches will be forced out of business, small town economies will suffer, local governments will be deprived of the revenues necessary to support basic public services, including education, and rural North Dakota will face ongoing negative economic and demographic pressures. This report will evaluate these claims of catastrophic economic loss and conclude that the negative impacts are grossly exaggerated and the positive impacts almost completely ignored.

If the proposed Forest Service management changes for the NGs were being undertaken for no practical purpose, reductions in grazing and oil and gas production could be seen as a pure loss. If, on the other hand, these management changes are being undertaken in order to protect other valuable, but noncommercial, resources, it is possible that the gains in one set of resource values more than offsets the reduction in the other resource values, actually improving well-being in the process. In that case, there may well be a positive social logic to the change in management policy. Whether or not this is the case is an empirical matter: How large are the losses? How large are the gains?

This report seeks to analyze exactly this question: What is the relative balance of losses and gains to the region associated with proposed changes in the management of the National Grasslands. It does this by focusing on two particular National Grasslands, the Little Missouri NG and the Sheyenne NG.<sup>2</sup> These two NGs were chosen as case studies because they represent, in many ways, “worst case” scenarios for adjacent communities. The Little Missouri NG is the largest of the Great Plains NGs. It represents the largest concentration of federal land ownership in North Dakota. Most of one county, Billings, lies almost within the NG. If changes in commercial resource flows from the NGs are going to have a large and negative impact on the local economy, it will be largest on the Little Missouri. The Sheyenne NG was chosen because a comparison of the projected livestock grazing under the NG’s Preferred Alternative (Alternative 3) with current “permitted” grazing levels has been interpreted by Forest Service critics as indicating that it would face the largest percentage reduction in grazing.<sup>3</sup> Here too, if

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<sup>1</sup> “Regional Effects of Proposed Revised Management Plans for the National Grasslands in North Dakota: A Summary,” prepared for Heritage Alliance of North Dakota, F. Larry Leistritz and Dean A. Bangsund, December, 1999. Leistritz and Bangsund also prepared individual county report on Billings, McKenzie, and Slope Counties (Little Missouri NG) as well as a report covering Ransom-Richland Counties (Sheyenne NG).

<sup>2</sup> The HAND economic reports cited in the previous footnote also focus on the Little Missouri and Sheyenne NGs.

<sup>3</sup> Compare Tables LG-3 and LG-11 on pages 3-58 and 3-66 of the Draft Environmental Impact Statement: Northern Great Plains Management Plans Revision July 1999, USDA Forest Service. As will be discussed below, current permitted grazing levels is not the same as actual current use. All the

changes in access to NG commercial resources are going to have a large negative impact, they will be greatest in the counties reliant on the Sheyenne NG. If, on the other hand, the impacts of management changes at these two NGs are relatively small or actually, on net, positive, it is highly likely that the same will be true of all of the other NGs. The analysis of these two NGs sets an upper limit on the size of the potential damage done to the local economy by changes in management policy.

The analysis contained in this report supports the following conclusions:

1. The new management proposals for the North Dakota National Grasslands (Alternative 3) will not cause serious economic loss to the counties where those National Grasslands are located or to North Dakota. Such new management directions for the NGs, including those embodied in the more restrictive Alternative 4 are more likely to support the ongoing diversification and development of the local and state economies.
2. The huge economic losses that commodity users on the National Grasslands have calculated (e.g. \$100 million per year and \$1 billion over the next ten years) are based measures and assumptions designed to quantify as large a projected negative impact as possible. The quantitative measures chosen and the assumptions made are not supported by either economics or the facts.
3. The \$100 million per year “loss” estimate is a measure of economic activity, not a measure of economic well-being. It overstates any measure of reduced income to North Dakota citizens 4 to 6 fold.
4. The “economic impact” modeling that has been the source of the claims of huge economic losses if management of the National Grasslands is changed implicitly denies that we live in a dynamic entrepreneurial market economy. That “economic impact” modeling assumes a frozen, non-adaptable economy inhabited by “dumb” economic actors. It is that depiction of the North Dakota economy that allows the huge economic “losses” to be calculated.
5. The sizeable reductions (34 to 70 percent) in livestock grazing on the National Grasslands that the local livestock grazing associations have estimated would result from implementation of Alternative 3 are based on a misinterpretation of the Forest Service’s grazing analysis and a mis-statement of current grazing use. Alternative 3, according to the Forest Service’s modeling would result in a 5-10 percent reduction in grazing relative to current policy on the Little Missouri NG and a 40 percent reduction on the Sheyenne NG.

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grazing permitted under current management plans may not actually be authorized each year and all the grazing authorized may not be implemented by the grazing associations.

6. The National Grasslands are just one of many sources of feed for North Dakota's cattle. Cattle raising is just one part of North Dakota's agricultural economy. Agriculture is just one part of the overall economy. This is also true at the local level. The NG forage is the source of only a small fraction of the total economic value being created in the counties adjacent to the NGs: as little as 2 percent in the Little Missouri NG and two-tenths of one percent in the Sheyenne NG.

As a result, the proper context in which to consider the economic role of the National Grasslands' forage is that it is one source of one input into one branch of a complex economy. A modest reduction in one source of one input will not lead to a catastrophic abandonment of economic resources; rather, it will lead to rational adjustments and redeployment of economic resources.

7. The huge "losses" in oil and gas revenues calculated by the studies commissioned by the Heritage Alliance of North Dakota, are actually quite small reductions in quite large future development potentials. The realization of these future potentials will not depend on National Grassland management decisions but on future energy prices and energy extraction technology.
8. The Forest Service projects a potential for 600 new oil and gas wells to be drilled in the Little Missouri National Grasslands over the next ten years if energy prices are supportive. It estimates that the proposed restrictions on surface use embodied in Alternative 3 would eliminate 15 of these wells. The North Dakota Geological Survey estimates that 24 of the 600 potential wells would be eliminated. The North Dakota Oil and Gas Division estimates that 40 of these potential wells would be eliminated. The HAND analysis, inexplicably, estimates that 103 of these potential wells would be eliminated. Thus, the worst case scenario projected by these energy interests is that "only" 83 to 93 percent of the future Little Missouri oil and gas development potential would be realized under the preferred alternative.

But only about a third of oil and gas development in the Little Missouri National Grassland counties takes place on federal lands; only a fifth of the oil and gas production in the Little Missouri National Grassland economic area takes place on federal land. Thus the decisions made by the National Grasslands would not affect two-thirds to four-fifths of the oil and gas potential. This reduces the potential impact of NG management decisions in the Little Missouri NG area on the future oil and gas development potential to at worst a few percentage points. That is 97 percent or more of that potential could still be realized.

9. Most of the dollar value created by oil and gas development never becomes part of the local economy. Even the labor earnings in the oil and gas industry tend to flow to workers who commute into the counties where the oil and gas are located rather than to local residents. Because of this, oil and gas development has contributed little to the economic development of rural counties. Similarly, the decline in oil and gas production has had only modest impacts on local

economies. The same will be true of the small changes in future development potential associated with National Grassland management decisions.

10. Protecting the natural landscape values associated with the National Grasslands will enhance the wildlife, fisheries, scenic, and recreation values associated with those public lands. These natural area values also have significant economic value. In that sense the protection of those values is not just an environmental decision, it is also an economic one.
11. Non-commercial environmental amenities have become an increasingly important source of local economic vitality both on the Great Plains and throughout the Western states. The National Grasslands and National Park in North Dakota represent important natural amenities in a state with very little protected public lands to support such amenities. These natural landscape amenities support local economic development by helping create high quality living environments that hold existing residents and attract new residents. They also support commercial recreation and tourist industries.

Tourism has been one of the few parts of the North Dakota economic base that has shown steady growth both statewide and in rural counties. In the state as a whole, tourism's share of the economic base is similar to the energy sector's share. Even in rural, agricultural areas such as Billings County in western North Dakota, recently tourism has been as important a part of the economic base as agriculture. More important, tourism is likely to be an ongoing source of new jobs and income. That is not true of either agriculture or energy production from a long run point of view.

12. The core economic decision implicit in the management decisions for the North Dakota National Grasslands is whether these public lands are going to be managed almost exclusively to support the declining economies of the past or whether some significant part of these natural areas will be committed to supporting a more diversified economy for the future. The amenity-supported economic development elsewhere on the Great Plains and across the Western states demonstrates a potential. The rapidly growing and increasingly significant tourist industry in North Dakota clearly demonstrates that the potential is real in North Dakota. But one cannot have everything at once, unconstrained by scarcity. To support this diversification and the development of new economic activity to offset declines taking place in the historical economic base, some resources have to be committed to the support of that diversification. A modest commitment in this direction by the National Grasslands is embodied in the Forest Service's preferred alternative as well as Alternative 4 that various environmental organizations support.

Alternatives 3 and 4 do involve reduced commitments of the National Grasslands to commercial agriculture, energy production, and motorized recreation. But almost 100 percent of North Dakota is now open to all three of these. Protecting

a tiny part of North Dakota for the pursuit of an alternative set of non-commercial, non-consumptive economic values does not represent a radical or dangerous decision that threatens the state's economy. Quite the contrary, it represents a very modest investment in the development of a new part of North Dakota's economic base that will be very important in the future: North Dakota's natural amenities. Lands committed to agriculture, to energy development, and to motorized activity are very common, in fact, ubiquitous in North Dakota. High quality natural amenities are relatively scarce. In that context, protecting the scarce resource at modest cost to the more plentiful resources makes powerful economic sense. Doing the opposite, destroying that which is unique and irreplaceable in order to protect that which is plentiful and of declining economic value does not protect North Dakota's economic future, it threatens it.

## **2. Federal Resource Management Decisions and Economic Impacts: An Overview**

### **a. Local Versus State Impacts**

In some ways, it is startling that federal land management decisions would raise considerable controversy in North Dakota and that huge impacts could be said to be associated with those decisions. The federal government owns less land in North Dakota than in most of the Western states, only 3.2 percent.<sup>4</sup> Half of Wyoming is federal land while over a quarter of Montana is federal. Minnesota and South Dakota have almost twice as large a percentage of federal land as North Dakota (7.9 and 5.3 percent, respectively). Most of the Western states have a quarter to a half of their land in federal ownership. Only the Great Plains states have very low federal ownership.

With the federal government controlling only 3.2 percent of the land surface and even less of the below-surface mineral rights in North Dakota, it is unlikely that federal land management policies could have a large impact on the state's overall economy. Federal land ownership in North Dakota, however, is concentrated in the three National Grasslands located in North Dakota, the Little Missouri, Sheyenne, and Cedar River National Grasslands. Significant portions of individual counties lay in federal ownership. In western North Dakota, half of Billings County lies in the National Grassland that also encompasses parts of McKenzie, Golden Valley, and Slope Counties. Cedar River NG in south-central North Dakota encompasses parts of Sioux and Grant Counties. In the southeast, the Sheyenne NG straddles the line between Ransom and Richland Counties. As a result of these geographic concentrations of federal land ownership, it is possible that federal land management decisions could significantly affect local economies even if their impact on the state economy was quite small. It is on these potential local impacts on which this report will focus.

This contrast between state and local dependency on federal lands can be dramatized by focusing on the county where the federal land is most dominant, Billings County, where half of the land is federal. By one estimate, about half of the grazed forage in Billings County comes from federal lands.<sup>5</sup> That federal forage represents about a fifth of the total feed requirements for Billings County's 34,000 cattle. Clearly the loss of a significant part of that federal forage might have a significant impact on Billings County ranchers, especially in the short run before ranchers adjusted. Billings County's cattle, however, represent less than two percent of the state's total cattle and the feed from the Little Missouri NG represents less than one-half of one percent of the total feed requirements of the state's herd. Finally, livestock operations are the source of only a fifth of North Dakota's total agricultural sales. Clearly, changes in the amount of grazing on federal lands in Billings County will not have much of an impact on the state's agricultural economy.

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<sup>4</sup> Statistical Abstract of the United States, 1998, Table No. 389.

<sup>5</sup> Economic Profile of Billings County, D.A. Bangsund and F. L. Leistritz, North Dakota State University Agricultural Economics Report 354, July, 1995, p. 24, Table 10.

Alternatively, one can look at energy production in Billings County. According to one recent study, about 90 percent of the Billings County “economic base” is tied to oil and gas activities.<sup>6</sup> An area could not get much more dependent on a particular economic activity than that! Billings County also provides almost a quarter of the total oil extracted in North Dakota and a sixth of the natural gas. This would suggest that federal land management activities in Billings County could have a significant impact on the state’s mineral sector. But according to the authors of the HAND economic reports only about 10 percent of the energy production in Billings County comes from federally owned minerals.<sup>7</sup> Other sources suggest that about a third of the oil being produced in the Little Missouri National Grassland counties comes from federal sources.<sup>8</sup> As a result, depending on which estimate is use, only about 2 to 7 percent of the state’s oil and gas is tied to federal minerals in Billings County. In addition, oil and gas production are the source of only about half of all mining income in North Dakota. What might be a significant change in the Billings County economy may well be a relatively minor change in the state economy.

#### **b. Measuring the Local Economic Impact of Changes in Access to Federal Natural Resources**

The economic logic that leads local residents to be concerned about the impact of changes in federal land management decisions seems straight-forward: The federal government controls the crucial raw materials on which some rural economies rely, e.g. livestock forage or oil and gas fields. If the federal government cuts off access to those raw materials, the local economy necessarily will go into a tailspin.

This line of analysis takes local dependence on federal commercial resources for granted and simply assumes that the local impacts will be significant and negative. Each of these assumptions, however, represents a factual assertion that needs to be investigated before being accepted as true. Beliefs about the local economy are not a good substitute for the facts.

The federal government controls some of the raw materials upon which local economic activity relies in a few counties in North Dakota. Even in those counties, the federal government is just one source of just one input into just one economic activity of the many economic activities that make up the total local economy. The point is that even rural economies are more complex than just one economic activity. In addition, business firms combine many inputs to produce their product, choosing among different sources of supply for each input. Finally, successful local economies are constantly in the process of changing and developing. They do not stand still.

These are not trivial points. Our economy is built around private enterprise where individual economic actors deploy their entrepreneurial skills to productively cope with a constantly changing economy. If we assume no entrepreneurial adjustment to changes

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<sup>6</sup> Op. cit. p. 10.

<sup>7</sup> Op. cit. Appendix Table 13.

<sup>8</sup> See Section 4b below.

in the economy and freeze the economy in some past status, we can calculate catastrophic impacts from changes, but those are theoretical changes that will never actually occur since those catastrophic impacts are the results of the incorrect assumptions that were made. Instead economic actors, including business manager, workers, investors, and government officials, act to defend themselves and their organizations from the negative impacts associated with a change and to optimize the positive impacts. As a result, the projected impact, that assumes a “dumb” response by economic actors, never actually occurs. In addition, while one sector of the economy is shrinking, other sectors are expanding, creating new economic opportunities for workers and businesses. Again, the dynamic, ongoing change partially offsets the projected negative impacts so that what is actually experienced in the economy bears no relationship to what was projected based on a “frozen economy” assumption. A projected “loss” of 800 jobs in an economy that would be adding 9,300 jobs during the same period will lead to a net impact, at worst, of a gain of 8,500 jobs, not a loss of 800 jobs.<sup>9</sup> The net effect is that the projected impact is a lousy forecast of actual economic experience.

A lot of economic impact modeling embodies “dumb person” and “frozen economy” assumptions because that makes the modeling easier. Easier modeling, however, is not the same as accurate forecasting. Many economic impact analyses of changes in federal natural resource decisions have been spectacularly off the mark. The drastic declines in the harvest of timber from federal lands in Western Montana, North Idaho, and the Cascade region of the Pacific Northwest are good examples. The declines in those federal harvests were predicted by many industry analysts to have catastrophic consequences for the region’s “economic base.” Over a hundred thousand jobs were predicted to be lost, towns were going to be come ghost towns, and a “new Appalachia” was going to be created. Nothing of the sort happened. Despite dramatic declines in the flow of timber from federal lands, these “timber-dependent” regions experienced a steady economic expansion both in the rural areas and in the trade centers.<sup>10</sup> When analyzing the local economic impacts in changes in federal land management decisions in North Dakota, it is important to keep in mind these spectacular past failures of industry-sponsored impact analysis.

How one chooses to measure economic impacts matters too. Different measures can suggest much different levels of impact. To most people, the “local economic impacts” of greatest concern are the impacts on local employment, income, and population. These can be measured directly in terms of changes in total jobs, personal income, number of residents, and total net economic value created. It is in those terms that the national economy is evaluated. Local impact analysis of the sort HAND has provided is **not** carried out in these terms. The focus, instead, is on “economic activity,” “gross

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<sup>9</sup> During the 1990s the North Dakota economy added an average of 9,300 jobs per year. The HAND economic studies projected a state-wide job loss of about 800 jobs.

<sup>10</sup> For a discussion of this see the author’s “Making Sense out of the Economic Babble: What Are We Trying to Learn from the Economic Analysis of Salmon Restoration Alternatives of the Snake and Salmon Rivers?”, a chapter in *The Future of the Lower Snake River Dams*, Hugh Nichols, editor, Washington State University Press, forthcoming, pp. 17-27, and *The Sky Did NOT Fall: The Pacific Northwest’s Response to Logging Reductions*,” Ernie Niemi, et al., ECONorthwest, Eugene, OR, April, 1999.

dollar volume of business,” and the size of the “economic base” also measured in terms of the dollar volume of sales. The problem with these measures is that none of them is closely related to local employment and income. “Dollar volume of sales” can involve much double counting as a local good moves from one processor or commercial handler to another. In addition, it does not ask what part of the sales value is retained locally as income to residents. As a result of both of these problems, huge impacts can be calculated that have little to do with local employment and income. That is why economists do **not** measure changes in the national economy in these terms.

This is not an obscure technical point when it comes to quantitative estimates of “impacts.” HAND’s economic reports show that its chosen measure of economic impact, the impact on “economic activity,” is four times larger than the impact on the income received by North Dakotans for changes in grazing and six times larger than the impact on income for changes in oil and gas production.<sup>11</sup> It may be politically more compelling to exaggerate impacts on the well-being of North Dakotans by a factor of 4 to 6, but it does not assist in making rational economic choices.

The picture of the local economic base that the HAND approach paints is also seriously distorted. Consider one dramatic example: energy activities in Billings County. As mentioned above, by one estimate, oil and gas activities represent 90 percent of the Billings County economic base. The more recent HAND analysis for Billings County shows that the energy sector made up 95 percent of the economic base in 1985 but that with declining oil and gas production and values in 1997 the energy sector represented “only” 74 percent of the Billings County economic base.<sup>12</sup> The figure at the top of the next page shows this estimate of the Billings “economic base” for the years 1988-1997.

It is startling to discover that although we are told that 74 percent of the Billings economic base is associated with oil and gas, almost none of the residents of Billings County are employed in that sector and almost none of the earnings received by Billings County residents flows from the energy sector. The two figures at the bottom of the next page show the economic base stated in terms of the sources of employment and earnings for Billings County residents.<sup>13</sup> Apparently 74 percent of the Billings County economic base provides only about 1 percent of the “basic” jobs held by local residents. On the other hand, agriculture that is 15 percent of the economic base provides 72

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<sup>11</sup> Billings Study, pp. 23 and 36; McKenzie Study, pp. 23 and 36; Ransom-Richland Study, p.19.

<sup>12</sup> “Regional Economic Effects of Proposed Revised Management Plans for the National Grasslands: Billings County, North Dakota, F. Larry Leistritz and Dean A. Bangsund, December 1999, prepared for Billings County, North Dakota, hereafter cited as “HAND Billings County Study,” p. 11, Table 3.

<sup>13</sup> The data for these graphs comes from the US Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System CD-ROM. The residence adjustment for personal income was determined to be very closely associated with earnings in the energy sector and was used to identify jobs held by residents and the earnings associated with those jobs. The other mineral jobs and earnings flow to non-residents who commute to Billings County. Tourism was not included in the basic employment and income because of the difficulty in identifying the part of trade and services that is tourist related. Earnings in Federal Employment and total transfer payments (which are dominated by federal transfers) were used for the income associated with the federal government.

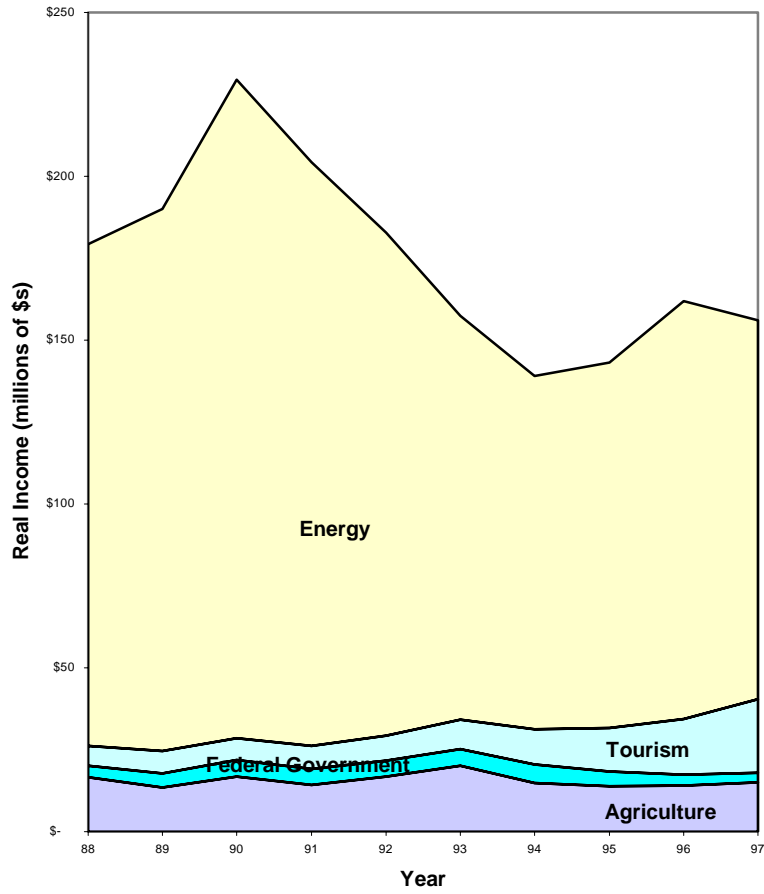
percent of the basic jobs held by local residents. The pie charts on the page after next contrast these two conflicting pictures of the economic base.

Equally startling is the lack of impact the decline in the Billings County economic base has had on population. The fundamental idea behind the economic base approach to the economy is that one can explain how it is that residents can support themselves and reside in a particular area by studying the economic activities that bring income into the local economy. Since 1985, the Billings County economic base, as calculated by HAND's economists, has been cut to less than a quarter of its earlier size. One would expect that that would have a dramatic impact on the ability of local residents to continue to reside there. But population has been largely stable despite the boom and then bust in the local "economic base." See the graph at the bottom of the page after next.

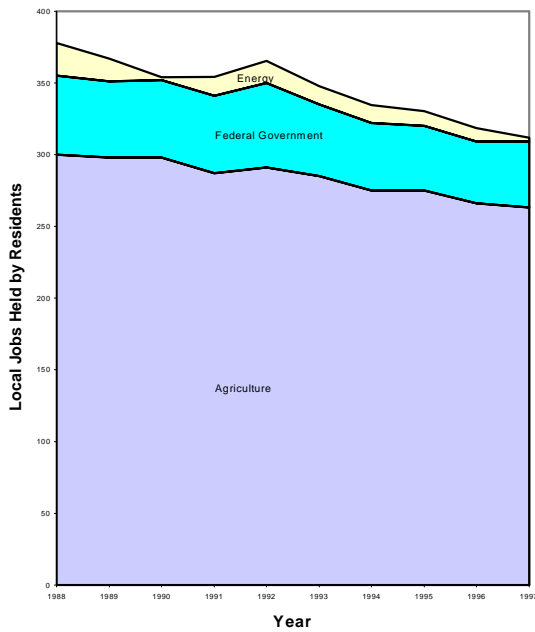
It should be clear that the approach taken by the HAND economists to measure local economic impacts has little to do with local employment, income, and population. Dramatic changes in the size of the "economic base" have little or no impact on resident's ability to provide themselves with a living. Yet that is the primary concern of most residents when they think about local economic impacts.

The primary advantage of using the "economic base" approach to measuring impacts in this particular context is that it generates what appears to be a much larger quantitative impact than one would obtain if one measure impacts in terms of personal income or employment. The approach taken by HAND, for instance, estimates that the annual loss to the economy in terms of gross business volume resulting from the Forest Service adopting its preferred alternative in Billings County would be \$28 million. The impact on personal income, however, would only be

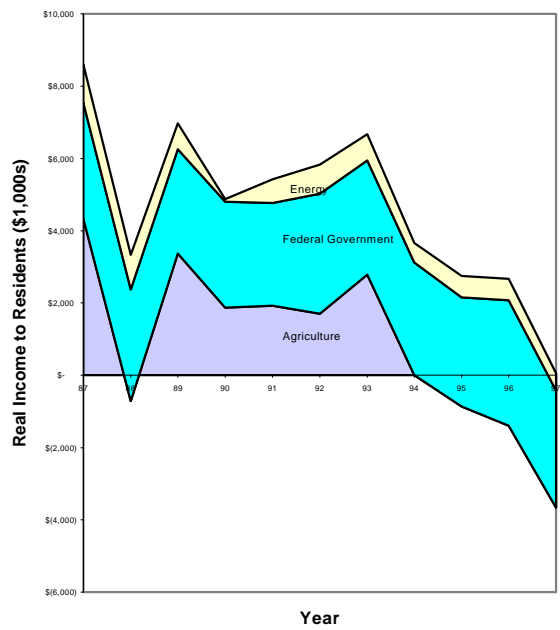
**"Economic Base" Billings County ND:  
Dollar Value of Sales**



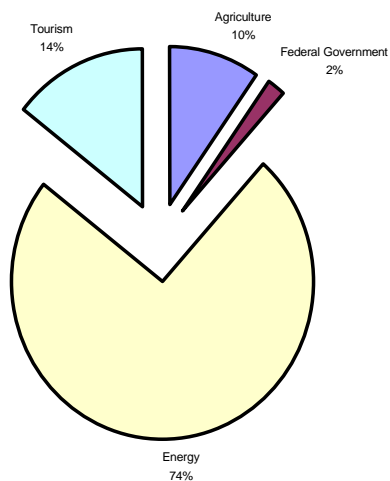
**Residents "Basic Employment": Billings County, ND**



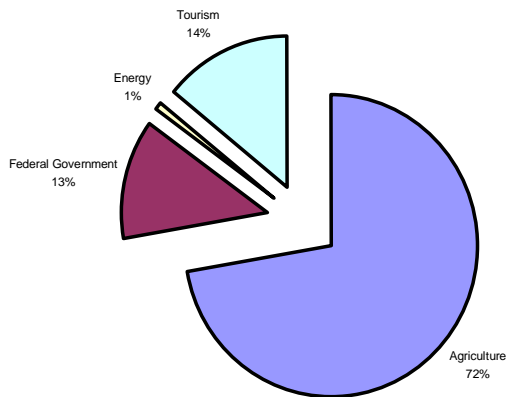
**Residents' "Basic" Local Income: Billings County, ND**



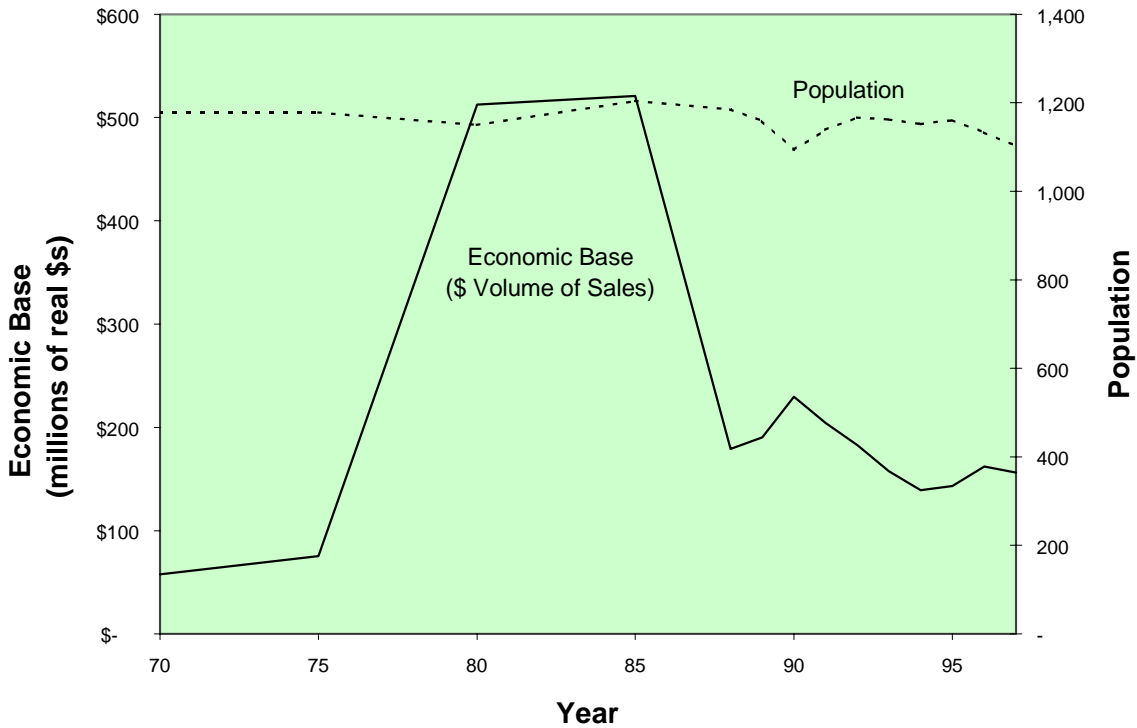
Dollar Value of Export Sales "Economic Base"



Basic Jobs Held by Residents



### Changes in the Size of the Local "Economic Base" and Local Population: Billings County, ND



about \$5 million.<sup>14</sup> Thus the choice to measure impacts in terms of gross business volume allowed HAND to exaggerate the apparent dollar impact by a factor of five!<sup>15</sup> It is clear that HAND is not measuring anything related to economic welfare by the titles associated with the summary tables. They report on “Annual Loss in Regional Economic Activity,” not the annual loss in income or earnings.<sup>16</sup>

The HAND economic impact analysis does not emphasize impacts on the income that North Dakotans actually have to support themselves. The various summary tables do not mention it at all. Employment is mentioned as one of the last items in a list of a dozen or so “economic impacts.”<sup>17</sup> The total employment impact estimated in the HAND studies is 780 for the Little Missouri NG economic area and 112 for the Sheyenne NG economic area. The exaggerations associated with these estimates will be discussed below. The point here is that these represent less than 2 percent and one-tenth of one percent of regional employment in the Little Missouri and Sheyenne NG economic areas, respectively. The projected loss of 780 jobs in the Little Missouri NG economic area is to be contrasted with the loss of 12,400 jobs in that area as a result of the decline in energy activity between 1982 and 1989 and the gain of a total of 4,400 jobs in the overall economy between 1989 and 1997.<sup>18</sup> Clearly it matters how you measure economic impacts and what reference point you use to judge the relative size of those impacts. Economists have developed measures that have some connection with potential economic welfare: the real income and employment opportunities of local residents. Unfortunately the HAND economic studies either fail to utilize these or mention them only in passing. Instead the HAND studies have utilized a measure that incorporates significant double counting, generating a large but irrelevant number.

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<sup>14</sup>Emphasis added. HAND Billings County Study, pp. 23 and 36; the high and low grazing impacts were averaged together.

<sup>15</sup> Input-Output models of the sort that both the HAND economists and the Forest Service use to estimate economic impacts often require that changes in economic conditions be stated in terms of changes in the dollar volume of sales to final demand. Those models, however, allow the impact to be stated in income and employment terms as well as in terms of the less relevant gross dollar volume of business activity. HAND chose the larger, irrelevant measure to state its version of the economic impacts.

<sup>16</sup> See for instance Table 5 in “Regional Economic Effects of Proposed Revised Management Plans for the National Grasslands in North Dakota: A Summary,” by F. Larry Leistritz and Dean A. Bangsund, December 1999, prepared for Heritage Alliance of North Dakota, henceforth cited as “HAND Summary Study.”

<sup>17</sup> See the summary lists on pp. 25-28 in the Hand Summary Study.

<sup>18</sup> USDC BEA REIS employment data. The Little Missouri economic area includes Adams, Bowman, Slope, Golden Valley, Billings, Stark, McKenzie, and Williams Counties in North Dakota. The Sheyenne NG economic area includes Ransom, Richland, and Cass Counties in North Dakota. The counties with larger urban areas (Stark, Williams, and Cass) are included because secondary economic impacts will be felt in those trade centers. If one wishes to focus only on the areas within or adjacent to the National Grasslands, the focus should only be on the direct impacts.

### c. The Economic Value of Natural Amenities: More Than Just Tourism

An “economic base” approach to the local economy focuses attention almost exclusively on the way in which the presence of commercially valuable local resources can stimulate specialize, export-oriented, economic activity. In that economic base context, protecting natural landscapes by restricting commercial activity necessarily has a negative impact on the local economy. The exception to this, in an economic base context, is any tourism that protected natural landscapes may draw to an area. Tourism, however, is only one of the connections between protected natural areas and local economic well-being. Protected natural areas assure a flow of valuable environmental services directly to residents in the surrounding area. In addition, because that flow of valuable environmental services, protected natural areas make adjacent areas more attractive as places to live, work, and do business. In that way, protected natural areas contribute directly to local economic development.

It needs to be emphasized that protected natural landscapes are not a drag on local economies. The environmental services provided by protected natural landscapes, wildlife, outdoor recreation, scenic beauty, air and water quality, etc. play an important economic role in adjacent communities. During the last half-century the federal and state governments have increasingly recognized the importance of protecting unique natural landscapes. As a result wilderness areas, national and state parks, wildlife refuges, and other protected natural areas have been created. If the extension of protection to these natural area regularly, on net, had a negative impact on local economic development, studies of the areas adjacent to these protected areas should show lower levels of economic development than found in areas where no such restrictions had been placed on commercial exploitation of the natural landscape.

However, analysis of the rates of economic growth in communities adjacent to protected natural areas reveals the opposite: rates of economic growth have been much higher in areas adjacent to national wilderness areas and national parks. For instance, population growth in counties adjacent to National Parks and National Wilderness area has been two to three times that found in metropolitan counties and three to six times the growth found in nonmetropolitan counties in general<sup>19</sup>. Statistical analysis of residential real estate activity also indicates that National Parks and Wilderness Areas serve as “magnets” for new economic activity in the Northern Rockies.<sup>20</sup> Similar analysis of state parks also indicates that they contribute to economic development rather than retard it.<sup>21</sup>

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<sup>19</sup> See Gundars Rudzitis, *Wilderness and the Changing American West*, John Wiley & Sons, 1996, pp. 106-107. Population growth in the counties adjacent to Theodore Roosevelt National Park has not fit this pattern thus far. This does not contradict a strong national pattern and the potential for amenity-assisted economic development it confirms.

<sup>20</sup> See David H. Jackson and Kenneth Wall. 1995 “Mapping and Modeling Real Estate Development in Rural Western Montana.” Discussion Paper No. 2. Bolle Center, School of Forestry, University of Montana, Missoula, MT. June, 27.

<sup>21</sup> “The Effect of State Parks on the County Economies of the West,” Duffy-Deno, K. T., 1997, *Journal of Leisure Research*, 29(2):201-224.

Because North Dakota has very little public land, almost its entire landscape has been opened to commercial development. The same is true of most of the Great Plains states. This commitment of almost the entire landmass of the state to the dictates of commercial markets has not, however, brought extensive and ongoing economic development. The lack of protected landscapes may, in fact, be harming North Dakota's economic development prospects. Analysis of those areas in the Great Plains that have seen ongoing economic development over the last two decades despite the loss of population across much of the Great Plains indicates that natural amenities have been playing a positive economic role in the Great Plains states too. Areas with attractive natural amenities have been able to hold their existing population and attract new residents despite the opposite region-wide trend. The only other areas gaining population from net migration on the Great Plains have been the larger trade centers.<sup>22</sup> This role of natural amenities in supporting rural population stability or growth is not unique to the Great Plains. The same pattern has been noted by researchers on that national scale.<sup>23</sup> Some of the growth in the larger urban areas on the Great Plains may also be supported by the protection of amenities in the rural areas. Urban residents evaluate the attractiveness of a city not just on the basis of the employment and income opportunities and the quality of the social environment (safety, quality of public services, etc.), they also evaluate the natural setting and recreational opportunities of the surrounding rural landscape.

One of the liabilities the Great Plains has to cope with is the relative rarity of high quality natural amenities. Because almost the entire landmass is a working (largely agricultural) landscape, little of the original natural landscape remains. The National Grasslands and National Parks represent one of the few exceptions to this. In that sense, protecting the integrity of these natural areas could be seen as an important positive economic decision. Protecting these lands husbands a type of economic asset that is in short supply in North Dakota in particular and on the Great Plains in general. Damaging these remnant natural prairie systems in the pursuit of additional livestock forage or additional oil well sites amounts to wasting valuable resources that are in very short supply in the pursuit of relatively common resources that are relatively plentiful elsewhere. That may be a serious economic mistake.

It is important to realize that commercial tourism represents only part of the economic value of protected landscapes. Current and potential future residents are the primary beneficiaries even though they may not expend much money in their ongoing enjoyment of the environmental services that those landscapes provide. Because people care where they live and act on their preferences for high quality living environments, including natural environments, the geographic distribution of economic activity is heavily influenced by the geographic distribution of social and natural amenities. This

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<sup>22</sup> "Net Migration in the Great Plains Increasingly Linked to Natural Amenities and Suburbanization," John B. Cromartie, 1998, *Rural Development Perspectives*, 13(1):27-34.

<sup>23</sup> "Natural Amenities Drive rural Population Change," David A. McGranahan, Economic Research Service, USDA, Agricultural Economic Report No. 781, September, 1999. Also see the August 1999 issue of *Rural Development Perspective* (14(2), USDA, ERS) which was devoted to the rural West. Almost all of the article note the role of natural amenities in supporting the "resettlement" of the rural West.

powerful economic force provides a good part of the explanation for the redistribution of the nation's population and economic activity over the last half-century including the ongoing "resettlement" of the Mountain West, the shift from "frost belt" to "sun belt," and the shift from center city to suburbs.<sup>24</sup> But tourism is also a significant, if not dominant, factor in the economic relationship between protected landscapes and local economies. It also plays a role in supporting non-tourist amenity-supported economic development since it is often through tourism that potential new residents become familiar with an area's amenities.

Even the HAND economic analysis highlighted the positive role that tourism has been playing in the North Dakota and southwestern North Dakota economies. For the state as a whole, over the last decade, tourism has quadrupled in real terms while agriculture has held constant or declined and energy has recovered only a little of its massive losses earlier in the 80s. As a result, tourism's share of the state's economic base has tripled in just one decade. Tourism is now almost as large a part of the state's economic base as the energy sector. Agriculture's share of the state's economic base, meanwhile, has declined significantly, by almost 30 percent.<sup>25</sup> In southwest North Dakota (State Planning Region 8), tourism has also almost quadrupled in real terms while its share of the economic base has increased almost two and a half fold.<sup>26</sup> In Billings County, itself, tourism also increased significantly (3.6 times in real terms) over the last decade, rising to where it now is significantly larger than the agricultural sector, 14.3 percent of the economic base compared to 9.6 percent for agriculture.<sup>27</sup> See the figure at the top of the next page.

The important point here is that tourism, which is closely tied to natural area values, is one of the few sources of ongoing economic development in North Dakota and the areas surrounding the National Grasslands and National Park. It has been steadily increasing while other sectors have gone through long term declines. In this setting, given the other economic development values associated with protected natural areas, the prudent economic development strategy would be to focus on the proven sources of growth and development rather than focusing instead exclusively on preserving the historically mature industries that are in relative decline and offer little long run potential for new jobs, income, and residents. It is very important to take such a forward-looking perspective rather than focusing on the rear-view mirror. Even if agriculture can be stabilized and the energy sectors revive as a result of temporary increases in energy prices, these sectors are constantly displacing labor with technology and capital. They will not be a source of new, long run, employment opportunities. In contrast, natural

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<sup>24</sup> For further support for these statements see the author's *Environmental Quality and Economic Development: The Economic Pursuit of Quality* (M. E. Sharpe: Armonk, NY, 1996) and *Lost Land Scapes and Failed Economies: The Search for a Value of Place* (Island Press: Washington, DC, 1996).

<sup>25</sup> HAND Billings Study, p. 7, Table 1. As discussed earlier, HAND's approach to measurement of the economic base leads to significant distortions. The point in citing these figures is that even HAND appears to recognize the growing importance of recreation and tourism as an important part of the economic base.

<sup>26</sup> Op. cit. p. 8, Table 2.

<sup>27</sup> Op. cit. p. 11, Table 3.

amenities and the economic values associated with them will continue to be the source of new jobs and income.

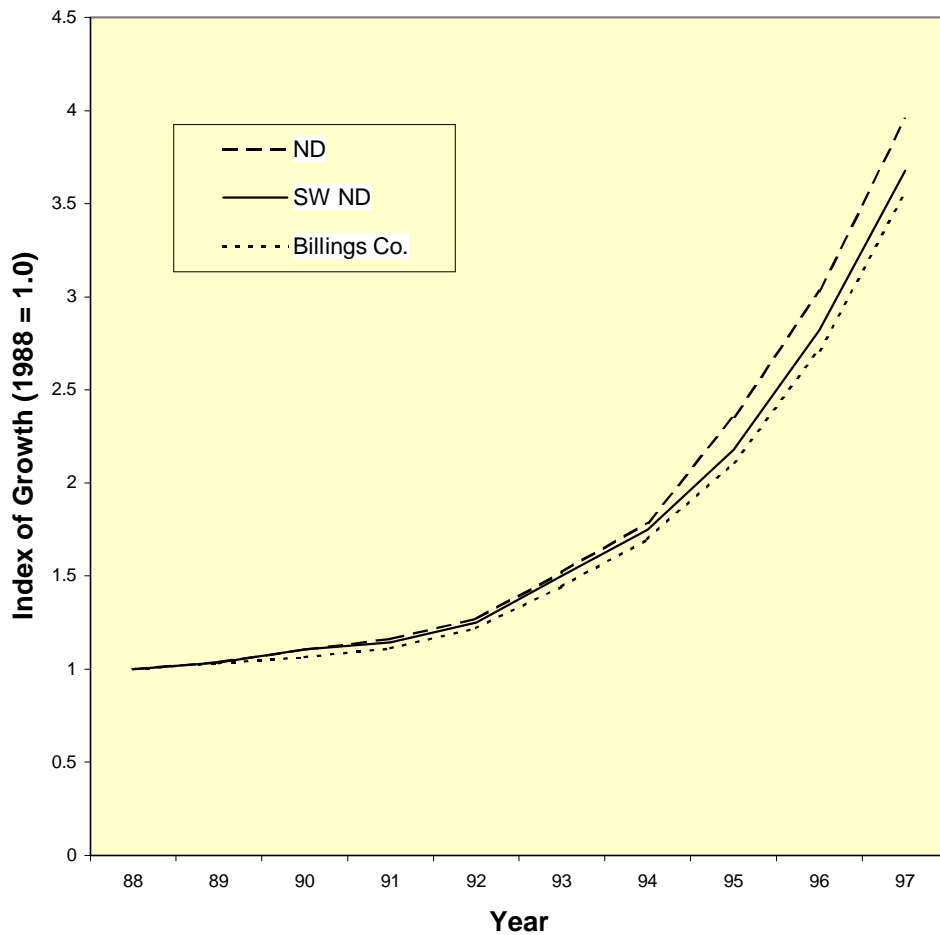
### **3. The Economic Impact of Revised Grazing Policy on the National Grasslands**

#### **a. Misinterpreting the Forest Service's Analysis of Alternatives**

Although the National Grasslands were originally created to replace failing and environmentally damaging farming operations in order to stabilize the land and create wildlife and recreation opportunities, livestock use has historically been allowed and adjacent ranches have come to depend upon it. Potential reductions in the allowed level of livestock use of the National Grasslands has been the source of much of the controversy surrounding the revision of the Forest Services management plans. Unfortunately, much of that controversy has been generated by a misinterpretation of the analysis the Forest Service provided as part of the environmental impact statement and public comment process. Before proceeding with an analysis of the relative economic importance of the livestock forage provided by the National Grasslands in North Dakota, these misinterpretations must be dealt with.

In the DEIS, the Forest Service indicated the current "permitted" grazing use as well as the current "authorized" use. The "permitted" use indicates the potential level of grazing that would be allowed under ideal range conditions. The "authorized" use is the level of use established each year after evaluating range conditions. It is important to understand that neither of these necessarily reflects

### Real Growth in the Tourist Sector of the Economic Base



Source: HAND Billings County Study, Tables 1-3

the actual level of use in any given year. The actual level of use is based on economic decisions that the grazing associations and the individual ranchers make about the size of their herds, the mix of feed, and forage conditions. Permitted use and actual use can diverge dramatically. For instance, between 1993 and 1995 the Medora Grazing Association, which controls the grazing permits on the southern part of the Little Missouri National Grassland, controlled private grazing lands supporting 48,500 AUMs but grazed those lands in a way that made use of only about half of that forage capacity, 26,700 AUMs.<sup>28</sup> If one were to use the “permitted capacity” of that private grazing land, one would make a very serious error in estimating the number of cattle actually supported by that land.

<sup>28</sup> “Economic Profile of Billings County,” Dean A. Bangsund and F. Larry Leistritz, Agricultural Economics Report 354, North Dakota State University, July 1996, p. 23, fn. 3.

It is exactly this error that the grazing associations dependent upon the National Grasslands have been making in their public comments about the impact of the Forest Service's proposed alternative management plan. The grazing associations, HAND, and their economists have used the "permitted" level of grazing as indicative of the actual current level of grazing. The size of the error involved in this is only partially known. We know that the "authorized" level of use in each of the last four years has, in general, been below the "permitted" use. For instance, in 1998 the authorized use on the McKenzie unit of the Little Missouri NG was 22 percent below the "permitted" use. For the Little Missouri NG as a whole, the "authorized use" was about 11 percent below the "permitted" use. For the Shenyenne NG the "authorized" use in 1998 was about 12 percent below the "permitted" use. Approximately the same divergence is found using the 1995-1998 average "authorized" use.

The Forest Service does not know the level of actual use that the grazing associations make of the NGs. Given the regulations surrounding grazing use of public lands, the grazing associations have an incentive to not inform the Forest Service of their actual use. If a grazing association or individual ranch regularly grazes fewer cattle than the Forest Service authorizes, that "non-use" ultimately could lead to a reduction in the permitted AUMs that grazing association or ranch has. Since the permitted AUMs have a financial asset value upon which the base ranche's value and the ranch's ability to borrow are based, ranchers do not want to risk such a reduction in permitted AUM because of non-use. They therefore report grazing use very close to the authorized use.

The Forest Service has sought to obtain from the grazing associations the records indicating actual grazing use of the NGs. The grazing associations, however, have refused to voluntarily provide this information and legal proceedings are now underway seeking to compel the disclosure of grazing association records. At this time, there is no publicly available data on the actual grazing use on the NGs. That makes it impossible to project the likely impact of the Forest Service's proposed management changes on actual grazing use.

Critics of the Forest Service's proposed changes in grazing policy have ignored this basic data problem and used the permitted level of use as a measure of actual use and then compared grazing outputs under the Forest Service's preferred alternative with the level of permitted use to estimate the decline in livestock grazing that the Forest Service intends to impose on the ranching economy. Besides beginning with an assumption that we know is inaccurate, namely that actual current use is the same as permitted use, this approach makes another serious error: It assumes that the modeling the Forest Service did so that it could measure the impact of the various alternative management regimes on grazing capacity was accurately calibrated to current grazing use. It was not.

The fact that the Forest Service did not seek to calibrate its analysis of the various alternatives to current permitted grazing is obvious from a simple comparison of the grazing outputs under the "current management" alternative (Alt. 1) with the current

permitted use. If one averages the high and low grazing outputs contained in the Forest Service analysis, Alternative 1 shows grazing outputs in terms of AUMs that are 36 percent below current permitted use on the Little Missouri NG and 52 percent below permitted use on the Sheyenne NG.<sup>29</sup> Clearly the “current management” alternative was not tied to current permitted use. There are two explanations for this. First, the Forest Service was not trying to model current permitted or actual use. Rather, this analysis sought to provide a comparison among the alternatives. It was intended to be relatively accurate when Alternative 3 was compared to Alternative 2 (commodity emphasis) or Alternative 4 (wilderness emphasis) but not to be accurate when comparing Alternative 3 to current use, either permitted or actual. In that sense, the Forest Service critics are misusing the DEIS modeling to estimate something the modeling was not designed to indicate. If the modeling is used for its intended purpose, it indicates that the Forest Service’s preferred alternative (Alt. 3) would involve an 8 percent reduction in livestock forage on the Little Missouri NG compared to current policy and a 30 percent reduction on the Sheyenne NG. These modeled reductions are significantly smaller than the 41 percent and 66 percent reductions that one can miscalculate if Alternative 3 is compared to current permitted use. That is exactly what the HAND economic studies have done.

There are several reasons that the Forest Service’s “current management policy” alternative is not tied to “current permitted use.” One has already been discussed. Current actual use is below “current permitted use.” It should not be surprising, therefore, to also find that the modeled grazing level under “current management policy” would also be below current permitted use.

Second, to make the modeling tractable for the purpose at hand (comparisons among the alternatives), the Forest Service modeled a very simple grazing regime: full season grazing by a standard-sized animal. No on-the-ground adaptation to particular management situations on particular lands was included in the modeling. It is quite possible that when the general management prescriptions are applied on the ground in particular locations that the actual grazing potential will turn out to be higher than what this simple modeling now suggests. If the 1987 Forest Plan grazing prescriptions were actually implemented (as the Forest Service contracts with the grazing associations require) and the grazing levels that were achievable under those prescriptions are above those being shown in the current Forest Service modeling, then we may have an indication that the actual grazing capacity of the land is higher than the current simple modeling suggests. As the grazing associations implement the new management policies currently being contemplated, the actual grazing capacity attainable is also likely to be above that shown in the simple modeling contained in the DEIS.

There is a third explanation for why the modeled grazing capacity of the NGs is below current use. That is that the 1987 management prescriptions were not implemented as required. In that case, current permitted grazing levels are inconsistent with the rules that have been in place for a dozen years. If that is the case, it should not be surprising that current modeling would indicate that grazing levels are too high. Similarly, if the

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<sup>29</sup> DEIS, Chapter 3, Tables LG-3 and LG-11.

Forest Service were to now impose management prescriptions that were modestly more restrictive of grazing than the current ones, it would not be surprising that those new prescriptions would involve dramatic reductions in grazing. Those dramatic reductions, however, would not be tied to the new rules but, rather, the failure to implement the old ones. The grazing associations have had over a dozen years to systematically implement the current management prescriptions. If they did not, it does not seem reasonable to now argue that implementing another adjustment requires too large a change from the status quo. The adjustment to the existing management rules should have been made long ago.

The large impacts on grazing that HAND calculates is tied to a misuse of Forest Service modeling. As a result, all that the HAND economic analysis shows is the impact of a large hypothetical reduction in grazing. That impact is not a projection tied to the Forest Service's preferred alternative. That HAND estimate has about the same logic as an estimate that half of the herds grazing on private lands were wiped out because grazing associations like Medora have at times used only half of the grazing capacity of the private lands they lease. There is no logic to such estimates. In addition, as will be shown below, even the calculation of the impact of this hypothetical reduction in grazing is exaggerated.

#### **b. Adaptations to Reductions in the Availability of One Source of Livestock Feed**

There is not just one way to raise cattle. Livestock producers make production decisions based upon the availability, cost, and risk associated with various inputs. Some rely almost entirely upon natural range to feed their cattle and produce their own calves and replacement cows. Others rely almost exclusively on feed they raise in planted pastures or feed they raise or purchase from a variety of sources. Some make heavy use of feedlots; others do not. Some purchase calves; others sell calves. There are rarely "pure" cases of the "right" approach as opposed to some less "correct" other approaches. Ranchers have to regularly adjust their management when there is a change in the cost or availability of certain inputs upon which they have relied in the past. A rancher who cannot adapt to changing economic circumstances cannot stay in business long. It is not appropriate to model the impact of a change in the availability or price of a particular input by assuming that that input is rigidly required in a fix amount and that any reduction in availability or use must lead to a proportional reduction in production. Such a modeling approach makes a "dumb producer" and "frozen economy" assumption that is both inappropriate and insulting. Yet that is the basis of the HAND projections of economic impacts.

The National Grasslands provide one source of feed for the livestock producers of North Dakota. Changes in the management of those public lands may change the availability and/or cost of that particular source of feed. One way to begin the analysis of the impact of potential changes in NG forage availability is to determine the relative importance of that particular source of livestock feed in the overall livestock economy, the agricultural economy, and the total regional or state economy.

The Little Missouri and Sheyenne National Grasslands provide about half of the feed for the cattle that graze on those public lands. The other half comes from private and state lands as well as from purchased feed. When we widen the view to the individual counties, including the non-federal lands in those counties, however, we find that only about a fifth of the feed for the cattle in the four county area where the Little Missouri National Grassland is located comes from the National Grassland. For the Sheyenne National Grassland counties (Ransom and Richland) only about 8 percent of the feed for the cattle comes from the National Grassland. Thus, even in the counties where the National Grasslands are most “dominant,” they provide a relatively small fraction of total cattle feed.

The concern, of course, is not just with the cattle economy; that is just part of the total agricultural economy. Most agricultural operations in the counties where the National Grassland are located in North Dakota mix both crop production (mostly feed grains and hay) with livestock production. In the Little Missouri NG counties, livestock sales are only about 40 percent of total agricultural sales. In the Sheyenne NG counties, livestock sales represent about one-sixth of total agricultural sales but this livestock total includes hogs; the cattle receipts would be an even smaller percentage. In this context, the cattle feed associated with the National Grassland forage support only about 8 percent of total agricultural sales in the Little Missouri NG counties and about 1 percent of total agricultural sales in the Sheyenne NG counties. Clearly the National Grassland forage is a very small percentage of total agricultural inputs even in the counties where those NGs are located. Of course, even the rural counties where the NGs are located are not entirely agricultural. There are non-agricultural sources of income too. In western North Dakota oil and gas production is an important source of income as is federal government activities and tourism. Except for the energy sector, the same is true of the Sheyenne NG counties. If one asks what percentage of total jobs or total income is associated with the forage on the NGs, the answer is that only a very tiny percentage of total jobs and income are directly associated with that forage: less than 2 percent of jobs and income in the Little Missouri NG counties and about one-tenth of one percent of jobs and income in the Sheyenne NG counties. These results are summarized in the table on the following page. Note that all of these calculations assume that the current permitted level of grazing on the NGs represents the actual level of grazing. As discussed above, that is not true; the actual level of grazing is below that level.

The above calculations and those shown in the table on the following page focus on the direct impact of the availability of forage from the NGs on the local economies. No “multipliers” have been applied to them. This is not an error or oversight. In many of these counties there are no substantial trade centers. As a result, there are unlikely to be significant “indirect and induced” impacts associated with the provision of inputs and the spending of earned income. Those impacts will be felt instead in the larger trade centers. But those larger trade centers have more diverse economies and are even less dependent upon the forage available from the NGs. As a result, if similar estimates of relative importance were to be calculated including these trade centers’ economies, the percentage dependence on NG forage would not be higher, but lower.

The Forest Service in its Draft Environmental Impact Statement has also estimated the relative importance of the forage associated with the NGs to the economies of the counties in which they are located. The Forest Service used the IMPLAN input-output model to carry out these calculations. Because of that, the Forest Service calculations do include the “indirect and induced” or “multiplier” impacts. The Forest Service’s estimates were based on 1992 data rather than 1997 data supporting the calculation above and in the table on the next page. In general, the Forest Service estimates of the dependence of the county economies on NG forage were as small or smaller than the estimates found in the following table.<sup>30</sup>

The HAND estimates of local impacts are larger because they employ the “dumb rancher” and “frozen economy” assumptions mentioned above. HAND assumes that when a ranch loses access to some NG forage, the cow that used that forage has to be abandoned. No other forage or feed source is available or practical. As a result, all of the other inputs used to support that cow, including other forage, feed, labor, management, equipment, property, buildings, etc. are simply abandoned and used for no other economic activity. The rancher simply gives up in the face of an economic change. Actually, an even stronger assumption is made. When the federal government reduces the allowed stocking level on federal land, the grazing association, the state, and private landowners simply passively accept that federal decision and apply it to their land too regardless of whether they think that level of stocking is appropriate. No legal, institutional, or management efforts are expended

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<sup>30</sup>The Forest Service results were shown in Table CLR-2, p. 3-13 in the DEIS.

**The Relative Importance of Forage from National Grasslands in Supporting Local and Regional Economies**

Area	1 Number of Cattle	2 AUMs to Support the Number of Cattle (1) x 12	3 National Grassland Permitted AUMs	4 NG AUMs as a % of Total AUMs Needed (3)/(2)	5 Livestock as a % of Total Agriculture Production (5 yr. Avg)	6 NG AUM as a % of the Agricultural Economy (5)x(4)	7 Ag Economy as a % of Total Income (5 yr. Avg.)	8 Agricultural Economy as a % Total Jobs	9 NG AUMs as a % of Total Jobs (8)x(6)	10 NG AUMs as a % of Total Income (7)x(6)
Billings	36,333	435,996	99,111	22.7%	64.5%	14.7%	7.6%	34.2%	5.01%	1.11%
McKenzie	68,000	816,000	186,723	22.9%	35.1%	8.0%	4.0%	22.0%	1.77%	0.32%
Slope	30,667	368,004			43.5%		19.2%	68.5%		
Golden Valley	24,000	288,000			42.8%		1.8%	21.2%		
Little Missouri NG Area	159,000	1,908,000	376,220	19.7%	41.3%	8.1%	4.8%	26.7%	2.17%	0.39%
Little Missouri NG	63,402	760,824	376,220	49.4%						
Ransom	34,000	408,000			23.0%		12.2%	16.4%		
Richland	32,333	387,996			14.3%		11.7%	10.2%		
Shenenne NG Area	66,333	795,996	62,834	7.9%	16.7%	1.3%	10.7%	11.6%	0.15%	0.14%
Shenenne NG	10,495	125,940	62,834	49.9%						

in order to protect the productivity of their own property. A “dumb landowner” assumption is applied all the way around and the economy remains frozen in a mechanical way. Resources currently deployed in cattle raising on state, private, as well as federal lands are simply abandoned.

This is not the way private business operations respond to changes in the economic environment. Private entrepreneurs, including ranchers and farmers, are constantly adjusting their operations and the way they deploy their resources to cope as productively as possible with changes in the economic environment that are beyond their control. Between 1990 and 1998 real cattle prices declined by 36 percent; between 1988 and 1999 real wheat prices fell by 52 percent. During the same periods, ranch and farm costs, of course, increased. Most ranches and farms survived these drastic economic changes by focusing on reducing costs and boosting productivity. They did not just mechanically surrender to the changes and go out of business. They adapted and coped, like all successful business do.

Agricultural operations that currently depend upon the National Grasslands for forage will also successfully adapt to changes in the availability of federal forage. This is not to say that some operations that are currently marginal and in trouble will not fail. Some will; some would fail regardless of what management policies the Forest Service adopts for the NGs. In 1997 there were 185 fewer farm proprietors than there were in 1990 in the Little Missouri NG counties. In the Sheyenne NG counties there were 220 fewer farm and ranch owners. This trend towards fewer farms and ranches has existed for many decades in North Dakota and the nation. It is not related to federal management of the small percentage of agricultural land the federal government controls. Just as important in terms of local economic impact, this reduction in the number of farms and ranches has not led to an abandonment of all resources previously employed in agriculture. The farm and ranch land largely remains in production. The previous farmers and ranchers are not unemployed. The capital, equipment, feed, fertilizer, etc. have been redeployed. A dynamic market economy does not leave valuable and productive resources unemployed for long. They are recommitted to other agricultural or non-agricultural pursuits that are also productive. The economy is not frozen in the past. It adapts so that productivity is maintained or enhanced. Projections that assume a frozen, non-adaptable, “dumb” economy in effect assume away the genius of an entrepreneurial market economy.

This is not to say that if the forage that the National Grasslands make available to commercial livestock operations in North Dakota is reduced, there will not be a reduction in the productivity of the North Dakota livestock economy. With the availability of a “low cost” input reduced, net livestock productivity will have to decline. What is at issue is the extent of the decline flowing from this sector. What is also at issue is the economic gain that is associated with protecting the non-market economic values associated with the National Grasslands.

Because federal forage is just one of the inputs into farm and ranch operations, because livestock operations are just part of the agricultural economy, because agriculture is just

part of the local economy, and because protecting natural area values has a positive impact on local economies, modest (10 to 30 percent) adjustments in the livestock forage made available on the National Grasslands in North Dakota will have a relative small and quite digestible impact on local economies. This is especially true when these impacts are compared to the other economic changes to which North Dakota agriculture has had to adapt over the last decade.

#### **4. The Economic Impact of Changes in the Management of Oil and Gas Development on the Dakota National Grasslands**

##### **a. Introduction**

The Forest Service is not proposing to cancel any oil and gas leases or force any producing oil and gas wells to shut down on the National Grasslands. It will abide by current leases. In that sense, there will be no impact on current oil and gas production activities as a result of the changes in management policy being considered by the Forest Service.

What the Forest Service is considering are changes in the way it protects other NG resources when it allows new oil and gas development on the NGs. Although the Forest Service is proposing to actually reduce the number of acres where surface occupancy will be prohibited (NSO), some of the proposed protective measures will raise the cost of oil and gas development and may, because of the increased costs, cause some new wells that would otherwise be drilled not to be drilled. The Forest Service does not by itself control the level of oil and gas development on the NGs. Energy market conditions, especially oil and gas prices, technological developments, and geological conditions, play the dominant role. This is dramatized by the decline in oil and gas production over the last 15 years in the counties in which the Little Missouri National Grassland is located. In 1984 oil production in McKenzie and Billings Counties combined was about 32 million barrels. In 1998 this had declined to about 11 million barrels. Between 1979 and 1985 an average of 175 wells were drilled each year within the boundaries of the LMNG. In 1995 and 1996 an average of 12 wells were drilled each year.<sup>31</sup> This decline in drilling and production was not due to changes in Forest Service management policy; it was due to dramatic changes in the market for petroleum, especially the decline in the price of crude oil. Changes in Forest Service policy cannot revive the oil and gas industry in western North Dakota; only a change in oil and gas markets can do that. Over the last two years there has been some significant improvement in oil prices, almost a doubling. This increase in price, if it is sustained, may well stimulate additional drilling and production in the Little Missouri National Grassland region. This increased production will also not be due to changes in Forest Service policy.

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<sup>31</sup> Well drilling data from "Dakota Prairie National Grassland: Little Missouri and Cedar River National Grasslands Reasonably Foreseeable Development Scenario for Oil and Gas, June, 1999, USFS, Region 1, Leslie S. Vaculik. Production data from ND Oil and Gas Division, various years.

The Forest Service can have an impact on the extent of the expansion of the oil and gas industry once energy market conditions support such an expansion. To the extent that the Forest Service restricts access to federal oil and gas or raises the cost of accessing those oil and gas fields, the Forest Service could reduce the amount of expanded drilling and production that takes place.

Note that we are talking about the size of the potential growth in the industry, not a decline in the industry imposed by federal policy. If, for instance, high oil prices provided the potential for the number of operating wells in the counties of the LMNG to triple (an increase of 200 percent), but Forest Service efforts to protect other National Grassland values limited this expansion to 192 percent, one could say that there was an 8 percentage point loss relative to what potentially could have been. One could then proceed to calculate the “negative” impact of this “lost” oil, on total production value, employment, and local government revenues, while ignoring the positive impact of the 192 percent expansion in oil production.

This is exactly the approach that HAND has taken in calculating the oil and gas losses that it says will accompany the Forest Service’s preferred alternative.

#### **b. Putting LMNG Oil and Gas Production in the Regional Context**

The Little Missouri National Grassland is underlain by the Williston Basin, a major production area for oil and gas. Between 1994 and 1998 the counties where the LMNG is located produced an average of 13.4 million barrels of oil a year. The production from wells on federal mineral deposits for the same years averaged 4.3 million barrels a year.<sup>32</sup> Thus about a third of the oil being produced in these counties is coming from federal minerals on the LMNG.<sup>33</sup> In an economic impact analysis, a larger area has to be analyzed because the LMNG counties contain no large trade centers. The federal oil production on the LMNG represents about a fifth (19.4 percent) of the total oil production for this larger LMNG economic area.<sup>34</sup>

If market conditions are supportive of expanded drilling and production in the Little Missouri National Grasslands area, the Forest Service has projected that about 600 new wells would be drilled over the next ten years within the LMNG boundaries. About 400 of these would be on federal minerals and the other 200 on private and state minerals.<sup>35</sup> There are currently about 600 wells on federal minerals in LMNG including shut in wells

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<sup>32</sup> Oil and Gas Division, various years; DEIS, p. 3-78.

<sup>33</sup> The authors of the HAND economic reports, in a previous publication, estimated that only 9.5 percent of oil and 14 percent of the natural gas produced in Billings County came from federal minerals. Page 29 and Appendix Table 13, in “An Economic Profile of Billings County,” Dean A. Bangslund and F. Larry Leistritz, Agricultural Economics Report 354, July 1996, North Dakota State University. The mineral rights under some of the federal lands are owned by private interests; they were separated from surface ownership when those lands were privately owned. In a smaller number of circumstances, the mineral rights under private land are owned by the federal government.

<sup>34</sup> The larger area includes Stark, Williams, and Dunn Counties besides Billings, McKenzie, Golden Valley and Slope.

<sup>35</sup> Op. cit. Little Missouri and Cedar River NG RFD Scenario for Oil and Gas, p. 11.

but excluding plugged wells.<sup>36</sup> Thus the projected potential oil and gas development (if economic conditions support it) represents an increase in the number operating wells on federal minerals of about 70 percent.<sup>37</sup> If economic conditions support increased drilling and production on federal minerals, they will also support increased drilling and production on non-federal minerals on the surrounding lands. The oil and gas expansion on federal lands will be just part of an overall expansion in the industry in western North Dakota.

As pointed out above, LMNG federal production represents about a fifth or a third of total area production, depending upon whether one uses a four county or seven county LMNG economic area. If the same rate of additional drilling takes place in the surrounding counties, 1,200 new wells will be drilled in the four county area and 2,000 wells in the seven county area.<sup>38</sup>

Forest Service analysis projected that the restrictions on oil and gas activity associated with its preferred alternative would eliminate 15 wells that otherwise would be drilled. The Forest Service assumed that directional drilling could be carried out from as far as a mile away from the preferred drilling site.<sup>39</sup> The North Dakota State Geological Survey has disputed this, claiming that directional drilling is only economic within a quarter-mile, and estimated that under the Forest Service's preferred alternative, 24 wells that might otherwise go in would be blocked by the high costs of directional drilling.<sup>40</sup> In essence, the Forest Service expects 2.5 percent of the 600 potential wells to be blocked while the North Dakota Geological Survey expects 5 percent of the 600 potential wells to be blocked. Stated differently, the Forest Service expects 97.5 percent of the growth potential to be realized but the State of North Dakota expects "only" 95 percent of the growth potential to be realized. Both the 2.5 and 5 percent apply to only that part of the area's oil and gas growth potential that is under federal control, which is only a third or a fifth of the total. This reduces the reduction in the growth potential that is tied to Forest Service management decisions to a Forest Service estimate of 0.8 percent for the four county area and 0.5 percent for the seven county region. In essence, the State Geological Survey argues that the reduced growth potential will be 1.7 percent for the four county area and 1 percent for the seven county area. Under the State Geological Survey's more pessimistic analysis, 98.3 to 99 percent of the oil and gas growth potential would be realized even if the Forest Service's preferred alternative were adopted. The economic question at issue is whether this very small percentage reduction in potential oil and gas recovery is justified by the Forest Service's efforts to protect the other, noncommercial, resource values associated with the National Grasslands.

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<sup>36</sup> DEIS p. 3-78.

<sup>37</sup> This is true only if all of the wells went in immediately. Overtime, the number of existing operating wells will decline as they are depleted if no new producing wells are drilled.

<sup>38</sup> It is assumed that the drilling is in the pursuit of oil and natural gas is a byproduct. That is why oil production rather than natural gas production is being used as the reference.

<sup>39</sup> Op. cit. Little Missouri and Cedar River NGs RFD Scenario for Oil and Gas. Table RFDS-T5.

<sup>40</sup> December 7, 1999, Memorandum from John Bluemle to the Members of the ND Industrial Commission, Subject: USFS Environmental Impact Statement and Proposed Land and Resource Management Plan.

The HAND economic analysis cites the ND State Geological Survey as the source for its assertion that 103 potential wells will be blocked by the adoption of Alternative 3. This figure is 4.3 times as large as they contained in the ND Geological Survey's analysis and 2.6 times as large as the estimate of wells "lost" contained in the comments the ND Oil and Gas Division submitted to the Forest Service.<sup>41</sup> It is unclear exactly what the source of the HAND estimate is. However, even accepting it, what HAND is projecting is that only five-sixths of the projected potential expansion of oil and gas activity in the LMNG might take place if economic conditions were appropriate. For the four county area this would mean that "only" 94.6 percent of the expansion potential might be realized. For the seven county area "only" 96.7 percent of the expansion potential might be realized. This hardly represents some dramatic halting of oil and gas development if and when economic conditions support an expansion of that activity.

Note the dramatic contrast between these two ways of describing the same thing: HAND projects a ten year loss of oil and gas revenues of \$265 million dollars and a shrinkage of the North Dakota economy by almost a half a billion dollars. But this is a really a reduction from an estimated potential expansion that is 18 to 30 times the size of the potential "loss." Will a new glass of wine be poured 95 percent full or will that new glass of wine be left 5 percent below full capacity? How much should we worry about the latter possibility? What should we sacrifice in the way of other important resources and economic potentials in the pursuit of that last 5 percent of potential? Those are the real economic questions that confront us as we evaluate the Forest Service's proposed changes in management policies for the Dakota National Grasslands.

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<sup>41</sup> December 10, 1999 letter to the National Grassland Plan Coordinator, USDA Forest Service, Chadron, NE, by Lynn D. Helms, Director.

### c. Linking Changes in Oil and Gas Production to Local Economies

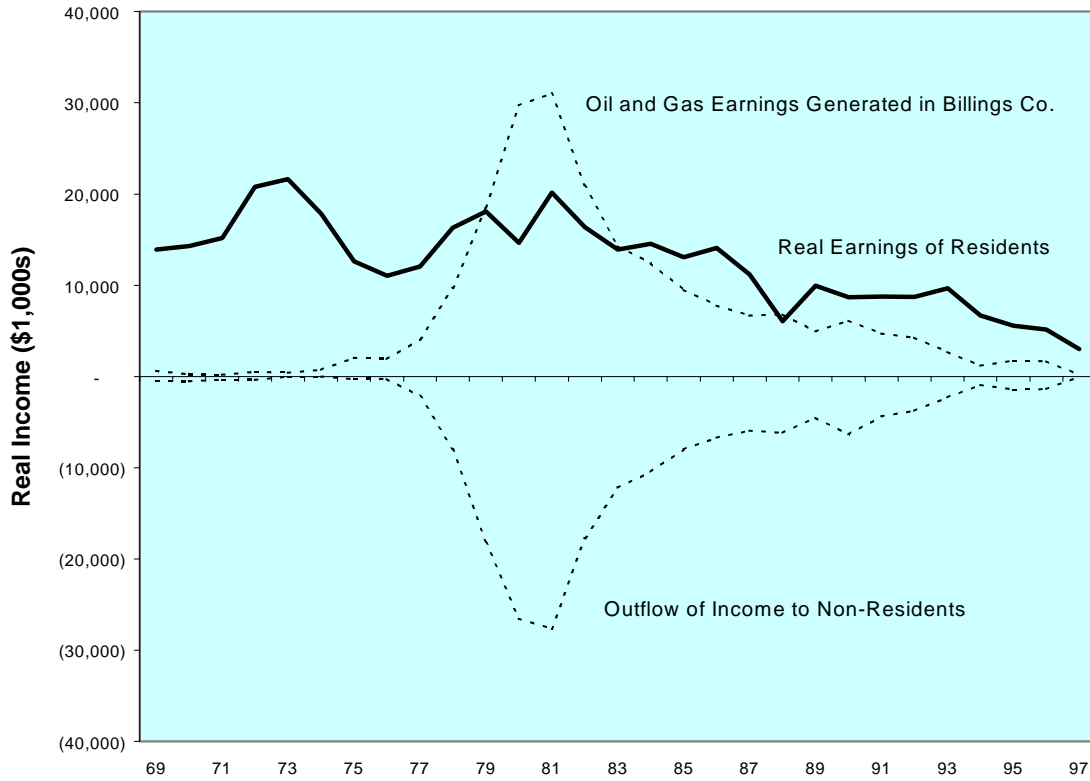
Oil and natural gas, like many other mineral deposits, represent very concentrated economic value. Most of that economic value, however, rarely touches the local economy. Just because billions of dollars of coal have been extracted from Appalachia does not mean that Appalachia is one of the most prosperous regions of the nation. Mineral extraction often goes hand-in-hand with local depression and poverty. One set of counties in the nation that have had the poorest economic performance over the last two decades has been the counties specialized in mineral production. This is a warning that we should not equate a high dollar volume of mineral production with local prosperity. Yet that is exactly what the HAND economic studies do.

The limited impact of oil and gas industry expansion on the local economy can be seen dramatically by looking at Billings County in western North Dakota in which a significant part of the LMNG is located. During the late 70s and early 80s, an economy in which annual real earnings had been in the \$4 to \$6 million dollar range had up to \$30 million dollars in oil and gas pay added to the local economy. Almost none of this oil and gas pay stayed in Billings County. The outflow of earnings to non-residents rose almost dollar for dollar as the oil and gas industry expanded. As a result, the ongoing hard times in agriculture easily swamped what few oil and gas dollars flowed to local residents with the result that real earnings to Billings County residents did not rise significantly during this “economic boom.” See the figure at the top of the next page.

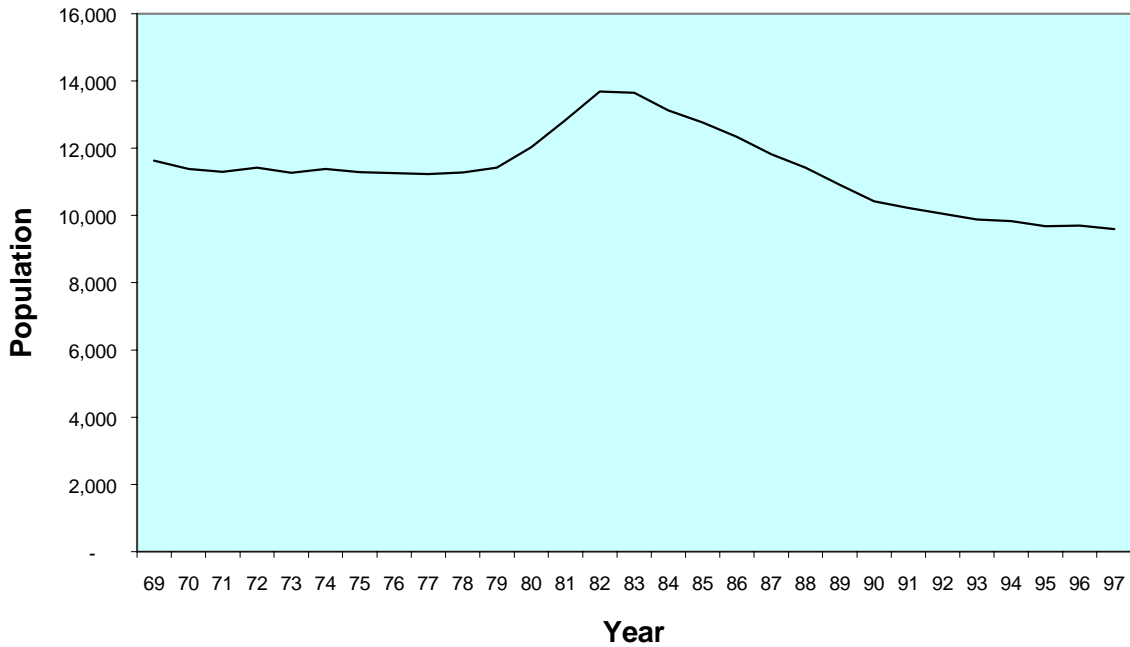
In this type of setting, focusing on the dollar volume of oil and gas production tells us very little about what is happening to the local economy and the economic opportunities open to local residents. This is not to say that none of the benefits of local oil and gas development flow to local residents. Some do both in the form of wages and salaries, funding for local government services, and some lease or royalty payments. The point is that the benefits to local residents are not measured or indicated by the dollar volume of county oil and gas sales. That figure is not related to the local economy and is not a measure of local economic impact. Yet that is the measure HAND chose to use, no doubt because it was the biggest number that could be calculate.

Even when one focuses on the economic benefits of oil and gas development that do flow to local residents, one has to consider the stability and reliability of these dollar flows. Unstable and unreliable dollar flows do not support local economic development in the same way the more predictable income flows do. When income flows are uncertain they do not support local investments in homes, businesses, or local public infrastructure. Investment usually requires some confidence that the particular economic activity, the local jobs and income it supports, and the public revenues it provides will last more than a few years. If

### The Impact of Oil and Gas Earnings on Residents' Income: Billings County, ND



### Population in the Little Missouri National Grassland Counties



that confidence is not there, there may be very little local investment and local economic development. The lack of any impact of the oil and gas boom on the population of Billings County is a sign of this. Even for the whole set of Little Missouri National Grassland counties, there was very little impact of the oil and gas boom and no long run positive impact. See the bottom figure on the previous page.<sup>42</sup>

#### **d. “Lost Oil and Gas”**

When oil and gas is not extracted from the ground this year or next year, it is not “lost.” If that were true, North Dakota’s oil and gas deposits would have disappeared millennia ago since significant extraction did not begin until the early 1950s. The “eliminated wells” associated with the Forest Service’s proposed land management policies are the result of technical and economic limitation currently associated with directional drilling. With current techniques the cost of drilling rises while the probability of success and the volume extracted decline as the drilling site is moved away from the optimum location and directional drilling is used. The quarter-mile economic limit to directional drilling that the ND Geological Survey used to estimate the number of potential wells that would be eliminated by Forest Service restrictions was based on current technology and economics. There have been substantial improvements in directional drilling over the last decade or so as well as improvements in more accurately locating oil deposits. We can expect additional improvements in the future. This means that oil and gas deposits that are not economic to reach with today’s technology and at today’s oil prices may well be reachable in the near future with improved technology and/or with improved oil prices. In general, the oil will still be there.<sup>43</sup>

The counties in the Little Missouri National Grassland area have already experienced both a boom and a bust and the slow depletion of existing developed fields. This experience demonstrates the limited extent of the resource and the value to be extracted from it. Rushing or accelerating extraction may not be the best long run strategy for those counties. Put the other way, pacing extraction over a longer time period may not be a bad thing for the counties. It stretches out the time period over which that resource can support the local economy and local government. That can provide the transitional financing for the shifts in the local economy that are crucial if it is going to be able to retain its population. For those who believe that fossil fuel energy shortages are inevitable and higher oil and natural gas prices almost certain in the long run, leaving some of the oil and gas in the ground can also be seen as an investment, savings in the bank, which will be more valuable when extracted in the future than they would be if they were extracted when energy prices were relatively low.

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<sup>42</sup> The figures on the previous page are based on the US Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System CD-ROM. Earnings flowing to not residents is taken from the residence adjustments in that county data.

<sup>43</sup> Inability to optimally space step out wells can reduce overall recovery from an oil field. In that sense, inability to drill at certain locations can reduce the effectiveness of total recovery. In addition, to the extent that adjacent wells drain oil and gas from locations below surface areas where the Forest Service has restricted surface development towards other operating wells, some of the mineral will be recovered despite the lack of drilling. It too is not “lost” although federal payments to state and local governments based on federal production could be “lost.”

## **5. Economic Development and the National Grasslands in Rural North Dakota**

Most of the criticism of the Forest Service's proposals to increase the protection of non-commercial landscape values associated with the remnant natural prairies that make up the National Grasslands focuses on the fact that there will be a negative impact on the production of cattle forage, on the opportunity to expand oil and gas production in the future, and on the opportunities for motorized recreation. This would be a persuasive objection only if there were no benefits associated with the increased protection of the natural area values on these public lands. The intent of the new regulations, however, is not to mindlessly restrict valuable commercial activity but to protect valuable non-commercial resources. Economics is about the analysis of tradeoffs. One can rarely pursue one objective without limiting one's ability to pursue another. There is an opportunity cost associated with almost every economic decision. The existence of that opportunity cost is not evidence that a bad or irrational decision has been made.

From an economic point of view, the concept of "multiple-use" cannot possibly mean that all economic activities and valuable resources are simultaneously pursued with equal intensity on each parcel of land. Productively and effectively pursuing one particular economic value will usually mean that other economic values cannot be pursued at as high a level as would otherwise be possible. That is to say, there is an opportunity cost associated with most uses of public lands. We can pursue one economic value associated with a particular part of the landscape only by reducing our opportunities to pursue other economic values there. Even within the concept of multiple-use tradeoffs are unavoidable. The purpose of land-use planning is to consider those tradeoffs in the light of our priorities and make as informed and as rational decision as possible, necessarily accepting the unavoidable opportunity costs associated with our decisions.

What is at issue in the current round of decision making about the National Grasslands is not that there will be costs incurred but whether the costs we unavoidably have to incur are justified by the objectives we are pursuing.

This remains true when the management of the National Grasslands is put in the context of the economic development of rural areas of the Great Plains. Economic development also requires the commitment of resources and therefore has a cost associated with it. Because we are resource constrained, we cannot do everything at once. Within the context of rural economic development, the question is what management direction on the National Grasslands would contribute most to actual economic development of the surrounding rural economies.

Traditionally these rural areas have been almost totally committed to agriculture. Since the 1950, and especially since the mid-1970s, for some of these areas there has also been an important energy component. There is a tendency to think about future economic development by focusing on enhancing the industries on which a locale already depends. That way of thinking about the local economy lies at the core of the HAND critique of the Forest Services preferred alternative. But this is a dangerous way

to pursue economic development for it focuses our gaze on the past and where we have been rather than on the present and future and the actual opportunities that currently confront us.

More of the same, in general, is not economic development. Continued dependency upon one or two industries almost always leads to instability and decline. The landscapes of the Great Plains states are almost 100 percent committed to agricultural and energy production. Insisting that this 100 percent commitment to economic activities of past and present economic importance may not leave much room for dynamic new industries that would provide the additional jobs and income to offset the ongoing declines in opportunities that are endemic with mature industries like agriculture and energy production.

The current economic development role being played by public lands in the United States is not their commercial exploitation to support the extension of historically dominant uses. Rather, their current, very productive, economic role has centered on protecting and enhancing high quality living environments for current and potential future residents. There has been a slow but steady shift in the relative value of the different types of resources these public lands can provide: The environmental services (wildlife, recreation, scenic beauty, clear air and water, open space, etc.) provided by these lands has increased in value while the commodity values have declined, at least in relative terms. The low grain and beef prices and low energy prices that have characterized the 1990s give clear evidence of this relative shift. The ongoing economic dynamism of economies adjacent to most protected federal lands is also dramatic evidence.

One part of the alternative economic potential associated with more careful protection of the natural values associated with the North Dakota National Grasslands is already quite clear: Tourism activity in the North Dakota counties associated with the Little Missouri and Sheyenne NGs has increased significantly over the last decade. Between 1990 and 1997 tourism's real contribution to the economic base has increased three to four fold in Billings, McKenzie, Ransom, and Richland Counties. As a percentage of the total economic base, it has increased three to seven fold.<sup>44</sup> In most counties, tourism is still a relatively small (but increasing) part of the total economic base, being swamped by agriculture, oil and gas, or manufacturing. In Billings County, however, one sees its potential: In the late 90s tourism's share of the economic base was 50 percent larger than that of agriculture.

Inappropriate grazing pressure can do serious damage to the wildlife (and therefore recreation) capacity of public lands. Both the areas along rivers and streams and the woody draws are crucial to both fisheries and wildlife. Livestock grazing can degrade both. One of the targets of improved livestock management of the NGs is to reduce the damage to these crucial wildlife areas. Cover for upland bird species can also be degraded by grazing. In addition, on the Little Missouri NG, cattle can directly compete with elk for forage. The point is that one of the resources associated with public lands

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<sup>44</sup> See Table 3, p. 11 of the HAND county economic studies (Billings, McKenzie, and Ransom-Richland), op. cit.

that the Forest Service has an obligation to protect is wildlife, and that protection may require changes in how the land is grazed by livestock. This is not a matter of economic values conflicting with aesthetic or wildlife values. It is a matter of one type of economic value conflicting with another. Wildlife and wildlife habitat are an important part of the recreation and tourist values associated with the natural landscape, and both of those can be an important part of the local economy.

Researchers at North Dakota State University have estimated that 21,000 jobs and almost \$400 million in personal income are associated with hunting and fishing in the state.<sup>45</sup> The 1996 ***Natural Survey of Fishing, Hunting, and Wildlife-Associated Recreation*** showed that a significant part of North Dakota residents' fishing and hunting expenditures take place out of state. About 40 percent of angling days and 11 percent of hunting days by North Dakota residents take place outside of North Dakota. On net, after accounting for people from other states coming to North Dakota to hunt and fish, 30 to 40 percent of the hundreds of millions of dollars North Dakota residents spend on hunting and fishing take place out of state.<sup>46</sup> That is partially true because non-resident recreational spending in North Dakota is quite small and partially because North Dakota residents find the recreation opportunities within the state inadequate. Of course, if this is true of both residents and visitors, it is also likely to be true of potential residents. That can make it difficult for North Dakota to attract and hold residents, adding another downward pressure on the economy.

Changing management of the National Grasslands in North Dakota to better protect wildlife habitat can pay dividends in enhancing an already growing tourist sector. Hunting and angling are big business in other areas of the Great Plains and the West. Reduced grazing pressure can increase habitat and feed for wildlife and allow wildlife populations to rebound. Reduced grazing on some of the NGs, such as the Fort Pierre NG in South Dakota, has led to significant improvements in wildlife habitat and populations. This appears to have stimulated additional hunting activity and expenditures.<sup>47</sup> The North Dakota Game and Fish Department recognizes this economic potential associated with improved wildlife habitat on the NGs. It estimates that already 40,000 visitor days to the Little Missouri National Grasslands can be attributed to hunting and fishing.<sup>48</sup> It also recognizes that the management of livestock grazing on these public lands may need to be changed in order to protect and enhance wildlife values.

The core economic decision implicit in the management decisions for the North Dakota National Grasslands is whether these public lands are going to be managed almost exclusively to support the declining economies of the past or whether some significant part of these natural areas will be committed to supporting a more diversified economy

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<sup>45</sup> "Characteristics, Expenditures, and Economic Impact of Resident and Nonresident Hunters and Anglers in North Dakota, 1996-97 Season and Trends, Tina D. Lewis, Hay A. Leitch, and Aaron J. Meyer, Agricultural Economics Report, Agricultural Experiment Station, 1998.

<sup>46</sup> North Dakota volume of the Survey, FHW/96-ND, April, 1998, US Fish and Wildlife Service, p.4.

<sup>47</sup> Personal communication, Fort Pierre NG staff based on comments by local businesses.

<sup>48</sup> Public Lands: A North Dakota Game and Fish Department Perspective, 1999.

for the future. The amenity-supported economic development elsewhere on the Great Plains and across the Western states demonstrates a potential. The rapidly growing and increasingly significant tourist industry in North Dakota clearly demonstrates that the potential is real in North Dakota. But one cannot have everything at once, unconstrained by scarcity. To support this diversification and the development of new economic activity to offset declines taking place in the historical economic base, some resources have to be committed to the support of that diversification. A modest commitment in this direction by the National Grasslands is embodied in the Forest Service's preferred alternative as well as Alternative 4 that various environmental organizations support.

Alternatives 3 and 4 do involve reduced commitments of the National Grasslands to commercial agriculture, energy production, and motorized recreation. But almost 100 percent of North Dakota is now open to all three of these. Protecting a tiny part of North Dakota for the pursuit of an alternative set of non-commercial, non-consumptive economic values does not represent a radical or dangerous decision that threatens the state's economy. Quite the contrary, it represents a very modest investment in the development of a new part of North Dakota's economic base that will be very important in the future: North Dakota's natural amenities. Lands committed to agriculture, to energy development, and to motorized activity are very common, in fact, ubiquitous in North Dakota. High quality natural amenities are relatively scarce. In that context, protecting the scarce resource at modest cost to the more plentiful resources makes powerful economic sense. Doing the opposite, destroying that which is unique and irreplaceable in order to protect that which is plentiful and of declining economic value does not protect North Dakota's economic future, it threatens it.

## Summary Vita

### Thomas Michael Power

#### Current Position

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#### Educational Background

B.A. 1962 Lehigh University (Physics)  
Ph.D.(1970), M.A.(1965) Princeton University (Economics)

#### Honors and Awards

Phi Beta Kappa  
B.A. with High Honors  
Woodrow Wilson Fellowship

#### Fields of Specialization

Resource Economics; Regional Economics

#### Selected Publications

##### a. Books

**Environmental Protection and Economic Well-Being: The Economic Pursuit of Quality**, M.E. Sharpe Publishers, New York, 1996 (2nd Edition of *The Economic Pursuit of Quality*).  
**Lost Landscapes and Failed Economies: The Search for a Value of Place**, 1996, Island Press.  
**The Economic Pursuit of Quality**, M.E. Sharpe Publishers, New York, 1988.  
**The Economic Value of the Quality of Life**, Westview Press, Boulder, Colorado, 1980.

##### b. Chapters in Books

"The Contribution of Economics to Ecosystem Preservation: Far Beyond Monetary Valuation," in **Managing Human-Dominated Ecosystems**, MBG Press and Island Press, Fall, 1999.  
"Trapped in Consumption: Modern Social Structure and the Entrenchment of the Device," Chapter 15 in **Technology and the Good Life?**, Eric Higgs, Andrew Light, and David Strong, editors. University of Chicago Press. Forthcoming (Spring, 2000).  
"Ideology, Wishful Thinking, and Pragmatic Reform: A Constructive Critique of Free-Market Environmentalism," in **The Next West**, Don Snow, editor, Island Press, Fall, 1997.  
"Thinking about Natural Resource-Dependent Economies: Moving beyond the Folk Economics of the Rear-View Mirror," a chapter in **A New Century for Natural Resource Management**, Robert L. Knight and Sarah Bates, editors, Island Press, Washington, D.C., 1994.  
"The Economic Pursuit of Quality: Escaping the Extractive View of Our Economy," in **Voices of the Earth: Selections from the America's Best Environmental Books**, Daniel D. Chiras, editor, Johnson Books, Boulder, Colorado, 1994.  
"Measuring Local Economic Well-Being: Per Capita Income and Local Economic Health", a chapter in **Green Economics: The Measurement of Sustainable Economic Welfare**, John B. Cobb, Jr., Editor, University Press, Washington, D.C., 1992  
"The Economics of Wildland Preservation: The View from the Local Economy," in **The Economic Value of Wilderness**, Pat Reed and Claire Payne, eds., General Technical Report SE-78 Southeastern Forest Experiment Station, Forest Service, U.S.D.A., December, 1992.  
"Capitalism, Socialism, and the Environment: The Role of Social Organization," in **International Dimensions of Environmental Problems**, Richard Barrett, editor, Westview Press, 1986.

##### c. Published Monographs and Reports

**Economic Evaluation of River and Wetland Restoration Projects: A Conceptual Manual**, with Ernie Niemi, U.S. Environmental Protection Agency, 1998.  
**Economic Well-Being and Environmental Protection in the Pacific Northwest: A Consensus Statement by Pacific Northwest Economists**, T.M. Power, editor, University of Montana, January, 1996.

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**The Central Arizona Project: An Economic Analysis** (National Audubon Society, 1979)

**Projections of Northern Great Plains Coal Mining and Energy Conversion Development 1975-2000** (NSF/RANN, 1975)

d. Articles in Refereed Journals

"An Economic Evaluation of Flood Control Alternatives in the Vermillion river Basin, SD," **Great Plains Natural Resource Journal**, Spring, 1999.

"Economic Well-Being and Environmental Protection in the Pacific North west," **Illiahee: Journal of the Northwest Environment**, Spring, 1996.

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"The Wealth of Nature," **Issues in Science and Technology**, National Academy of Sciences, Spring, 1996.

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"For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future: A Review," **Environmental Ethics**, 15(1):85-90, Spring, 1993.

"Urban Size (Dis-)Amenities Revisited," **J. of Urban Economics**, 1981

e. Articles in Non-Refereed Journals

"A Price on Everything: A Review of Free-Market Environmentalism," **Sierra Magazine**, Winter, 1993.

"The Pursuit of Quality: A Non-Material View of the Economy," **Orion Magazine**, Summer, 1993.

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f. Professional Reports/Consulting

Federal Energy Regulatory Agency  
U.S. Environmental Protection Ag.  
Washington State Attorney General  
Idaho Office of Attorney General  
Idaho Public Utilities Commission  
Montana Public Service Commission  
Washington Dept. of Ecology  
Florida Public Service Commission  
Colorado Office Consumer Counsel  
Oklahoma Corporation Commission  
City of Austin, Texas  
City of Seattle, Washington  
City of Spokane, Washington  
Citizens Utility Board, Oregon  
Office of Technology Assessment

Confederated Salish Kootenai Tribes  
Blackfeet Tribe  
Spokane Tribe of Indians  
Rocky Boy Chippewa-Cree  
Forest Co. Potawatomi Community  
National Audubon Society  
National Wildlife Federation  
Idaho Office of Energy  
Nebraska Energy Office  
Kansas Corporation Commission  
Oahe Irrigation District  
Trout Unlimited  
Wilderness Society  
Illinois Commerce Commission  
Colville Tribe

g. Other Professional Activities

Regular "Commentator" on Montana Public Radio (twice a month)